

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changes in Version 2005.01.15

Preface for Academics

Added the Preface for Academics:

“This year marks the one hundredth anniversary of the year that Albert Einstein addressed the two most important anomalies in early twentieth century physics. His particle theory of light addressed the problem that black-bodies did not radiate energy in the way the prevailing wave theory of light predicted they would. His special theory of relativity addressed the problem that the speed of light was the same in the direction of the earth’s rotation as it was in all other directions.

“Early twenty-first century economists face two similar anomalies. The first is that acting wisely differs from acting efficiently. The second is that the economic research program is not consistent with other scientific research programs.

“Einstein provides a model for addressing these two anomalies. In his special theory of relativity he replaced the Newtonian foundation of invariant time and space with the foundation of invariant light speed. It is painfully obvious that we need to replace modern economics’ foundation of *practically* invariant consumer wants with something more stable. The obvious choice is human nature, which is many orders of magnitude more stable than consumer wants. We owe it to ourselves to expand modern economics’ scientific research program to include all human knowledge. We urgently need the resulting universal research program to discover and disclose the foolish use of theories.

“From this practical perspective, discovering more about human nature is part of the economic problem that we must solve. A major hurdle in discovering more about ourselves is the complex (“reflexive”) relationship between the models that we use to guide our actions and reality. We owe it to ourselves to distinguish between the theories that we use to predict what will happen and the theories that we use to explain how to act wisely. In the pursuit of useful knowledge, this distinction is more basic than the distinction between theories that are scientific and those that are not scientific.

“The essence of the science of practical wisdom is that we owe it to ourselves to test theories by how we use them in decision-making. We ought to test the theories that we use to predict by how well they help us to predict. We ought to test the theories that we use to explain by how well they help us to find problems to solve.”

Acknowledgments, ninth paragraph, third and fourth sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“He attributed this to my style, particularly to my use of such unfamiliar terms as ‘recursionist economics.’ **The real problem was more a matter of substance than of style.**”

were changed to:

“He attributed this to my style, particularly to my use of such unfamiliar terms as ‘**paradigm**’ and ‘recursionist economics.’ **A year and a half after his death I recognized that my style was too intellectual. I also recognized that there was a more substantial problem.**”

Acknowledgments, ninth paragraph, last sentence

Changed “The **faster we** progress” to “The **greater our potential for** progress **is.**”

Chapter 1, title

Changed “**Strategy**” to “**Learning.**”

Chapter 1, Modern Economics' Blind Spot

Changed “**creating useful knowledge**” to “**learning.**”

Chapter 2, eleventh footnote, end

Added the sentences:

“The further away we are from these attractors, the greater the potential for avalanche catastrophes.”

Chapter 4, Avalanche Catastrophes, last two paragraphs

“Regardless of whether market economies are weakly chaotic, decreasing fluidity stores economic stress, which worsens the danger of avalanche catastrophes. **Ball bearings never produce avalanches.**”

“Those who would give up essential liberty to purchase a little temporary safety put themselves and others at greater risk. As Benjamin Franklin wrote **to the governor of Pennsylvania in 1755**, they deserve neither liberty nor safety.”

were changed to:

“Regardless of whether market economies are weakly chaotic, decreasing fluidity stores economic stress, which worsens the danger of avalanche catastrophes. Those who would give up essential liberty to purchase a little temporary safety put

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

themselves and others at greater risk. As Benjamin Franklin wrote, they deserve neither liberty nor safety.”

Chapter 5, Just Taxation, second paragraph

Changed “**creating** useful knowledge” to “useful knowledge” in the third sentence.

Changed “**creating** useful knowledge” to “knowledge” in the fourth sentence.

Changes in Version 2005.01.20

Preface for Academics, second and third paragraphs

“Early twenty-first century economists face **two similar** anomalies. **The first** is that acting wisely differs from acting efficiently. **The second** is that the economic research program is not consistent with other scientific research programs.

“Einstein provides a model for addressing these two anomalies. In his special theory of relativity he replaced the Newtonian foundation of invariant time and space with the foundation of invariant light speed. We can replace modern economics’ foundation of **practically** invariant consumer wants with **something more stable. The obvious choice is human nature, which is many orders of magnitude more stable than consumer wants. We owe it to ourselves to** expand modern economics’ scientific research program to include all human knowledge. We urgently need the resulting universal research program to discover and disclose the foolish use of theories.”

were changed to:

“Early twenty-first century economists **also** face **important** anomalies. **One** is that acting **efficiently** differs from acting **wisely**. **Another** is that the economic research program is not consistent with other scientific research programs. Einstein provides a model for addressing these two anomalies. In his special theory of relativity he replaced the Newtonian foundation of invariant time and space with the foundation of invariant light speed. We can replace modern economics’ foundation of **practically** invariant consumer wants with **a foundation of practically** invariant human nature. **Making this change requires that we** expand modern economics’ scientific research program to include all human knowledge. We urgently need the resulting universal research program to discover and disclose the foolish use of theories.”

Preface for Academics, new third paragraph, second and third sentences

“A major hurdle in discovering more about ourselves is the complex (“reflexive”) relationship between the **models** that we use to guide our actions and reality. **We owe**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

it to ourselves to distinguish between the positive theories that we use to predict what will happen and the normative theories that we use to explain how to act wisely.”

were changed to:

“A major hurdle in discovering more about ourselves is the complex (“reflexive”) relationship between the **normative theories** that we use to guide our actions and reality. **Clearing this hurdle requires that we** distinguish between the **positive** theories that we use to predict what will happen and the **normative** theories that we use to explain how to act wisely.”

Acknowledgments, ninth paragraph, second to last sentence

Changed “**could** not grasp” to “**did** not grasp.”

Chapter 2, Economic Science, title

Changed title to “**Expanding** Economic Science.”

Chapter 3, *Three Common Misbeliefs*, title

Changed title to “**Several** Common Misbeliefs.”

Chapter 3, *Several Common Misbeliefs*, first paragraph

Changed “promote” to “improve” in all (2 occurrences).

Changed “promoting” to “improving” in all (3 occurrences).

Changes in Version 2005.01.24

Acknowledgments

Added tribute to Milton Friedman:

“The fourth was Milton Friedman. Soon

“Einstein provides a model for addressing these two anomalies. In his special theory of relativity he replaced the Newtonian foundation of invariant time and space with the foundation of invariant light speed. We can replace modern economics’ foundation of **practically** invariant consumer wants with **something more stable. The obvious choice is human nature, which is many orders of magnitude more stable than consumer wants. We owe it to ourselves to** expand modern economics’ scientific research

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

program to include all human knowledge. We urgently need the resulting universal research program to discover and disclose the foolish use of theories.”

Changes in Version 2005.01.31

Preface for Academics, first paragraph

“This year marks the one hundredth anniversary of the year that Albert Einstein addressed the two most important anomalies in early twentieth century physics. His particle theory of light addressed the problem that black-bodies did not radiate energy in the way the prevailing wave theory of light predicted they would. His special theory of relativity addressed the problem that the speed of light was the same in the direction of the earth’s rotation as it was in all other directions.”

was deleted.

Preface for Academics, new first paragraph

Changed “**Early twenty-first century** economists” to “**E**conomists” in the first sentence.

Changed “**also** face important anomalies” to “face important **theoretical** anomalies” in the first sentence.

Changed “Einstein” to “**Albert** Einstein” in the fourth sentence.

Changed “**he**” to “**Einstein**” in the fifth sentence.

Changed “**Making this change**” to “**This**” in the seventh sentence.

Preface for Academics, new second paragraph

“From this practical perspective, **discovering more about human nature is part of** the economic problem that we must solve.”

was changed to

“From this practical perspective, the economic problem that we must solve **includes discovering more about human nature.**”

Changes in Version 2005.02.07

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Title page

Changed “S. M. Harris” back to “Scott Maynard Harris.” The original change is to prevent confusion with economist (Robert) Scott Harris. The change back is to prevent confusion with atheist Sam Harris.

Appendix B, Sacrifice and Prudence, last paragraph, end

Added the sentence: “Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.””

Appendix B, Divine Law, end

Added the paragraph: “Religious fundamentalists ought to heed Einstein’s warning, “Religion without science is blind.””

Changes in Version 2005.02.12

Acknowledgments, fourth paragraph

Added the paragraph:

“The fourth is Taiichi Ohno. In the summer of 1984 I was head of information systems and human resources, essentially the chief knowledge officer at Star Forms, Inc., our family owned business forms manufacturing company. Star Forms was then thirteen years into what was to be a fourteen year run of 33% annual sales growth and 34% annual return on equity. We learned faster than our competitors. A lecture by Taiichi Ohno, which was the highlight of a tour of Japanese factories, convinced me that by Toyota standards we were not organized to learn.”

Renumbered subsequent paragraphs.

Acknowledgments, new tenth paragraph

Changed “**our family owned manufacturing firm**” to “**Star Forms**” in the first sentence.

Chapter 5, Just Taxation, fifth paragraph

“If we were **as lucid as angels**, if we were **to choose wisely all of the time**, no government would be necessary.”

was changed to

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“If we were **perfectly wise**, if we were **as lucid as angels**, no government would be necessary.”

Chapter 5, Just Taxation, seventh paragraph

“If we were **as lucid as angels**, we would share our wealth wisely. There would be no need for governments to force us to do so. Regrettably, we are not **as lucid as angels**. This does not mean that we ought to demand that governments expend non-knowledge resources to force us to share our wealth. Non-knowledge government resources are poor substitutes for the inexhaustible knowledge resource of practical wisdom. We ought to demand that governments encourage us to become ever **more lucid**.”

was changed to

“If we were **perfectly wise**, we would share our wealth wisely. There would be no need for governments to force us to do so. Regrettably, we are not **perfectly wise**. This does not mean that we ought to demand that governments expend non-knowledge resources to force us to share our wealth. Non-knowledge government resources are poor substitutes for the inexhaustible knowledge resource of practical wisdom. We ought to demand that governments encourage us to become ever **wiser**.”

Appendix B, title

Changed “**Eliminating**” to “**Culling**.”

Appendix B, Conclusion, last sentence

Deleted “**as an organizing principle**.”

Changes in Version 2005.02.18 (Responses to DFB criticisms)

Preface, second paragraph, fifth sentence

Added “**by blinding me to more useful truths**.”

Preface, third paragraph, last two sentences

“**These** scholars also ought to consider what happened in the market for production management tools. Toyota’s strategy for learning beat the theories for allocating.”

were converted to a new paragraph and changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Scholars **who believe that it takes a theory to beat a theory** also ought to consider what happened in the market for production management tools. Toyota’s strategy for learning **wisely** beat the theories for allocating **efficiently**.”

Preface for Academics, second paragraph, first sentence

Changed ““reflexive”” to “reflexive / **recursive**.”

Preface for Academics, last paragraph, first sentence

Changed “owe it to ourselves” to “owe it to ourselves (ought).”

Acknowledgments, fifth paragraph

Changed “at Star Forms, **Inc.**” to “, at Star Forms” in the second sentence.

Changed “Star **Forms**” to “Star” in the third sentence.

Acknowledgments, fifth paragraph, fourth sentence

“We learned **ed** faster than our competitors.”

was changed to:

“We **achieved this remarkable record by acting and** learning faster than our competitors.”

Chapter 1, Marginalist Economics’ Blind Spot, third paragraph, third sentence

“This is as true of conceptual frameworks as it is for railroad networks.”

was deleted.

Chapter 1, Marginalist Economics’ Blind Spot, fourth paragraph, second sentence

“Mainstream economists define “wealth” to mean **consumer** goods and the resources for producing **consumer goods, where consumer goods are** those goods and services **that we buy to satisfy our wants**.”

were converted to a new paragraph and changed to:

“Mainstream economists define “wealth” to mean **the** goods **and services that we consumers buy to satisfy our wants** and the resources for producing **these consumer** goods and services.”

Chapter 1, Marginalist Economics’ Blind Spot, fifth paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We can see **this** in the marginalist economic order quantity (EOQ) model, **which is at the heart of Material Requirements Planning (MRP) systems, the most advanced Western production systems of the nineteen seventies and eighties.**”

was moved to the next paragraph and changed to:

“We can see **how this definition of excellence in means tends to blind us by studying** the marginalist economic order quantity (EOQ) model.”

Chapter 1, Marginalist Economics’ Blind Spot, eighth paragraph, fifth sentence

“The inexhaustibility of knowledge makes **finding out the value of what we expect to learn** problematic.”

was changed to:

“The inexhaustibility of knowledge makes **this evaluation** problematic.”

Chapter 1, Marginalist Economics’ Blind Spot, last paragraph, second sentence

Deleted “**By learning through experience,**” in the second sentence.

Chapter 1, Managerial Excellence, first paragraph, second sentence

Added “**the term**” to the first sentence.

Chapter 1, Managerial Excellence, second paragraph

Inserted the paragraph:

“Choosing the right problem to solve is a matter of dividing up the problem of how best to pursue our ultimate ends into smaller, more tractable problems. In the production example above, the ultimate end of production scheduling is producing wisely. Given the global problem of how best to produce wisely, the subordinate problem of how best to set up is more effective than the more limited subordinate problem of how to best to set up for our current knowledge of how to set up. In managerial terms, it is a more *effective* problem to solve.”

Changed “**intelligent beings**” to “**, the members of the community of beings capable of using the knowledge that we create,**” in the first sentence.

Chapter 1, The Strategy, first paragraph

“Changing our concept of excellence in means from marginalist “efficiency” to managerial “efficiency and effectiveness” calls for making profound changes **to** how we think about the universal problem we face, the problem that defines our ultimate

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

ends. The inexhaustibility of knowledge makes it impossible to separate what happens today from what happens one thousand years from now. **We must** consider not only the living but also future generations. Further, the low cost of copying many types of useful knowledge makes it impossible to separate what happens in our society from what happens in other societies. **We must** consider not only members of our society but also all other members of the community capable of using the knowledge that it creates.”

was changed to:

“Changing our concept of excellence in means from marginalist “efficiency” to managerial “efficiency and effectiveness” calls for making profound changes in how we think about the universal problem we face, the problem that defines our ultimate ends. The inexhaustibility of knowledge, **the fact that using knowledge does not use it up**, makes it impossible to separate what happens today from what happens one thousand years from now. **In determining what is wise, we owe it to ourselves to** consider not only the living but also future generations.

Further, the low cost of copying many types of useful knowledge makes it impossible to separate what happens in our society from what happens in other societies. **In determining what is wise, we ought to** consider not only members of our society but also all other members of the community capable of using the knowledge that it creates.”

Chapter 1, The Strategy, new third through fifth paragraphs

“From the managerial perspective, the universal problem we face is one of how we, the members of the community of beings capable of using the knowledge that we create, choose **to** progress toward our ultimate ends. This universal problem is an open-ended one. **Mathematicians face a similar problem when they seek to evaluate the transcendental number pi. Rather than seeking ever better rational approximations of pi:**

3,
22/7,
355/113,
...,

they seek ever better means of calculating pi:

$$\begin{aligned} \pi &= 4(1 - 1/3 + 1/5 - 1/7 + 1/9 - 1/11 + \dots), \\ \pi &= 2 \cdot \sqrt{3}(1 - 1/3 \cdot 3 + 1/5 \cdot 3^2 - 1/7 \cdot 3^3 + 1/9 \cdot 3^4 - 1/11 \cdot 3^5 + \dots), \\ &\dots \end{aligned}$$

where better means are those that converge more quickly.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Mathematicians progress toward pi by applying a process (formula) recursively. Similarly, we progress toward our ultimate ends by applying a process (decision-making) recursively.

“Decision-making starts with finding a problem to solve and ends with learning from the experience. We do not decide perfectly. Our imperfect decision-making wastes resources. But, given a learning attitude, we learn from our mistakes. Given a learning attitude, waste is a regrettable by-product of learning through experience.”

were changed to:

“From the managerial perspective, the universal problem we face is one of how we, the members of the community of beings capable of using the knowledge that we create, ought to progress toward our ultimate ends.⁵ We progress toward our ultimate ends by means of decision-making, where decision-making is defined as the process that starts with finding a problem to solve and ends with learning from the experience.

“We do not decide perfectly. Our imperfect decision-making wastes resources. But, given the proper attitude and an understanding of the value of learning, we learn from our mistakes. Given a learning attitude, waste is a regrettable by-product of learning through experience.”

“⁵Mathematicians face a similar (open-ended) problem when they seek to evaluate the transcendental number pi. Rather than seeking ever better rational approximations of pi: 3, 22/7, 355/113, ..., they seek ever better recursive processes for calculating pi: $\pi = 4(1 - 1/3 + 1/5 - 1/7 + 1/9 - 1/11 + \dots)$; $\pi = 2 \cdot \sqrt{3}(1 - 1/3 \cdot 3 + 1/5 \cdot 3^2 - 1/7 \cdot 3^3 + 1/9 \cdot 3^4 - 1/11 \cdot 3^5 + \dots)$; ..., where better recursive processes are those that converge more quickly.”

Chapter 2, *Theories produce predictions and explanations.*, last paragraph

Changed “owe to ourselves (ought)” to “ought” in the second to last sentence.

Chapter 2, Refining Ultimate Ends, fifth paragraph, last sentence

“We can do so by basing our theory of consumption on theories that look to our internal programming to explain what motivates us.”

was changed to:

“We can do so by basing our theory of consumption on theories that look to human nature — our internal programming — to explain what motivates us. Modern biologists call theories that look to internal programming to explain motivation “teleonomic theories.””

Chapter 2, Refining Ultimate Ends, sixth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “these "teleonomic theories"” to “teleonomic theories” in the first sentence.

Chapter 2, Refining Ultimate Ends, seventh paragraph

Deleted “Pragmatists focus on means. Idealists define ultimate ends. Pragmatic idealists refine ultimate ends:”

Changed “tighten” to “then tighten” in the last sentence.

Chapter 2, Refining Ultimate Ends, eighth paragraph

“We owe it to ourselves to cull teleonomic theories that fail to help us identify what we need to pursue our ultimate ends. For example, psychologist Abraham Maslow provides us with a means of identifying our physical and mental needs.⁶ Our physical needs for oxygen and water arise from our molecular processes’ need for oxygen and water. In contrast, our mental needs for love and self-respect arise from our minds, not from the molecular processes of our brain cells. Until we understand the complex relationships between our bodies and what we commonly refer to as our minds and our spirits, focusing on one level of abstraction will tend to blind us to needs that emerge on other levels of abstraction. We ought to cull all teleonomic theories that focus on a single level of abstraction. We ought to cull teleonomic theories based solely on sociobiology, which focus on our bodies; teleonomic theories based solely on postmodernism, which focus on our minds; and teleonomic theories based solely on our need to relink with the infinite Being, which focus on our spirits. The wise focus not on their bodies, on their minds, or on their spirits, but rather on their bodies, minds, and spirits.

“⁶Maslow, Abraham H., *Motivation and Personality*, (New York: Harper & Row, 1987), 15-31.”

was changed to:

“We owe it to ourselves to cull teleonomic theories that fail to help us identify what we need to pursue our ultimate ends. First, we ought to cull all teleonomic theories that focus on a single level of abstraction. Until we understand the complex relationships between our bodies and what we commonly refer to as our minds and our spirits, focusing on one level of abstraction will tend to blind us to needs that emerge on other levels of abstraction. Only fools focus on their bodies, minds, or spirits. The wise focus on their bodies, minds, and spirits. Hence, we ought to cull teleonomic theories based solely on sociobiology, which focus on our bodies; teleonomic theories based solely on postmodernism, which focus on our minds; and teleonomic theories based solely on our need to relink with the infinite Being, which focus on our spirits.”

Chapter 2, Refining Ultimate Ends, ninth paragraph

Changed “owe to ourselves” to “ought” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Refining Ultimate Ends, end

Added the paragraph:

“Pragmatists focus on means. Idealists define ultimate ends. Pragmatic idealists refine ultimate ends.”

Chapter 3, Introduction, first sentence

Deleted “subordinate ends and means to our chosen subordinate.”

Chapter 3, Wealth

“Wealth is goods and the resources to produce goods. Marginalist goods are things that we *want*. In sharp contrast, managerial goods are things that we *need* to progress toward our ultimate ends.”

was changed to:

“Marginalists and managers alike define wealth as goods and the resources to produce goods. However, they differ in how they define goods. Marginalists define goods as those consumer goods and services that we *want*. This definition of goods does *not* include practical wisdom. Managers define goods as those things that we *need* to progress toward our ultimate ends. This definition of goods does include practical wisdom.”

Chapter 3, Consumption, first paragraph

“From the marginalist perspective, winning a fortune in the lottery will automatically lead to a good life, and so it is unequivocally good. From the managerial view, it can be bad if the winner is foolish, as would be the case if the winner were an alcoholic who would use the money to pursue his or her self-destructive habit. Understanding this difference requires a deeper understanding of pleasure and pain.”

was changed to:

“The marginalist definition of goods *does not* include practical wisdom. From the marginalist perspective, winning a fortune in the lottery will automatically lead to a good life, and so it is unequivocally good. In contrast, the managerial definition of goods *does* include practical wisdom. From the managerial view, winning a fortune in the lottery can be bad if the winner is foolish, as would be the case if the winner were an alcoholic who would use the money to pursue his or her self-destructive habit. Understanding this difference requires a deeper understanding of pleasure and pain.”

Chapter 3, Virtuous Circles, second paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**ability**” to “**potential**” in all (3 occurrences).

Chapter 3, Practical Wisdom, first paragraph, first sentence

“The ultimate **normative** end of life is happiness, a life well lived.”

was changed to:

“**Aristotle tells us that** the ultimate end of life is happiness, a life well lived.”

Chapter 3, *Two Means of Pursuing Happiness*, second paragraph

Changed “acting **in the world**” to “**interacting with others**” in the third sentence.

Chapter 3, *Alternatives to Pursuing Happiness*, third paragraph, first sentence

“The distinction between pursuing happiness, pursuing pleasure, and pursuing nothing is **more than an artifact of Western civilization.**”

was changed to:

“**This** distinction between pursuing happiness, pursuing pleasure, and pursuing nothing is **universally useful. We find clear reflections of it in successful Eastern cultures.**”

Chapter 3, *Alternatives to Pursuing Happiness*, last paragraph

Merged into third paragraph.

Chapter 3, Trade, second paragraph

Changed “**establishing**” to “**setting up new**” in the fourth sentence.

Changed “**unwinding**” to “**ending**” in all (2 occurrences).

Chapter 3, *Trust*, last paragraph, last sentence

“Trust lowers the cost of protecting knowledge from theft, which promotes creating knowledge.”

was changed to:

“Trust promotes knowledge by lowering the cost of protecting knowledge from theft.”

Chapter 3, *Several Common Misbeliefs*, title

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**Several**” back to “**Three**.”

Chapter 3, *Several Common Misbeliefs*, first paragraph

Changed “**Several**” back to “**Three**” in the first sentence.

Added “**(efficiency and effectiveness)**” in the first sentence.

Added “**first and**” in the second sentence.

Chapter 3, *Several Common Misbeliefs*, second paragraph

Changed “**A** second” to “**The** second” in the first sentence.

Added the sentence:

“For example, a mahogany desk made from wood from a certified source may be more valuable to us than an otherwise identical desk made from wood of unknown origin.”

Chapter 3, *Several Common Misbeliefs*, third paragraph

Changed “**A** third” to “**The** third” in the first sentence.

Chapter 3, *Production*, first sentence

Changed “**Production**” to “**As the rapid tool setting example in the first chapter showed, production.**”

Chapter 3, *Profit*, first sentence

Inserted the sentence:

“Profit is the return on practical wisdom.”

Chapter 4, *Introduction*

Changed “economic turbulence” to “**the** economic turbulence **it creates.**”

Chapter 4, *Progress*, first paragraph, first sentence

“**P**rogress is movement toward the ultimate normative end of a good life for all.”

was changed to:

“**If we accept Schweitzer's ultimate normative end of reverence for life (Appendix B), then** progress is movement toward the ultimate normative end of a good life for all.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Progress, second paragraph, last sentence

“A small rise in the price of a raw material might cause firms to react as marginalist theory predicts; it might have no immediate effect; or it might trigger a firm to adopt a new process that changes the industry.”

was changed to:

“A small rise in the price of a raw material might cause firms to react as marginalist theory predicts. **Alternatively**, it might have no immediate effect or it might trigger a firm to adopt a new process that changes the industry.”

Chapter 4, Progress, third paragraph

Changed “**interfere**” to “**interact**” in the second sentence.

Chapter 4, Progress, last paragraph, last sentence

“Metaphorically, progress from increasing managerial excellence creates a “**bow wave**” of inflation.”

was changed to:

“Metaphorically, **a surge of** progress from increasing managerial excellence creates a **temporary** wave of inflation.”

Chapter 4, Turbulence, third paragraph, second sentence

“**When capturing this benefit requires trading with those hurt by turbulence, it also requires the trust needed to make such trades.**”

was changed to:

“**Capturing this benefit may** require trading with those hurt by turbulence.”

Chapter 4, Fluidity, fourth paragraph

Changed “raise” to “**raises**” in the fourth sentence.

Deleted “significantly” in the last sentence.

Chapter 4, Fluidity, last paragraph

Changed “more fluid **over time**” to “**ever** more fluid” in the last sentence.

Chapter 4, Conclusion, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Renegade Austrian economist Joseph Schumpeter believed that (1) wealth is consumer goods and the capacity to produce consumer goods; (2) the *wealthy* are willing to give up some liberty to purchase economic security and (3) socialism would rid us of capitalism’s “gales of creative destruction.”⁴ These widely-held beliefs are not the most useful for progressing toward the ultimate end of reverence for life. More useful are the beliefs that (1) wealth is what we need to progress toward the ultimate end of reverence for life; (2) the *wise* are willing to accept economic turbulence as a regrettable result of progress; and (3) socialism postpones turbulence by retarding progress from increasing excellence, which is both unwise and unjust.”

was changed to:

“This chapter rebuts the widely held beliefs that: (1) the *wealthy* are willing to give up some liberty to purchase economic security and (2) socialism would rid us of capitalism’s “gales of creative destruction.”⁴ These two beliefs are not the most useful for progressing toward the ultimate end of reverence for life. More useful are the beliefs that (1) the *wise* are willing to accept economic turbulence as a regrettable result of progress and (2) socialism postpones turbulence by retarding progress from increasing excellence, which is unwise and unjust.”

Chapter 5, Introduction, first paragraph, first sentence

“Policy makers decide who makes what decisions under what incentives.”

was changed to:

“Policy making is a matter of who makes what decisions under what incentives.”

Chapter 5, Consider the Justice of Interventions, third paragraph

Added the sentence:

“The classic example is the attempt to prohibit the sale of alcohol in the United States during the nineteen twenties.”

Changed “prudence” to “practical wisdom” in the last sentence.

Chapter 5, Control the Monetary Supply Passively, first paragraph

Changed “price” to “the price” in the first sentence.

Deleted “allow monetary authorities” in the third sentence.

Chapter 5, Free Association, third paragraph

Changed “urban, industrial, and market-oriented” to “industrial” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 5, Free Association, fourth paragraph, last two sentences

“This supposed **break** for employees effectively takes away their right to buy insurance from whomever they please. **It also involves employers, and through authoritarian progressive legislation, the government, in the personal lives of employees.**”

was changed to:

“This supposed **gain** for employees **is** effectively **a loss in that it** takes away their right to buy insurance from whomever they please.”

Chapter 5, Conclusion

Added the sentence:

“The best government is the one that results in the greatest improvement in the quality of decision-making.”

Chapter 6, first paragraph

“In information age economies, the potential interactions between ethics (how we ought to live) and mainstream economics (how we use scarce resources to satisfy our wants) are too important to ignore. We need a strategy for learning how to live ever more wisely.”

was changed to:

“At the dawn of the industrial age, Adam Smith’s example of a pin factory showed the wisdom of pursuing the virtuous circle of the division of labor and the expansion of market size. Today, Toyota’s strategy for learning shows the wisdom of pursuing the virtuous circle of good people and good products: Good people produce good products. Good products, *including good intellectual tools*, produce good people. We ought to learn more about what makes people good. We ought to learn more about what enlightened self-interest truly is.”

Chapter 6, second paragraph, first sentence

“**The managerial** strategy for learning how to live ever more wisely **put forth in this work** differs markedly from current economic theories.”

was changed to:

“*Wealth in the Information Age* **promotes a** strategy for learning how to live ever more wisely. **This strategy for learning** differs markedly from current economic theories.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 6, third paragraph

Changed “The managerial strategy for learning” to “This strategy” in the first sentence.

Changes in Version 2005.02.21

Preface, second paragraph, fifth sentence

Deleted “leading me astray by.”

Preface, third paragraph

Changed “They” to “These scholars” in the third sentence.

Preface, fourth paragraph

Changed “Scholars who believe that it takes a theory to beat a theory” to “These scholars” in the first sentence.

Acknowledgments, fourth paragraph

Added the paragraph:

“The fourth is Harold Leavitt, my first year faculty advisor at the Stanford Graduate School of Business. Hal told his core course organizational behavior students that the least understood, most often ignored, and often most difficult part of decision-making is finding the best problem to solve. As Einstein observed, perfection of means and confusion of ends seem to characterize our age.”

Renumbered subsequent paragraphs.

Acknowledgments, new sixth paragraph

Changed “essentially” to “what today would be called” in the second sentence.

Acknowledgments, new ninth paragraph, end

Added the sentence:

“I am especially grateful for his explanation of his cognitive style (*Hayek on Hayek*, 134-5), which often inspired me to continue rolling this stone up the mountain.”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2005.02.26

Preface for Academics, first paragraph

Changed “**human nature**” to “**teleonomic programming**” in the sixth sentence.

Changed “**human knowledge**” to “**knowledge useful in fulfilling our teleonomic programming**” in the seventh sentence.

Changed “**the resulting**” to “**this**” in the last sentence.

Changed “**theories**” to “**intellectual tools**” in the last sentence.

Preface for Academics, second paragraph, first two sentences

“**From this practical perspective**, the economic problem that we **must** solve includes **discovering** more about **human nature**. A major hurdle in **discovering** more about ourselves is the complex (reflexive / recursive) relationship between our sensations of reality and the normative theories that we use to guide our actions **and reality**.”

were changed to:

“**Ideally**, the economic problem that we **owe it to ourselves (ought) to** solve includes **learning** more about ourselves. A major hurdle in **learning** more about ourselves is the complex (reflexive / recursive) relationship between **our sensations of reality and** the normative theories (**models**) that we use to guide our actions.”

Preface for Academics, third paragraph

“**The essence of the science of practical wisdom is that we owe it to ourselves (ought)** to test theories by how we use them in decision-making. We ought to test the theories that we use to predict by how well they help us to predict. We ought to test the theories that we use to explain by how well they help us to find problems to solve.”

was changed to:

“**Practically, we ought** to test theories by how we use them in decision-making. We ought to test the theories that we use to predict **what will happen** by how well they help us to predict **what will happen**. We ought to test the theories that we use to explain **how to act wisely** by how well they help us to find problems to solve.”

Acknowledgments, tenth paragraph, end

Moved paragraph to after new eleventh paragraph. Renumbered acknowledgments accordingly.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Refining everyday thinking, first paragraph

Added: “that define our ultimate ends” at the end of the third sentence.

Chapter 2, *Theories are refinements of everyday thinking.*, third paragraph

“Idealists believe that science ought to concern the discovery of the truth. A true theory is one that predicts and explains everything about a system. We refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):”

were changed to:

“Idealists believe that science ought to concern the discovery of the truth. Discovering the truth, which some describe as God’s view of the Universe, helps us satisfy our need for mystical oneness, our need to become part of something greater than ourselves. (See Schweitzer’s *Universal Spiritual Need* in Appendix B.) Idealists also believe that a good scientific theory is a theory that predicts and explains everything about a system. Accordingly, they refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):”

Chapter 2, *Theories are refinements of everyday thinking.*, fifth paragraph

Changed “useful truth” to “useful knowledge” in the first sentence.

Chapter 4, Progress, first paragraph, first two sentences

“If we accept Schweitzer’s ultimate normative end of reverence for life (Appendix B), then progress is movement toward the ultimate normative end of a good life for all.”

were changed to:

“Progress is movement toward our ultimate normative ends.”

Chapter 4, Avalanche Catastrophes, last paragraph

Changed “weakly chaotic” to “weakly or strongly chaotic” in the first sentence.

Afterword, third paragraph, seventh sentence

“The new regulations would make flying commuter airlines more expensive, which would cause some people to switch from flying to driving.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Regulating commuter airlines like major airlines would make flying commuter airlines more expensive. This in turn would cause some people to switch from flying to driving.”

Afterword, third paragraph, last sentence

“Would more regulation result in more highway deaths than it saved by preventing airline crashes?”

was changed to:

“Right wingers asked whether regulating commuter airlines like major airlines would result in more highway deaths than it saved preventing airline crashes.”

Changes in Version 2005.03.05

Preface, second paragraph

The first two sentences:

“I was already familiar with Bach’s decision rules. I had learned the first from my parents; the second from Wilfred McNeil, comptroller of the United States Department of Defense under its first six Secretaries; and the third from Harry Carroll, professor of classical Western history, art, languages, and philosophy.”

were deleted.. The the next two sentences were appended to the first paragraph. The last sentence was appended to the third paragraph.

Preface, last two paragraphs

“Rather than strategic theories, we ought to seek strategies for learning. This radical idea will be resisted by scholars who believe that it takes a theory to beat a theory. These scholars ought to consider the foremost task of decision-making, which is defining our ultimate ends. The intellectual tool that we use to define our ultimate ends ought to address all uncertainty. Unlike theories, which cannot address the uncertainty of basic assumptions, strategies for learning can address all uncertainty.

“These scholars also ought to consider what happened in the market for production management tools. Toyota’s strategy for learning wisely beat the theories for allocating efficiently.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Rather than strategic theories, we ought to seek strategies for learning. This radical idea will be resisted by scholars who believe that it takes a theory to beat a theory. **More useful than the belief that it takes a theory to beat a theory is the belief that it takes an intellectual tool to beat an intellectual tool. There are both theoretical and practical reasons for this. In theory,** the foremost task of decision-making is defining our ultimate ends. The intellectual tool that we use to define our ultimate ends ought to address all uncertainty. Unlike theories, which cannot address the uncertainty of basic assumptions, strategies for learning can address all uncertainty. **In practice,** Toyota’s strategy for learning wisely beat the theories for allocating efficiently.”

Preface for Academics, second and third paragraphs

“**Ideally, the economic problem that** we owe it to ourselves (ought) to **solve includes** learning more about ourselves. A major hurdle in learning more about ourselves is the complex (reflexive / recursive) relationship between our sensations of reality and the normative **theories (models)** that we use to guide our actions. Clearing this hurdle requires that we distinguish between the positive **theories** that we use to predict what will happen and the normative **theories** that we use to explain how to act wisely. In the pursuit of useful knowledge, this distinction is more basic than the distinction between theories that are scientific and those that are not scientific.

“**Practically,** we ought to test theories by how we use them in decision-making. We ought to test the theories that we use to predict **what will happen** by how well they help us to predict **what will happen**. We ought to test the theories that we use to explain **how to act wisely** by how well they help us to find problems to solve.”

were changed to:

“**In theory,** we owe it to ourselves (ought) to **follow the scientific research program that arises from our teleonomic programming. Following this program requires that we** learn more about ourselves. A major hurdle in learning more about ourselves is the complex (reflexive / recursive) relationship between our sensations of reality and the normative models that we use to guide our actions. Clearing this hurdle requires that we distinguish between the positive **models** that we use to predict what will happen and the normative **models** that we use to explain how to act wisely. In the pursuit of useful knowledge, this distinction is more basic than the distinction between theories that are scientific and those that are not scientific.

“**In practice,** we ought to test **economic** theories by how we use them in decision-making. We ought to test the theories that we use to predict by how well they help us to predict. We ought to test the theories that we use to explain by how well they help us to find problems to solve.”

Acknowledgment, tenth paragraph

Deleted “**and his uncle, Wilfred McNeil,**” in the seventh sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, *Theories are refinements of everyday thinking.*, last sentence

“The ever-evolving process of discovering and testing useful knowledge is a scientific research program of, by, and for all intelligent life.”

was deleted.

Afterword, last paragraph, end

Added the paragraph:

“I believe that all human activity both is and ought to be part of the scientific research program of, by, and for all intelligent life.”

Changes in Version 2005.03.12

Preface, first paragraph, third sentence

Changed “**revealing** his beliefs” to “**disclosing** his **core beliefs**.”

Preface, second paragraph

“I have since learned that this wish was foolish. Rather than strategic theories, we ought to seek strategies for learning. **This radical idea will be resisted by scholars who believe that it takes a theory to beat a theory. More useful than the belief that it takes a theory to beat a theory is the belief that it takes an intellectual tool to beat an intellectual tool. There are both theoretical and practical reasons for this. In theory, the foremost task of decision-making is defining our ultimate ends. In practice, Toyota’s strategy for learning wisely beat all theories for allocating efficiently.**”

was changed to:

“I have since learned that this wish was foolish. Rather than strategic theories, we ought to seek strategies for learning. **The foremost task of decision-making is defining our ultimate ends. Unlike theories, which cannot address the uncertainty of basic assumptions, strategies for learning can address all uncertainty.**”

“**The idea that a strategy ought to replace a theory conflicts with the maxim that it takes a theory to beat a theory. More useful than this scholastic maxim is the pragmatic maxim that it takes an intellectual tool to beat an intellectual tool.** Toyota’s strategy for learning wisely beat all theories for allocating efficiently.”

Preface for Academics, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “the economic research program” to “their scientific research program.”

Preface for Academics, second paragraph, second sentence

“Following this program requires that we learn more about ourselves.”

was changed to:

“Following this program involves learning more about ourselves.”

Acknowledgments, fifth paragraph, second sentence

Changed “his core course organizational behavior students” to “me.”

Changed “, most often ignored, and often most difficult” to “and most often ignored.”

Acknowledgments, ninth paragraph

Changed “Reverend John Lothrop inspired” to “Congregationalist” in the third sentence.

Changed “approach to problems often conflicted with those” to “approach to decision-making often conflicted with the model centric approach” in the last sentence.

Acknowledgments, tenth paragraph, first sentence

Changed “as head of human resources and information systems for” to “at.”

Acknowledgments, eleventh paragraph, last sentence

Changed “cognitive style” to “intellectual make-up.”

Chapter 2, *Theories are refinements of everyday thinking.*, fourth paragraph, second and third sentences

“We test theories by testing how well they perform their role in everyday thinking. From the managerial perspective put forth in this work, we test theories by testing how well they perform their role in decision-making.”

was changed to:

“In the pursuit of useful knowledge, we ought to test theories by testing how well they perform their role in decision-making.”

Chapter 2, *Theories are refinements of everyday thinking.*, second footnote

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**In the pursuit of useful truth, the**” to “**The**” in the first sentence.

Chapter 2, *Theories are refinements of everyday thinking.*, fourth paragraph

Changed “test” to “**ought to test**” in the new third and fourth sentences.

Changed “refine” to “**ought to refine**” in the new fifth and seventh sentences.

Changed “**the M-theory**” to “**Witten’s M-theory**” in the last sentence.

Chapter 2, *Theories are refinements of everyday thinking.*, fifth paragraph

Changed “**metamethodology**” to “**approach**” in the first sentence.

Chapter 2, *Theories are refinements of everyday thinking.*, last paragraph

“Some idealists will dismiss this pragmatic definition of science for not being positive, for not describing the world as it is. They ought to consider the nature of scientific research programs. Scientific research programs are positive in their ends, normative in their means, and potentially religious in their effect on researchers.”

was deleted.

Chapter 2, *Refining Ultimate Ends*, eighth paragraph, last three sentences

“**Only fools focus on their bodies, minds, or spirits. The wise focus on their bodies, minds, and spirits.** Hence, we ought to cull teleonomic theories based solely on sociobiology, which focus on our bodies; teleonomic theories based solely on postmodernism, which focus on our minds; and teleonomic theories based solely on our need to relink with the infinite Being, which focus on our spirits.”

were changed to:

“Hence, we ought to cull teleonomic theories based solely on sociobiology, which focus on our bodies; teleonomic theories based solely on postmodernism, which focus on our minds; and teleonomic theories based solely on our need to relink with the infinite Being, which focus on our spirits. **Only fools focus on their bodies, minds, or spirits. The wise focus on their bodies, minds, and spirits.**”

Appendix B, title

Changed “**Culling Unethical Theories**” to “**Reverence for Life.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Preface, second paragraph, third sentence

“The foremost task of decision-making is defining our ultimate ends.”

was deleted.

Preface for Academics, second paragraph, second sentence

Changed “involves learning” to “requires that we learn.”

Preface for Academics, third paragraph, first sentence

Changed “economic theories” to “theories.”

Acknowledgments, third paragraph, first sentence

Changed “human being” to “person.”

Chapter 2, *Theories are refinements of everyday thinking.*, third paragraph, fourth sentence

Inserted a paragraph break.

Chapter 5, Just Taxation, fourth through sixth paragraphs

“The case for ending personal income taxes is more problematic. It is also more enlightening in that it gets to the heart of the reason that we have governments.

“If we were perfectly wise, if we were as lucid as angels, no government would be necessary. *Government is a substitute for practical wisdom.*

“If we were perfectly wise, we would share our wealth wisely. There would be no need for governments to force us to do so. Regrettably, we are not perfectly wise. This does not mean that we ought to demand that governments expend non-knowledge resources to force us to share our wealth. Non-knowledge government resources are poor substitutes for the inexhaustible knowledge resource of practical wisdom. We ought to demand that governments encourage us to become ever wiser.”

were changed to:

“The case for ending personal income taxes is more problematic. If we were perfectly wise, we would share our wealth wisely. There would be no need for governments to force us to do so. Regrettably, we are not perfectly wise. This does not mean that we ought to demand that governments force us to act wisely. It does mean that we ought to demand that governments encourage us to act ever more wisely.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 5, Just Taxation, last paragraph, third sentence

Inserted a paragraph break.

Appendix B, Sacrifice and Prudence, last paragraph

“Secular humanists tend to ignore our need for mystical oneness. The danger of ignoring this potentially overwhelming need is the flourishing of such deeply flawed means of satisfying it as Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist religious humanism. Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.””

was changed to:

“**Secular Humanism**

Secular humanists tend to ignore our need for mystical oneness. The danger of ignoring this potentially overwhelming need is the flourishing of such deeply flawed means of satisfying it as Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist religious humanism.

“Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.””

Appendix B, Divine Law, title

Changed “**Divine Law**” to “**Religious Fundamentalism.**”

Changes in Version 2005.03.31

Preface for Academics, second paragraph, third sentence

“A major hurdle in learning more about ourselves is the complex (reflexive / recursive) relationship between **our sensations of reality and** the normative models that we use to guide our actions.”

was changed to:

“A major hurdle in learning more about ourselves is the complex (reflexive / recursive) relationship between the normative models that we use to guide our actions **and reality.**”

Acknowledgments, second paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “several” to “nine” in the first sentence.

Acknowledgments, sixth paragraph

Changed “Star” to “Star Forms” in the second sentence.

Deleted “, which was the highlight of a tour of Japanese factories,” in the last sentence.

Acknowledgments, eighth paragraph

Changed “1996” to “1998” in the last sentence.

Chapter 2, Refining Everyday Thinking, title

Changed title to “The Nature of Theories.”

Chapter 2, The Nature of Theories, first paragraph

“The Toyota strategy for learning how to produce ever more wisely involves refining production operations by removing work-in-process inventory. (See Appendix A.) Similarly, the managerial strategy for learning how to progress ever more wisely involves refining our pursuit of our ultimate ends by removing theories that define our ultimate ends. Understanding this strategy calls for understanding the nature of theories.”

was changed to:

“The first chapter proposed a strategy for learning how to progress toward our ultimate ends ever more wisely. Pursuing this strategy requires that we understand the nature of theories.”

Chapter 2, Refining Ultimate Ends, title

Changed title to “Refining Everyday Thinking.”

Chapter 2, Refining Everyday Thinking, last paragraph

“Pragmatists focus on means. Idealists define ultimate ends. Pragmatic idealists refine ultimate ends.”

was reduced to a footnote at the end of the seventh paragraph.

Chapter 2, Expanding Economic Science, end

Added the paragraph:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“All human activity both is and ought to be part of the scientific research program of, by, and for all intelligent life.”

Chapter 3, Trade, first paragraph

Changed “**Having a reputation of**” to “**A reputation for**” in the first sentence.

Chapter 3, *Three Common Misbeliefs*, first paragraph

Deleted “(efficiency and effectiveness)” in the first sentence.

Changed “WIP inventory” to “**work-in-process (WIP)** inventory” in the fifth sentence.

Afterword, last paragraph, last sentence

“I believe that all human activity both is and ought to be part of the scientific research program of, by, and for all intelligent life.”

was deleted.

Appendix A, Introduction

“Just-In-Time (JIT) Manufacturing/Lean Manufacturing/Toyota Production System has become something of a joke among economists. Many believe that it represents the early information age equivalent of Adam Smith’s early industrial age pin factory, which Smith used to introduce the virtuous circle of the division of labor and the expansion of market size. Like Smith’s pin factory, the Toyota system straddles two economic epochs. Where Smith’s pin factory combined pre-industrial age technology with industrial age batch manufacturing organization and management, JIT/Lean Manufacturing/Toyota Production System combines industrial age batch manufacturing technology with something post-industrial. **The joke is that economists cannot agree on the system’s name, much less what makes it special.**”

“What makes the Toyota system exemplary is its information age organization and management, **which focuses on continual improvement (*kaizen*) in production, trade, and consumption. It is the epitome of an information age, learning-by-doing strategy.** From this perspective, more production of saleable product is not always more productive. Less “production” can be more productive.”

was changed to:

“Just-In-Time (JIT) Manufacturing/Lean Manufacturing/Toyota Production System has become something of a joke among economists. Many believe that it represents the early information age equivalent of Adam Smith’s early industrial age pin factory, which Smith used to introduce the virtuous circle of the division of labor and the

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

expansion of market size. **The joke is that economists cannot agree on the system's name, much less what makes it special.**

“ Like Smith's pin factory, the Toyota system straddles two economic epochs. Where Smith's pin factory combined pre-industrial age technology with industrial age batch manufacturing organization and management, JIT/Lean Manufacturing/Toyota Production System combines industrial age batch manufacturing technology with information age organization and management. **Toyota managers** focus on continual improvement (*kaizen*) in production, trade, and consumption. From this **learning-by-doing** perspective, more production of saleable product is not always more productive. Less “production” can be more productive.”

Appendix A, Ever Leaner Production, second paragraph

Changed “work-in-process inventory” to “work-in-process **(WIP)** inventory” in the first sentence.

Appendix A, *Traditional Manufacturing Systems*, sixth paragraph

Changed “work in process” to “work-in-process” in the fourth sentence.

Appendix A, *Smoothing Flows*, first paragraph

Changed “**WIP** flows” to “**Work-in-process** flows” in the second sentence.

Appendix A, *Smoothing Flows*, last paragraph

Deleted “**(WIP)**” in the third sentence.

Appendix B

Demoted sections: *Practical Benefits of Magical Wisdom*, *Secular Humanism*, and *Religious Fundamentalism*.

Appendix B, *Practical Benefits of Magical Mysticism*, fourth paragraph

Changed “religious conversions” to “religious conversions **triggered by divine action**” in the second sentence.

Appendix B, *Sacrifice and Prudence*

Changed title to “**Balanced Excellence**.”

Added subsection title, “**Sacrifice**,” after the third paragraph.

Appendix B, *Sacrifice*, first paragraph, last four sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Even here successful religions teach us to balance the extreme Dionysian with the Apollonian. Too small a willingness to risk ourselves for the sake of others is deemed to be cowardly. Too great a willingness to risk ourselves for others is deemed to be foolhardy or self-destructive. Only the proper balance is deemed to be heroic. The wise temper sacrifice with practical wisdom.”

were deleted.

Appendix B, *Sacrifice*, last paragraph

Changed “**prudent**” to “**wise**” in the first sentence.

Changed “**prudence and romance over enlightenment**” to “**practical wisdom**” in the last sentence.

Appendix B, *Sacrifice*, end

Added the paragraph:

“In contrast, the wise temper sacrifice with practical wisdom. Too small a willingness to risk ourselves for the sake of others is cowardly. Too great a willingness to risk ourselves for others is foolhardy or self-destructive. Only the wise amount is truly heroic.”

Appendix C, first paragraph

Changed “, **which**” to “**that**” in the first sentence.

Changes in Version 2005.04.08

Preface, first paragraph

Changed “**beliefs**” to “**values**” in the third sentence.

Chapter 1, Mainstream Economics’ Blind Spot, eighth paragraph

Changed “**fellow workers**” to “**others**” in the seventh sentence.

Chapter 1, Managerial Excellence, last paragraph

Changed “learning **by doing**” to “learning **through experience**” in the first sentence.

Chapter 1, The Strategy, third paragraph, end

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Added the footnote:

“Formal decision-making consists of (1) finding a problem to solve, (2) formulating alternatives, (3) choosing an alternative, (4) carrying out the chosen alternative, and (5) learning from the experience. Not all decision-making situations deserve formal decision-making. Less costly forms of decision-making include decision rules (heuristics / rules of thumb) and discipline (habits). The decision to use these less costly forms often deserves formal decision-making.”

Chapter 1, The Strategy, fourth paragraph

Changed “the proper attitude and” to “an attitude based on” in the second sentence.

Chapter 2, Refining Everyday Thinking, first two paragraphs

“The managerial strategy for learning how to progress toward our ultimate ends ever more wisely aims at improving the quality of decision-making. Formal decision-making consists of (1) finding a problem to solve, (2) formulating alternatives, (3) choosing an alternative, (4) carrying out the chosen alternative, and (5) learning from the experience. To perform the first two tasks well, decision-makers need theories that explain based on what the wise would do.

“The Austrian school of evolutionary economics comes close to producing such theories. Austrian economists seek to explain human action.³ They argue that societies in which individuals are free to manage their own lives create the most consumer satisfaction and that such societies need high ethical standards if they are to remain free. To those who believe that freedom and responsibility encourage ethical behavior, Austrian economics holds the moral high ground. To others, it is merely an apology for current beliefs and behaviors.”

was changed to:

“The managerial strategy for learning how to progress toward our ultimate ends ever more wisely calls for theories that explain based on what we would do if we were wiser. The Austrian school of evolutionary economics, which seeks to explain human action,³ comes close to producing such theories. Austrian economists recognize that people free to manage their lives will tend to become ever wiser. Regrettably, they do not recognize that the combination of freedom and moral vision is better than freedom alone.”

Chapter 3, Three Common Misbeliefs, first paragraph

Changed “learning by doing” to “learning” in the last sentence.

Chapter 3, Three Common Misbeliefs, third paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “closeness” to “**the** closeness” in the last sentence.

Chapter 3, *Three Common Misbeliefs*, last paragraph

Changed “**former** Soviet Union” to “Soviet Union” in the second sentence.

Chapter 4, Introduction, first paragraph

Changed “**normative** view” to “**complex adaptive systems** view” in the first sentence.

Chapter 4, Turbulence, last paragraph (double spaced Adobe version only)

“In freely evolving economies, individuals and managers experiment with new decision-making methods. In the long run, the best methods are emulated and the worst are discarded. Hence, freely evolving economies tend to become ever more fluid.”

was moved to the end of the Fluidity section. This mistake occurred when transferring paragraphs from the online version to the double spaced Adobe version over a year ago.

Chapter 5, Introduction, first paragraph

Changed “just taxation, **and international cooperation**” to “**and** just taxation” in the last sentence.

Chapter 5, *Consider the Justice of Interventions*, second paragraph, last sentence

“They know that the government that governs best governs least.”

was deleted.

Chapter 5, *Consider the Justice of Interventions*, third paragraph, sixth sentence

Footnote in Adobe versions mistakenly referenced online HTML page. It should have referenced the following:

“³ Olson, Mancur, *The Rise and Decline of Nations*, (New Haven: Yale University Press, 1982).”

Chapter 5, International Cooperation, entire section

“International Cooperation

Nation states are not leviathans with human characteristics living in a global village. Nevertheless, the basic principles underlying international affairs are the same as those underlying domestic affairs. Government officials ought to consider the justice of

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

intervening in the affairs of other states rather than the justice of the actions of other states. They ought to consider the advantages of living under the rule of international law rather than the rule of nation states. Most importantly, they ought to consider international cooperation to be a means of improving the quality of decision-making rather than an end in itself.⁴

⁴ Many today advocate creating a world government. This means of improving the quality of decision-making is problematic. In theory, government is a substitute for practical wisdom. In practice, special interest groups will cynically accept just normative ends while denying adequate means of progressing toward them. The classic example is the three-fifths clause in the United States Constitution, which guaranteed that the slave states could prevent progress toward the just ends proclaimed in the Preamble. It took the bloodiest war in United States history to erase that stain from the Constitution.”

was deleted.

Appendix A, *Three Common Misbeliefs*, first paragraph

Deleted “riveting,” from the second sentence.

Changes in Version 2005.04.11

Chapter 1, *Managerial Excellence*, second paragraph

Changed “more effective” to “better” in the third sentence.

Chapter 1, *Managerial Excellence*, last paragraph

Changed “better” to “more effective” in the last sentence.

Chapter 2, *Refining Everyday Thinking*, first six paragraphs

“The managerial strategy for learning how to progress toward our ultimate ends ever more wisely calls for theories that explain based on what we would do if we were wiser. The Austrian school of evolutionary economics, which seeks to explain human action,³ comes close to producing such theories. Austrian economists recognize that people free to manage their lives will tend to become ever wiser. Regrettably, they do not recognize that the combination of freedom and moral vision is better than freedom alone.

“To progress most readily, we need an explicitly moral theory of evolutionary economics — one that removes the artificial barrier separating excellence in what Austrian economists deem to be consumption, from excellence in what they deem to

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

be production and trade. Whether it is the ability to read, write, calculate, operate a motor vehicle, use a computer, learn quickly, communicate clearly, think logically, or behave contently, useful knowledge does not recognize the boundaries that separate “consumption” from “production” and “trade.”

“Applying the Austrian school’s deductive approach to the question of how we turn consumer goods into progress toward our ultimate ends appears to call for making controversial metaphysical assumptions about our nature. The most important of these unverifiable assumptions concerns whether an immaterial part of us survives the death of our bodies. The founder of Austrian economics, Carl Menger, chose to avoid this and other metaphysical problems by defining ‘wealth’ as consumer goods and the resources to produce consumer goods. Supporters of this subjectivist concept of wealth believe it to be value-neutral. It actually supports the current state of the world by tending to blind us to the possibility of learning to live more wisely.

“We can correct this problem by replacing Austrian economics’ subjectivist theory of consumption with an evolutionary one. We can do so by basing our theory of consumption on theories that look to human nature — our internal programming — to explain what motivates us. Modern biologists call theories that look to internal programming to explain motivation “teleonomic theories.”⁴

“Modern biology supports using teleonomic theories as the foundation for explaining cultural evolution. It tells us that our beliefs and behaviors are evolving at a pace many orders of magnitude faster than the genetic level programming that underlies our higher level internal programming. For all practical purposes, we can assume that our fully realized internal programming is fixed.⁵

“Rather than basing evolutionary explanations on what we want, which ignores the possibility of solving problems by learning to live more wisely, we can base them on the set of all teleonomic theories. We can then tighten these loose explanations by culling members of this set.⁶

⁴ Although we can improve the process by which our genetic programming develops into our higher level programming, we cannot improve our higher level internal programming beyond the bounds set by our genetic programming. Therefore, we can safely assume that our fully realized internal programming is fixed. This may not always be the case. The next economic era is most likely to be defined by our ability to change our genetic programming. A major challenge of the information age must be to accumulate the wisdom we will need to meet the challenges of the coming era.”

were changed to:

“The managerial strategy for learning how to progress toward our ultimate ends ever more wisely calls for theories that explain based on what we would do if we were wiser. The Austrian school of evolutionary economics, which seeks to explain human action,³ comes close to producing such theories. Austrian economists recognize that

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

people free to manage their lives will tend to become ever wiser. Regrettably, they do not recognize that the combination of freedom and moral vision is better than freedom alone. We need an explicitly moral theory of evolutionary economics — one that removes the artificial barrier separating excellence in what Austrian economists deem to be consumption, from excellence in what they deem to be production and trade. Whether it is the ability to read, write, calculate, operate a motor vehicle, use a computer, learn quickly, communicate clearly, think logically, or behave continently, useful knowledge does not recognize the boundaries that separate “consumption” from “production” and “trade.”

“To progress toward our ultimate ends most readily, we need to consider the issue of how we turn consumer goods into progress toward our ultimate ends. Addressing this issue using theories requires that we make controversial assumptions about our ultimate ends. The most important of these concerns whether an immaterial part of us survives the death of our bodies. The founder of Austrian economics, Carl Menger, chose to avoid these controversial assumptions by defining ‘wealth’ as consumer goods and the resources to produce consumer goods. Supporters of this subjectivist concept of wealth believe it to be value-neutral. It actually supports the current state of the world by tending to blind us to the possibility of learning to live more wisely.

“Rather than addressing the issue of how we turn consumer goods into progress toward our ultimate ends using Carl Menger’s subjectivist concept of wealth we can address it using a humanist concept of wealth. We can replace Menger’s subjectivist theory of consumption with the set of theories of consumption that look to human nature — our internal programming — to explain what motivates us.⁴ In biological terms, we can base our theories of consumption on the set of all “teleonomic theories.”⁵ We can then tighten these loose theories by culling members of this set.⁶

⁵ Teleonomic theories are theories that look to our internal programming to explain motivation. Modern biology supports using teleonomic theories as the foundation for explaining cultural evolution. It tells us that our beliefs and behaviors are evolving at a pace many orders of magnitude faster than the genetic level programming that underlies our higher level internal programming. For all practical purposes, we can assume that our fully realized internal programming is fixed.

“Although we can improve the process by which our genetic programming develops into our higher level programming, we cannot improve our higher level internal programming beyond the bounds set by our genetic programming. Therefore, we can safely assume that our fully realized internal programming is fixed. This may not always be the case. The next economic era is most likely to be defined by our ability to change our genetic programming. A major challenge of the information age must be to accumulate the wisdom we will need to meet the challenges of the coming era.”

Chapter 4, Introduction, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**view of macroeconomics**” to “**(CAS) macroeconomic model**” in the first sentence.

Chapter 5, Overview, first two paragraphs

“At the dawn of the industrial age, Adam Smith’s example of a pin factory showed the wisdom of pursuing the virtuous circle of the division of labor and the expansion of market size. Today, Toyota’s strategy for learning shows the wisdom of pursuing the virtuous circle of good people and good products: Good people produce good products. Good products, *including good intellectual tools*, produce good people. We ought to learn more about what makes people good. We ought to learn more about what enlightened self-interest truly is.

“*Wealth in the Information Age* promotes a strategy for learning how to live ever more wisely. This strategy for learning differs markedly from **current** economic theories. Where **current** microeconomic theories help us evaluate alternatives, the managerial strategy helps us formulate them. And where **current** macroeconomic theories **try to help** government **officials** pursue **their ends**, the managerial strategy helps policy makers **help all of** us pursue happiness. It tells us that policy makers should judge interventions of government rather than the actions of the governed and that they should err on the side of not intervening justly rather than intervening unjustly.”

were changed to:

“**Mainstream economics focuses on the tactical problem of allocating efficiently. Intellectual tools derived from mainstream economics, including mainstream economics’ concepts of wealth and excellence in means, are tactical. We should never use these tactical tools strategically.**

“*Wealth in the Information Age* promotes a strategy for learning how to live ever more wisely. This strategy for learning differs markedly from **mainstream** economic theories. Where **mainstream** microeconomic theories help us evaluate alternatives, the managerial strategy helps us formulate them. And where **mainstream** macroeconomic theories **encourage** government **policy makers to lower economic turbulence**, the managerial strategy **encourages policy makers to create an environment that allows** us pursue happiness **ever more readily**. It tells us that policy makers should judge interventions of government rather than the actions of the governed and that they should err on the side of not intervening justly rather than intervening unjustly.”

Chapter 5, Overview, third paragraph

Changed “strategy” to “strategy **for learning**” in the first sentence.

Changes in Version 2005.04.15

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Preface, third paragraph, last sentence

Italicized “Toyota’s strategy for learning wisely beat all theories for allocating efficiently.”

Chapter 1, title quotation

Added “*The Paradigmatic Individuals*” to the attribution.

Chapter 1, The Strategy, first three paragraphs

“Changing our concept of excellence in means from marginalist “efficiency” to managerial “efficiency and effectiveness” calls for making profound changes in how we think about the universal problem we face, the problem that defines our ultimate ends. The inexhaustibility of knowledge, the fact that using knowledge does not use it up, makes it impossible to separate what happens today from what happens one thousand years from now. In determining what is wise, we owe it to ourselves to consider not only the living but also future generations.

“Further, the low cost of copying many types of useful knowledge makes it impossible to separate what happens in our society from what happens in other societies. In determining what is wise, we ought to consider not only members of our society but also all other members of the community capable of using the knowledge that it creates.

“From the managerial perspective, the universal problem we face is one of how we, the members of the community of beings capable of using the knowledge that we create, ought to progress toward our ultimate ends.⁵ We progress toward our ultimate ends by means of decision-making.⁶

⁵ Mathematicians face a similar (open-ended) problem when they seek to evaluate the transcendental number pi. Rather than seeking ever better rational approximations of pi: 3, 22/7, 355/113, ..., they seek ever better recursive processes for calculating pi: $\pi = 4(1 - 1/3 + 1/5 - 1/7 + 1/9 - 1/11 + \dots)$; $\pi = 2 \cdot \sqrt{3}(1 - 1/3 \cdot 3 + 1/5 \cdot 3^2 - 1/7 \cdot 3^3 + 1/9 \cdot 3^4 - 1/11 \cdot 3^5 + \dots)$; ..., where better recursive processes are those that converge more quickly.

⁶ Formal decision-making consists of (1) finding a problem to solve, (2) formulating alternatives, (3) choosing an alternative, (4) carrying out the chosen alternative, and (5) learning from the experience. Not all decision-making situations deserve formal decision-making. Less costly forms of decision-making include decision rules (heuristics / rules of thumb) and discipline (habits). The decision to use these less costly forms often deserves formal decision-making.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We progress toward our ultimate ends by means of decision-making.”⁵

“Formal decision-making consists of (1) finding a problem to solve, (2) formulating alternatives, (3) choosing an alternative, (4) carrying out the chosen alternative, and (5) learning from the experience. Not all decision-making situations deserve formal decision-making. Less costly forms of decision-making include decision rules (heuristics / rules of thumb) and discipline (habits). The decision to use these less costly forms often deserves formal decision-making.”

Chapter 2, Refining Everyday Thinking, paragraph, last two sentences

“We need an explicitly moral theory of evolutionary economics — one that removes the artificial barrier separating excellence in what Austrian economists deem to be consumption, from excellence in what they deem to be production and trade. Whether it is the ability to read, write, calculate, operate a motor vehicle, use a computer, learn quickly, communicate clearly, think logically, or behave continently, useful knowledge does not recognize the boundaries that separate “consumption” from “production” and “trade.””

were changed to:

“We need an explicitly moral theory of evolutionary economics.”

Chapter 2, Expanding Economic Science, second paragraph

Inserted the following paragraph:

“The inexhaustibility of knowledge, the fact that using knowledge does not use it up, makes it impossible to separate what happens today from what happens a thousand years from now. In determining what is wise, we ought to consider not only the living but also future generations. Further, the low cost of copying many types of useful knowledge makes it impossible to separate what happens in our society from what happens in other societies. In determining what is wise, we ought to consider not only members of our society but also all other members of the community capable of using the knowledge that it creates. All human activity both is and ought to be part of the scientific research program of, by, and for all intelligent life.”

Chapter 5, Overview, third paragraph

Changed “God's view” to “a God's eye view” in the first sentence.

Appendix B, Religious Fundamentalism, third paragraph

Removed parentheses around “(with preference given to other intelligent life)” in the last sentence.

Changes in Version 2005.04.16

Chapter 1, The Strategy, new third paragraph

Changed “the rule of law” to “**trust in our predictions about what the courts will do, hence** the rule of law” in the fifth sentence.

Chapter 2, Refining Everyday Thinking, second paragraph

Changed “of these” to “of these **issues**” in the third sentence.

Chapter 2, Refining Everyday Thinking, fourth paragraph

Changed “to pursue” to “**in order** to pursue” in the first sentence.

Numbered clauses in the fourth sentence.

Changed “bodies, minds, *or* spirits” to “bodies, **on their** minds, *or* **on their** spirits” in the fifth sentence.

Chapter 4, Introduction, first paragraph

Added the sentences:

“Progress is movement toward our ultimate normative ends. Assuming that we share the ultimate normative end of reverence for life, progress is movement toward a good life for all. In information age economies, the primary means of progress is increasing managerial excellence.”

Chapter 4, Progress, title

Changed title to “**Increasing Excellence.**”

Chapter 4, Increasing Excellence, first paragraph, first two sentences

“**Progress is movement toward our ultimate normative ends. In information age economies, the primary means of progress involves increasing managerial excellence, which** is a matter of converting new information into new applications of knowledge.”

were changed to:

“**Increasing excellence** is a matter of converting new information into new applications of knowledge.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Fluidity, first paragraph

Changed “**applying useful knowledge**” to “**increasing excellence**” in the first sentence.

Changes in Version 2005.04.18

Preface for Academics, title

Changed “**Academics**” to “**Scientists**.”

Preface for Scientists, first paragraph

Inserted the paragraph:

“Consider a complex adaptive system consisting of potentially cooperative intelligent agents who are uncertain of their needs and the best means of satisfying their needs. The traditional scientific approach to studying this system is for scientists to develop and verify theories about agents’ needs and agents’ means of satisfying their needs. The alternative put forth in this work is for scientists to develop and verify strategies for agents to learn more about their needs and the best means of satisfying them. In short, it is for scientists to help intelligent agents become ever better scientists.”

Preface for Scientists, new second paragraph

“**Economists** face important theoretical anomalies. One is that acting efficiently differs from acting wisely. Another is that **their** scientific research program is not consistent with other scientific research programs. **Albert Einstein provides a model for addressing these two anomalies. In his special theory of relativity Einstein replaced the Newtonian foundation of invariant time and space with the foundation of invariant light speed.** We can **replace modern** economics’ foundation of practically invariant consumer wants with a foundation of practically invariant teleonomic programming. This requires that we expand mainstream economics’ scientific research program to include all knowledge useful in fulfilling economic agents’ teleonomic programming. We urgently need this universal research program to discover and disclose the foolish use of intellectual tools.”

was changed to:

“**As human beings we** face important theoretical anomalies **in mainstream (Anglo-American Neoclassical) economics**. One is that acting efficiently differs from acting wisely. Another is that **mainstream economics’** research program is not consistent with other scientific research programs. We can **address these two anomalies by replacing mainstream** economics’ foundation of practically invariant consumer wants with a foundation of practically invariant teleonomic programming. This **radical solution**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

requires that we expand mainstream economics' scientific research program to include all knowledge useful in fulfilling our teleonomic programming. We urgently need this universal research program to discover and disclose the foolish use of intellectual tools.”

Acknowledgments, fifth paragraph

Changed “Einstein” to “**Albert** Einstein” in the last sentence.

Chapter 2, *Theories are refinements of everyday thinking.*, third and fourth paragraphs

“Idealists believe that science ought to concern the discovery of the truth. **Discovering the truth, which some describe as a God’s eye view of the Universe, helps us satisfy our need for mystical oneness, our need to become part of something greater than ourselves. (See Schweitzer’s Universal Spiritual Need in Appendix B.)**

“**Idealists also believe that a** good scientific theory is a theory that predicts and explains everything about a system. Accordingly, they refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):”

were changed to:

“**We further refine knowledge by scientific research, which is a matter of developing and testing hypotheses. Idealists and pragmatists differ in their approach to this research.**

“Idealists believe that science ought to concern the discovery of the **whole truth about a part of the Universe. A** good scientific theory is one that predicts and explains everything about a system. Accordingly, **idealists** refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):”

Chapter 2, *Expanding Economic Science*, fifth paragraph

Changed “their self-fulfilling nature” to “**the combination of** their self-fulfilling nature and “**lock-in.**”” in the fourth sentence.

Chapter 4, *Introduction*, first paragraph

Changed “, **which**” to “**that**” in the last sentence.

Chapter 4, *Fluidity*, first paragraph

Changed “**Progress from** increasing” to “**I**ncreasing” in the first sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Appendix B, *Schweitzer's Universal Spiritual Need*, first paragraph

Changed “truth” to “truth (“a God’s eye view of the Universe”)” in the last sentence.

Changes in Version 2005.04.21

Preface for Scientists, first paragraph

Inserted the paragraph:

“Tradition holds that science is positive and wisdom is normative. From this perspective, ‘the science of practical wisdom’ is an oxymoron. Given the ever increasing importance of practical wisdom, it is time for a new perspective.”

Chapter 2, *Theories are refinements of everyday thinking.*, third paragraph

Changed “this” to “scientific” in the last sentence.

Chapter 2, sixth footnote

Changed “focus on means” to “refine everyday thinking” in the first sentence.

Chapter 2, Refining Everyday Thinking, seventh paragraph

Changed “that usually falls short” to “that often falls short” in all (2 occurrences).

Chapter 2, eleventh footnote, last sentence

“The further away we are from these attractors, the greater the potential for avalanche catastrophes.”

was deleted.

Chapter 3, Harmful Pleasure and Joy, first paragraph

Changed “allow” to “encourage” in the last sentence.

Chapter 4, Increasing Excellence, third paragraph

“Each new application of useful knowledge causes a ripple of change to flow through an economy. These ripples interact with one another in unpredictable ways. For example, the simultaneous rise in the price of steel and fall in the price of plastic is likely to cause a more rapid substitution of plastic for steel than if the price of steel rises a month after the price of plastic falls.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Applying new useful knowledge also causes a ripple of change to flow through an economy. These ripples interact with one another in unpredictable ways. For example, the simultaneous rise in the price of steel and fall in the price of plastic is likely to cause a more rapid substitution of plastic for steel than if the price of steel rises a month after the price of plastic falls.”

and moved to the end of the section.

Chapter 4, Fluidity

Changed “Fluidity” to “Adaptiveness” in the title.

Changed “Fluid” to “Adaptive” in the second sentence of the first paragraph.

Changed “fluidity” to “adaptiveness” in the third sentence of the first paragraph.

Changed “fluidity” to “adaptiveness” in the last sentence of the first paragraph.

Changed “fluidity” to “adaptiveness” in the last sentence of the last paragraph.

Chapter 4, Avalanche Catastrophes

Changed “fluidity” to “fluidity (adaptiveness)” in the first sentence of the third paragraph.

Changed “fluidity” to “adaptiveness” in the first sentence of the last paragraph.

Chapter 4, A Crude Look at the Whole

Changed “fluid” to “adaptive” in the last sentence of the first paragraph.

Chapter 5, Introduction, first paragraph

Changed “free association” to “adaptive relationships” in the last sentence.

Chapter 5, Free Association

Changed “Free Association” to “Adaptive Relationships” in the title.

Changed “fluid” to “adaptive” in the last sentence of the third paragraph.

Changed “fluid” to “adaptive” in the second sentence of the first paragraph.

Appendix A, *Good People*, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**adaptable**” to “**adaptive**” in the first sentence.

Changes in Version 2005.04.23

Chapter 3, *Harmful Pleasure and Joy*

“Pleasure and joy are harmful to us when they lead us away from following the virtuous circle of pleasure and joy. They mislead us by masking the pain of foolish activities. They also mislead us by masking the pain of unsatisfied needs that we are able to satisfy wisely. In short, they encourage us to construct fools’ paradises.”

was deleted.

Chapter 3, *Practical Wisdom*, third paragraph

Inserted the paragraph:

“We need practical wisdom because pleasure and joy are not perfect indicators of what is truly good for us. Pleasure and joy can mask the pain of unsatisfied foolish activities and the pain of unsatisfied needs that we are able to satisfy wisely. They often lead us to construct fools’ paradises.”

Chapter 3, *Trust*, second paragraph

Changed “**forms of knowledge**” to “**strategic assets**” in the first sentence.

Changed “**It**” to “**Deceit**” in the last sentence.

Moved paragraph to the end of the subsection.

Chapter 3, *Trust*, new second paragraph, first two sentences

“In information age economies, **trust is a strategic asset**. Knowledge **is especially** difficult to protect from theft:”

were changed to:

“**Trust is especially important** in information age economies. **This is because** knowledge **assets are more** difficult to protect from theft **than non-knowledge assets:**”

Chapter 3, *Trust*, new second paragraph

Changed “knowledge” to “**the substitution of knowledge for non-knowledge resources**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Conclusion, first paragraph

Changed “the ultimate end of reverence for life” to “our ultimate ends” in the second sentence.

Chapter 5, Introduction,

Changed “adaptive relationships” to “free trade” in the last sentence.

Chapter 5, Adaptive Relationships, title

Changed “Adaptive Relationships” to “Free Trade.”

Chapter 5, Free Trade, third paragraph, last sentence

“Part of the solution to this difficult problem must be to lower barriers to adaptive relationships, those things that make forming, changing, or dissolving relationships difficult or expensive.”

was changed to:

“Part of the solution to this difficult problem must be to lower barriers to trade. Barriers to trade are those things that make forming, changing, or dissolving trading relationships difficult or expensive.”

Chapter 5, Free Trade, fourth paragraph, first two sentences

“A good example of such a barrier in the United States is the tax-free status of employee insurance benefits. This supposed gain for employees is effectively a loss in that it takes away their right to buy insurance from whomever they please.”

was changed to:

“A good example of a barrier to trade is the tax-free status of employee insurance benefits in the United States. This supposed benefit effectively takes away employees’ right to buy insurance from whomever they please.”

Chapter 5, Free Trade, fifth paragraph

The first two sentences:

“We are used to thinking about the moral hazards of having insurance — people choosing to act foolishly because they are protected by insurance. We also ought to consider the potential moral encouragements of buying insurance.”

and the last sentence:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Those organizations with a mandate to do good works would pass spiritual benefits on to their insurance clients.”

were deleted.

This paragraph was merged with the fourth paragraph.

Chapter 5, Free Trade, last paragraph

“Nothing is more useful to a human than another human guided by lucidity. Adaptive relationships allow lucidity to flourish.”

was changed to:

“Free trade promotes competition. Given a moral vision, competition promotes cooperation and lucidity. Nothing is more useful to a human than another human guided by lucidity.”

and appended to the third paragraph.

Changes in Version 2005.04.25

Chapter 2, Refining Everyday Thinking, six paragraph, third sentence

“Under these conditions we would want intelligent beings to pursue Albert Schweitzer’s normative end of reverence for life:”

was changed to:

“Under these conditions we would want intelligent beings to satisfy their needs ever more efficiently as this lessens killing and suffering. We would also want intelligent beings to devote themselves to helping other life survive and thrive with preference given to other intelligent life. In Albert Schweitzer’s words:”

Chapter 2, Refining Everyday Thinking, seventh paragraph

“From this perspective, whenever we are tempted to use ‘social justice’ we ought to substitute ‘tribal justice’ in order to remind ourselves and others that we refer to a concept of justice that often falls short of the normative end of reverence for life. Similarly, whenever we are tempted to use ‘social science’ we ought to substitute ‘tribal science’ in order to remind ourselves and others that we refer to a science that often falls short of the normative end of reverence for life.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“From this **strategic** perspective, whenever we are tempted to use ‘social justice’ we ought to substitute ‘tribal justice’ in order to remind ourselves and others that we refer to a **tactical** concept of justice that **always** falls short of the normative end of reverence for life. Similarly, whenever we are tempted to use ‘social science’ we ought to substitute ‘tribal science’ in order to remind ourselves and others that we refer to a **tactical concept of** science that **always** falls short of the normative end of reverence for life.”

Chapter 2, Refining Everyday Thinking, last paragraph

Changed “rather than” to “rather than **on**” in the last sentence.

Chapter 5, Just Taxation, fifth paragraph, last two sentences

“**This does not mean that we ought** to demand that governments force us to act wisely. **It does mean that we ought** to demand that governments encourage us to act ever more wisely.”

were changed to:

“**We lack the wisdom** to demand that governments force us to act wisely. **The most we can hope for is the wisdom** to demand that governments encourage us to act ever more wisely.”

Appendix B, *Secular Humanism*

“Secular humanists **tend to ignore** our need for mystical oneness. **The danger of ignoring this potentially overwhelming need is** the flourishing of **such** deeply flawed means of satisfying it **as** Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. **Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist religious humanism.**

“Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.”

was changed to:

“Secular humanists **often use science to dismiss** our spiritual need for mystical oneness. **In doing so, they confuse the metaphysical assumptions of scientific theories with reality. Denying our need for mystical oneness encourages** the flourishing of deeply flawed means of satisfying it. **These include** Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.

“¹⁰**Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist humanism.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix B, *Religious Fundamentalism*, second paragraph

Changed “**lower our**” to “**rid us of**” in the third sentence.

Changed “judge” to “judge (**verify**)” in the third sentence.

Appendix B, *Religious Fundamentalism*, third paragraph

“Moral philosopher John Rawls provides a means of judging theories about how we ought to live. Rawls asks us to imagine what theories we would choose if we were ignorant of the circumstances of our birth.¹¹ For this imagined original position of ignorance to produce a complete theory of justice, we must consider what rules we would want to guide intelligent life if we were completely ignorant of the circumstances of our birth, which includes ignorance of what species we will be and into what era we will be born. Under these conditions we would want intelligent beings to satisfy their needs ever more efficiently as this lessens killing and suffering. We would also want intelligent beings to devote themselves to helping other life survive and thrive with preference given to other intelligent life.

“¹¹ Rawls, John, *A Theory of Justice*, (Cambridge, MA: The Belknap Press of Harvard University, 1971).”

was deleted.

Changes in Version 2005.05.02

Preface, third paragraph, last sentence

“Toyota’s strategy for learning wisely beat all theories for allocating efficiently.”

was changed to:

“Strategies for learning wisely can beat theories for allocating efficiently: Toyota’s batch production strategy beat all batch production theories.”

Preface for Scientists, second paragraph, first two sentences

“Consider a complex adaptive system consisting of potentially cooperative intelligent agents who are uncertain of **their needs and the best means of satisfying their needs**. The traditional scientific approach to studying this system is for scientists to develop and verify theories about agents’ **needs** and agents’ means of satisfying their **needs**.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Consider a complex adaptive system consisting of potentially cooperative intelligent agents who are uncertain of **what to do**. The traditional scientific approach to studying this system is for scientists to develop and verify theories about agents’ **wants** and agents’ means of satisfying their **wants**.”

Preface for Scientists, third paragraph

Changed “mainstream (Anglo-American Neoclassical) economics” to “**economic science**” in the first sentence.

Changed “**mainstream** economics” to “economic **science’s**” in the second sentence.

Changed “**mainstream** economics” to “economic **science’s**” in the third sentence.

Changed “**mainstream** economics’ **scientific**” to “economics” in the fourth sentence.

Chapter 2, Expanded Economic Science, third paragraph

Added “**thermometers**” to the third sentence.

Chapter 4, Introduction, second sentence

“Assuming that we share the ultimate normative end of reverence for life, progress is movement toward a good life for all.”

was deleted.

Chapter 4, A Crude Look at the Whole, first paragraph, sixth sentence

Inserted the sentence:

“In CAS terms, progress occurs at the boundary of order and chaos.”

Afterword, fifth paragraph

Changed “**progress toward** a good life **for all**” to “a good life” in the first sentence.

Afterword, last paragraph, third sentence

“When talking to those on the left, I claim to be a “classical liberal progressive” in that I favor classical liberal means and ever more “**progressive**” subordinate ends.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“When talking to those on the left, I claim to be a “classical liberal progressive” in that I favor classical liberal means and ever more **inclusive** subordinate ends **for individuals.**”

Appendix B, *Religious Fundamentalism*, second paragraph

Changed “**judge (verify)**” to “verify” in the third sentence.

Changes in Version 2005.05.12

Title page

Changed title from “**Wealth in the Information Age**, The Science of Practical Wisdom” to “The Science of Practical Wisdom.”

Changed author from “**Scott Maynard** Harris” to “S. M. Harris.”

Preface, first paragraph

Changed “**Wealth in the Information Age**, The Science of Practical Wisdom” to “The Science of Practical Wisdom” in the first sentence.

Changed “**immediate** problems” to “problems” in the last sentence.

Preface, fourth paragraph, last two sentences

“Given this new reality, we owe it to ourselves to learn more about **what makes people good**. We ought to learn more about what **enlightened self-interest truly is.**”

was changed to

“Given this new reality, we owe it to ourselves to learn more about **how to live wisely**. We ought to learn more about **practical wisdom.**”

Preface for Scientists

Merged with Preface.

Preface, new fifth paragraph, first sentence

“**Tradition holds** that science is positive and wisdom is normative.”

was changed to

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Most specialists in scientific research believe that science describes the world as it is and that practical wisdom prescribes how the world ought to be. In the words of Immanuel Kant, “Science is organized knowledge. Wisdom is organized life.””

Preface, new seventh and eighth paragraphs

“Consider a complex adaptive system consisting of potentially cooperative intelligent agents who are uncertain of what to do. The traditional scientific approach to studying this system is for scientists to develop and verify theories about agents’ wants and agents’ means of satisfying their wants. The alternative put forth in this work is for scientists to develop and verify strategies for agents to learn more about their needs and the best means of satisfying them. In short, it is for scientists to help intelligent agents become ever better scientists.

“As human beings we face important theoretical anomalies in economic science. One is that acting efficiently differs from acting wisely. Another is that current economic science’s research program is not consistent with other scientific research programs. We can address these two anomalies by replacing economic science’s foundation of practically invariant consumer wants with a foundation of practically invariant teleonomic programming. This radical solution requires that we expand economics’ research program to include all knowledge useful in fulfilling our teleonomic programming. We urgently need this universal research program to discover and disclose the foolish use of intellectual tools.”

were changed to:

“The traditional scientific approach to studying economies is for specialists to develop and verify theories about how we satisfy our wants. The alternative put forth in this work is for specialists to develop and verify strategies for helping us to learn to live ever more wisely.

“Modern economic science is a tactical tool for helping us to get what we want. We increasingly need a complementary strategic tool for helping us to learn to live ever more wisely. We can create such a tool by expanding economic science’s research program to include all knowledge useful in living wisely. We need this expanded research program to discover and disclose the foolish use of intellectual tools. We especially need it to discover when the intellectual tools that we use to solve problems are blinding us to better problems to solve.”

Preface, last two paragraphs

“In theory, we ought to follow the scientific research program that arises from our teleonomic programming. Following this program requires that we learn more about ourselves. A major hurdle in learning more about ourselves is the complex (reflexive / recursive) relationship between the normative models that we use to guide our actions and reality. Clearing this hurdle requires that we distinguish between the positive

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

models that we use to predict what will happen and the normative models that we use to explain how to act wisely. In the pursuit of useful knowledge, this distinction is more basic than the distinction between theories that are scientific and those that are not scientific.

“In practice, we ought to test theories by how we use them in decision-making. We ought to test the theories that we use to predict by how well they help us to predict. We ought to test the theories that we use to explain by how well they help us to find problems to solve.”

were deleted.

Acknowledgments, ninth paragraph

Changed “**businessman**” to “**entrepreneur**” in the second sentence.

Deleted the last sentences:

“The most impressed was her middle son, Lathrop, who became a favorite graduate student of University of Chicago political scientist Quincy Wright. While working on his thesis about the coming world war (1936), Lathrop fell into a deep depression and developed a severe case of tuberculosis, which confined him to an asylum until his death (1941). In his eulogy to Lathrop, Grinnell College philosophy professor John Stoops read from Lathrop’s treasured typewritten copy of Stephen Vincent Benét’s post apocalyptic short story, *The Place of the Gods (By the Waters of Babylon)*: “Truth is a hard deer to hunt. If you eat too much of the truth at once, you may die of the truth. ... Nevertheless, we make a beginning...” His older brother’s death by intellectual pursuit taught my father not to take intellectual models too seriously. This lesson was reinforced by his experiences as an Army Air Force officer attached to the Statistical Control and Management Control Groups during the Second World War. His common sense approach to decision-making often conflicted with the model centric approach of more intellectual “Whiz Kids.””

Acknowledgments, tenth paragraph, first two sentences

“**My father heartily supported my decision to write a book about the role of culture in information age companies: an important part of my job at Star Forms had been to maintain our small town Iowa corporate culture as we rapidly expanded across the country.** Despite **his** great ability to quickly get to the root of most matters, he could not comprehend what I had written about ethics and economics.”

were appended to the ninth paragraph and changed to:

“Despite **my father’s** great ability to quickly get to the root of most matters, he could not comprehend what I had written about ethics and economics.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Expanding Economic Science, third paragraph

Changed “cloud chambers” to “atomic clocks” in the third sentence.

Chapter 4, Avalanche Catastrophes, last paragraph

Changed “purchase” to “obtain” in the second sentence.

Chapter 5, Decentralization

Switched the subsections *Control the Money Supply Passively* and *Provide Moral Vision*.

Chapter 6, first paragraph

“Mainstream economics focuses on the tactical problem of allocating efficiently. Intellectual tools derived from mainstream economics, including mainstream economics’ concepts of wealth and excellence in means, are tactical. We should never use these tactical tools strategically.”

was deleted.

Chapter 6, new first paragraph, first sentence

Changed “Wealth in the Information Age” to “The Science of Practical Wisdom.”

Appendix B, *Practical Benefits of Magical Mysticism*, first paragraph.

Changed “a slow evolution” to “slow evolution away” in the first sentence.

Changes in Version 2005.05.16

Preface, second paragraph

Changed “ought” to “ought (owe it to ourselves)” in the second sentence.

Preface, fourth paragraph

Changed “owe it to ourselves to learn more about how to live wisely” to “ought to learn more about what makes people good” in the fifth sentence.

Acknowledgments, tenth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed: “often inspired me to continue rolling this stone up the mountain” to “describes the advantages and disadvantages of thinking in composite world-views” in the last sentence.

Changes in Version 2005.05.17

Preface, second paragraph

Changed “ought” to “ought (owe it to ourselves)” in the second sentence.

Preface, fourth paragraph

Changed “owe it to ourselves to learn more about how to live wisely” to “ought to learn more about what makes people good” in the fifth sentence.

Acknowledgments, tenth paragraph

Changed: “often inspired me to continue rolling this stone up the mountain” to “describes the advantages and disadvantages of thinking in composite world-views” in the last sentence.

Chapter 1, Managerial Excellence, second paragraph, second and third sentences

“In the production example above, the ultimate end of production scheduling is producing wisely. Given the global problem of how best to produce wisely, the subordinate problem of how best to set up is better than the more limited subordinate problem of how to best to set up for our current knowledge of how to set up.”

were changed to

“In the production example above, the subordinate problem of how best to set up is better than the more limited subordinate problem of how to best to set up for our current knowledge of how to set up.”

Chapter 2, Theories produce predictions and explanations., third paragraph, third sentence

“In the long term, predicting “the weather” (trajectory in phase space) requires knowing initial conditions with infinite precision, which is impossible.”

was changed to

“Predicting the long term “weather” (trajectory in phase space) requires knowing initial conditions with infinite precision, which is impossible.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, *Theories produce predictions and explanations.*, last paragraph

Deleted “(economic agents)” in the second sentence.

Changed “based how” to “based **on** how” in the fourth sentence.

Chapter 4, Introduction, first paragraph, second sentence

“**In information age economies**, the primary means of progress is increasing managerial excellence.”

was changed to:

“The primary means of progress **in information age economies** is increasing managerial excellence.”

Chapter 4, Turbulence, last paragraph

“Economic turbulence wastes time and other resources, **which creates an opportunity to those who know how to lower it**. Capturing **this** benefit may require trading with those hurt by turbulence. Ignorance of means of trade and mistrust **in potential trading partners’ willingness or ability to live up to their role in the means of trade** constrain us from lowering turbulence.”

was changed to:

“Economic turbulence wastes time and other resources. Capturing **the benefit of lowering turbulence** may require trading with those hurt by it. Ignorance of the means of trade and mistrust **may** constrain us from lowering turbulence.”

Chapter 4, Adaptiveness, first paragraph

“Increasing excellence creates economic stress, **the need to reallocate resources**. Adaptive economies are those that readily adapt to **the economic stress of progress**. Economic adaptiveness concerns the quality of decision-making: **decisions are good not only because they move us forward but also because they relieve stress quickly and efficiently**. Increasing the factors of wise decision-making tends to increase adaptiveness.”

was changed to

“Increasing excellence creates the need to reallocate resources. Adaptive economies are those that readily adapt to **this** stress. Economic adaptiveness concerns the quality of decision-making. **Decisions are good not only because they move us forward but also because they relieve stress quickly and efficiently**.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Increasing the factors of wise decision-making tends to increase adaptiveness. (Appended to next paragraph.)”

Chapter 4, Adaptiveness

Changed “managem~~ent~~” to “managers” in the first paragraph (2 occurrences).

Chapter 4, Adaptiveness

Changed “managem~~ent~~” to “managers” in the first paragraph (2 occurrences).

Chapter 4, Avalanche Catastrophes, first paragraph

Changed “~~stored economic~~ stress” to “stress” in the first sentence.

Chapter 4, Avalanche Catastrophes, third paragraph

Changed “~~stored~~ stress” to “stress” in the sixth sentence.

Chapter 4, Avalanche Catastrophes, fourth paragraph

“Regardless of whether market economies are weakly or strongly chaotic, decreasing adaptiveness stores economic stress, which worsens the danger of avalanche catastrophes. Those who would give up essential liberty to obtain a little temporary safety put themselves and others at greater risk. As Benjamin Franklin wrote, they deserve neither liberty nor safety.”

was deleted.

Afterword, last paragraph

Changed “~~the dynamic process that made the United States what it is today~~” to “~~the United States’ dynamic tradition of freedom and progress toward reverence for life~~” in the second sentence.

Changed “~~subordinate ends for individuals~~” to “~~definition of who "we" are~~” in the second sentence.

Changes in Version 2005.05.18

Acknowledgments, fourth paragraph, first sentence

Deleted: “~~, who was then the head of the economics department.~~”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Acknowledgments, fourth paragraph, second sentence

“The core of the course was Gary Becker’s pioneering work and Lester Thurow’s criticisms of it.”

was deleted.

Chapter 1, Mainstream' Economics Blind Spot, fourth paragraph

Deleted “(Anglo-American Neoclassical)” in the second sentence.

Afterword, fifth paragraph

Changed “pursuing this dynamic process” to “freely pursuing good lives” in the second sentence.

Changes in Version 2005.05.20

Chapter 2, Refining Everyday Thinking, sixth paragraph, last two sentences

“From this strategic perspective, whenever we are tempted to use ‘social justice’ we ought to substitute ‘tribal justice’ in order to remind ourselves and others that we refer to a tactical concept of justice that always falls short of the normative end of reverence for life. Similarly, whenever we are tempted to use ‘social science’ we ought to substitute ‘tribal science’ in order to remind ourselves and others that we refer to a tactical concept of science that always falls short of the normative end of reverence for life.”

were changed to:

“From this strategic perspective, all other normative ends are subordinate. Justice based on Schweitzer’s reverence for life, which considers the needs of all living things, is by definition the ideal balance of social justice, international justice, generational justice, and interspecies justice. Social justice considers the needs of members of a national society. International justice considers the needs of national societies. Generational justice considers the needs of generations. Interspecies justice considers the needs of species. Justice based on reverence for life considers all of these needs.”

Chapter 2, Refining Everyday Thinking, new ninth paragraph

Changed “normative end” to “ultimate normative end” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changes in Version 2005.05.21

Preface, last paragraph, last two sentences

“We need this expanded research program to discover and disclose the foolish use of intellectual tools. We especially need it to discover when the intellectual tools that we use to solve problems are blinding us to better problems to solve.”

were changed to:

“We need this expanded research program to discover and disclose the strategic use of tactical intellectual tools. This misuse of tactical tools tends to blind us to better problems to solve.”

Chapter 1, Managerial Excellence, first two paragraphs

“Mainstream economists commonly use the term “rational” to describe people who satisfy their wants efficiently. In contrast, we commonly use ‘wise’ to describe those who not only satisfy their wants efficiently but also want the “right” things. “Wise” people are not only efficient in satisfying their wants but also effective in choosing them. For example, the decision to smoke cigarettes efficiently is “rational,” but “foolish.” The “wise” choice is not to smoke. Choosing the right problem to solve is as important as choosing the right solution to a given problem.

“Choosing the right problem to solve is a matter of dividing up the problem of how best to pursue our ultimate ends into smaller, more tractable problems. In the production example above, the subordinate problem of how best to set up is better than the more limited subordinate problem of how to best to set up for our current knowledge of how to set up. In managerial terms, it is a more effective problem to solve.”

were moved to the end of the section and changed to:

“Mainstream economists commonly use the term “rational” to describe people who satisfy their wants efficiently. In contrast, we commonly use ‘wise’ to describe people who are not only efficient in satisfying their wants but also effective in choosing them. For example, the decision to smoke cigarettes efficiently is “rational,” but “foolish.” The “wise” choice is not to smoke. Choosing the right problem to solve is as important as choosing the right solution to a given problem.”

Chapter 2, *Theories produce predictions and explanations.*, last paragraph

“The distinction between predictions and explanations is especially important in economics. We predict what happens in economies based on the knowledge that we possess. If we explain what happens in economies based on the knowledge we possess, we will tend to blind ourselves to the possibility of learning. To avoid this, we

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

need to explain what happens in economies based on how **we** would act if **we** had greater knowledge of what **we** ought to do. In **other words**, we need to explain based on how the wise would act.”

was reduced to a footnote at the end of the chapter and changed to:

“¹³ We predict what happens in economies based on the knowledge that **economic agents currently** possess. If we explain what happens in economies based on the knowledge that **economic agents currently** possess, we will tend to blind ourselves **and others** to the possibility of learning. To avoid this, we need to explain what happens in economies based on how **economic agents** would act if **they** had greater knowledge of what **they** ought to do. In **short**, we need to explain based on how the wise would act.”

Chapter 3, Wealth, first paragraph (HTML version only)

Corrected HTML version by adding missing sentences regarding practical wisdom.

Chapter 3, Consumption, first paragraph, first three sentences

“**The marginalist definition of goods does not include practical wisdom.** From the marginalist perspective, winning a fortune in the lottery will automatically lead to a good life, and so it is unequivocally good. **In contrast, the managerial definition of goods does include practical wisdom.**”

were changed back to:

“From the marginalist perspective, winning a fortune in the lottery will automatically lead to a good life, and so it is unequivocally good.”

Chapter 5, Consider the Justice of Interventions., last two paragraphs

“Judging government intervention is difficult. Legislators can choose to err on the side of passing an unjust law or not passing a just law. **Wise policy makers know that it is better for governments to err on the side of not passing a just law.**

“Two arguments **for** erring on the side of not intervening are worth mentioning. First, to be effective, governments must be trusted to act wisely. When governments intervene foolishly, they undermine their effectiveness. The classic example is the attempt to prohibit the sale of alcohol in the United States during the nineteen twenties. Second, unjust interventions tend to benefit a few people greatly and to harm many people only a little. This makes them nearly impossible to rescind.³ **Because unjust government interventions are nearly impossible to rescind, practical wisdom demands that policy makers err on the side of not intervening.**”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Judging government intervention is difficult. Legislators can choose to err on the side of passing an unjust law or not passing a just law. Two arguments favor erring on the side of not intervening. First, to be effective, governments must be trusted to act wisely. When governments intervene foolishly, they undermine their effectiveness. The classic example is the attempt to prohibit the sale of alcohol in the United States during the nineteen twenties. Second, unjust interventions tend to benefit a few people greatly and to harm many people only a little. This makes them nearly impossible to rescind.³ New Deal “emergency” agricultural marketing orders still benefit established producers at the expense of the rest of the planet. Wise policy makers err on the side of not passing a just law.”

Changes in Version 2005.05.24

Preface, last paragraph, last two sentences

“We need this expanded research program to discover and disclose the strategic use of tactical intellectual tools. This misuse of tactical tools tends to blind us to better problems to solve.”

were changed to:

“We need this expanded research program to discover and disclose the strategic use of tactical intellectual tools, which tends to blind us to better problems to solve.”

Acknowledgments, eighth paragraph

Changed “1992” to “the early nineties” in the second sentence.

Changed “1998” to “the late nineties” in the third sentence.

Chapter 1, Mainstream Economics' Blind Spot, last paragraph

Inserted the paragraph:

“Although the EOQ model produces the most *efficient* order quantity, the rapid tool setting model is far more *effective* in lowering production costs.”

Chapter 1, The Strategy, title

Changed “The Strategy” to “The Managerial Strategy.”

Chapter 2, Theories produce predictions and explanations., fourth paragraph

Changed “better problems” to “problems” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**better** alternatives” to “alternatives” in the third sentence.

Chapter 2, *Theories produce predictions and explanations.*, last paragraph

Changed “predictions **of demand**” to “predictions” in the second sentence.

Chapter 2, *Theories are refinements of everyday thinking.*, third and fourth paragraphs

“We further refine knowledge by scientific research, **which is a matter of** developing and testing hypotheses. Idealists and pragmatists differ in their approach to scientific research.”

“Idealists believe that science ought to concern the discovery of the whole truth about a part of the Universe. A good scientific theory is one that predicts and explains everything about a system. Accordingly, idealists refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):

“This idealistic definition of science tends to limit testing to **systems** simple enough to be well understood.”

were changed to:

“We further refine knowledge by scientific research, **the process of refining narratives by** developing and testing hypotheses. Idealists and pragmatists differ in their approach to scientific research. Idealists believe that a good scientific theory is one that **logically and elegantly** predicts and explains everything about a part of the Universe. Accordingly, idealists refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):

“This idealistic definition of science tends to limit testing to **parts of the Universe** simple enough to be well understood.”

Chapter 2, *Theories are refinements of everyday thinking.*, new fourth paragraph

Changed “ought” to “**also** ought” in the seventh sentence.

Chapter 3, *Wealth*, first paragraph, last three sentences

“**This definition of goods does not include practical wisdom.** Managers define goods as those things that we *need* to progress toward our ultimate ends. **This** definition of **goods does include** practical wisdom.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Managers define goods as those things that we *need* to progress toward our ultimate ends. *Unlike the marginalist definition, the managerial of wealth definition considers practical wisdom.*”

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “analog~~ue~~” to “analog” in the first sentence.

Changes in Version 2005.05.26

Chapter 1, The Nature of Theories, title

Changed title to “**Science as Refined Everyday Thinking.**”

Chapter 1, The Nature of Theories, Introduction

“The first chapter proposed a strategy for learning how to progress toward our ultimate ends ever more wisely. Pursuing this strategy requires that we understand the nature of theories.”

was deleted.

Chapter 1, Theories are subjective., subsection

“*Theories are subjective.* Theories are conceptual models. What we conceive depends on the concepts that we use to describe what we perceive. Hence, all theories are subjective.”

was deleted.

Chapter 1, Theories are tools for producing useful knowledge., subsection

“*Theories are tools for producing useful knowledge.* The best tool for a job is the most useful one, the one that provides the most attractive combination of benefits and costs. Although Einstein’s theory of relativity provides more accurate answers, Newtonian mechanics is the more useful for plotting a spacecraft’s trajectory. The slightly higher value of the former’s predictions doesn’t justify the higher cost of using it.

“A tool that is good at one task may be poor at another. When we use a hammer to drive in nails, it is good; but when we use it to drive in screws, it is poor. Similarly, when we use the EOQ model to control inventory when there is no possibility of learning, it is good; but when we use it when there is such a possibility, it is poor.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was deleted.

Chapter 1, *Theories produce predictions and explanations.*, subsection

Theories produce predictions and explanations. A prediction is knowledge of what is likely to happen. An explanation is knowledge of why things happen as they do.

“Some theories predict better than they explain. Quantum mechanics provides incredibly accurate statistical predictions of subatomic events without explaining their causes equally well. Rather than better means of predicting what quantum mechanics predicts, physicists today seek to explain what links the subatomic to the cosmological.

“Other theories explain better than they predict. Chaos theory provides a means of explaining *deterministic chaotic systems* without being able to predict these systems equally well. Predicting the long term “weather” (trajectory in phase space) requires knowing initial conditions with infinite precision, which is impossible. The best we can hope to do is to predict the “climate” (pattern of the trajectory in phase space).

“Predictions and explanations help us in different ways. Predictions help us assign probabilities to uncertain events, which helps us evaluate alternatives. In contrast, explanations help us find problems to solve, which helps us formulate alternatives. Better predictions help us become more *efficient* and better explanations help us become more *effective*.

“Consider the problem of producing a product that has large variations in demand. Better predictions may lead us to more efficient production schedules. In contrast, better explanations may lead us to more effective problems to solve. For example, to keep sponge cake machinery busy during the off-season for strawberries, James Dewar invented the Hostess Twinkie. In current business vernacular, better explanations help us to “think outside the box.”

was inserted before the third sentence of paragraph introducing the third Venn diagram and changed to:

Theories produce predictions and explanations. A prediction is knowledge of what is likely to happen. An explanation is knowledge of why things happen as they do.

“Some theories predict better than they explain. Quantum mechanics provides incredibly accurate statistical predictions of subatomic events without explaining their causes equally well. Rather than better means of predicting what quantum mechanics predicts, physicists today seek to explain what links the subatomic to the cosmological.

“Other theories explain better than they predict. Chaos theory provides a means of explaining *deterministic chaotic systems* without being able to predict these systems

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

equally well. Predicting the long term “weather” (trajectory in phase space) requires knowing initial conditions with infinite precision, which is impossible. The best we can hope to do is to predict the “climate” (pattern of the trajectory in phase space).

“Predictions and explanations help us in different ways. Predictions help us assign probabilities to uncertain events, which helps us evaluate alternatives. In contrast, explanations help us find problems to solve, which helps us formulate alternatives. Better predictions help us become more *efficient* and better explanations help us become more *effective*.”

“Consider the problem of producing a product that has large variations in demand. Better predictions may lead us to more efficient production schedules. In contrast, better explanations may lead us to more effective problems to solve. For example, to keep sponge cake machinery busy during the off-season for strawberries, James Dewar invented the Hostess Twinkie. In current business vernacular, better explanations help us to “think outside the box.”

Chapter 1, Science as Refined Everyday Thinking, new first paragraph, first sentence

“Theories produce predictions and explanations.”

was deleted.

Chapter 1, Science as Refined Everyday Thinking, new fourth paragraph

Changed “**In the pursuit of useful knowledge**” to “**From the perspective of the managerial strategy for learning**” in the second sentence.

Chapter 1, Science as Refined Everyday Thinking, new tenth paragraph

“We ought to test theories that predict by testing how well they help us predict. We **ought to test theories that explain by testing how well they help us find problems to solve. Here, we** ought to refine narratives (A) by rejecting those that fail to meet our empirical standards for predicting. What remains are scientific theories that predict (C₁). We **also** ought to refine philosophical theories (B) by rejecting those that fail to meet our empirical standards for helping us find problems to solve. What remains are scientific theories that explain (C₂). This set includes **Charles** Darwin’s theory of evolution, **Alfred** Wegener’s theory of plate tectonics, and **Edward** Witten’s M-theory of physics:”

was changed to:

“**Again, we ought to test theories by how well they perform their role in decision-making.** We ought to test theories that predict by testing how well they help us predict: **we** ought to refine narratives (A) by rejecting those that fail to meet our empirical

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

standards for predicting. What remains are scientific theories that predict (C₁). We also ought to test theories that explain by testing how well they help us find problems to solve: we ought to refine philosophical theories (B) by rejecting those that fail to meet our empirical standards for helping us find problems to solve. What remains are scientific theories that explain (C₂). This set includes Charles Darwin's theory of evolution, Alfred Wegener's theory of plate tectonics, and Edward Witten's M-theory of physics:"

Chapter 1, Science as Refined Everyday Thinking, new twelfth paragraph

Changed "and one" to "as well as a theory" in the second sentence.

Chapter 1, Expanding Economic Science, title

Changed title to "Economics as Refined Everyday Thinking."

Changes in Version 2005.05.27

(ClearEdits Review of Chapter 2)

Chapter 2, Science as Refined Everyday Thinking, first paragraph

Changed "Einstein" to "Albert Einstein" in the first sentence.

Chapter 2, Science as Refined Everyday Thinking, second paragraph

Deleted, ", the process of refining narratives by developing and testing hypotheses" in the second sentence.

Chapter 2, Science as Refined Everyday Thinking, eighth paragraph

Changed "knowing" to "that we know" in the third sentence.

Changed "pattern of the trajectory" to "trajectory pattern" in the last sentence.

Chapter 2, Science as Refined Everyday Thinking, ninth paragraph, second footnote

"² The functional distinction between theories that predict and those that explain is more basic than the methodological distinction between theories that are scientific and those that are not scientific. In philosophical terms, the functional distinction between theories that predict and those that explain is a metamethodological distinction."

was deleted.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Science as Refined Everyday Thinking, tenth and eleventh paragraphs

Changed “the problem of” to “a factory” in the first sentence.

“Predictions and explanations help us in different ways. Predictions help us assign probabilities to uncertain events, which helps us evaluate alternatives. In contrast, explanations help us find problems to solve, which helps us formulate alternatives. Better predictions help us become more *efficient* and better explanations help us become more *effective*.”

“Consider a factory producing a product that has large variations in demand. Better predictions may lead us to more efficient production schedules. In contrast, better explanations may lead us to more effective problems to solve. For example, to keep sponge cake machinery busy during the off-season for strawberries, James Dewar invented the Hostess Twinkie. In current business vernacular, better explanations help us to “think outside the box.””

were changed to:

“Predictions and explanations help us in different ways. Predictions help us assign probabilities to uncertain events, which helps us evaluate alternatives. Better predictions help us become more *efficient*. In contrast, explanations help us find problems to solve, which helps us formulate alternatives. Better explanations help us become more *effective*. A better means of predicting the demand for strawberry shortcake, which fluctuates with the availability of fresh strawberries, would have allowed Chicago baker James Dewar to schedule his sponge cake production line more efficiently. Dewar redefined this scheduling problem as an off-season production capacity problem, which he solved by inventing a year-round sponge cake product, the Hostess Twinkie. In current business vernacular, his better explanation helped him to “think outside the box.””

Chapter 1, Science as Refined Everyday Thinking, new eleventh paragraph

“Again, we ought to test theories by how well they perform their role in decision-making. We ought to test theories that predict by testing how well they help us predict: we ought to refine narratives (A) by rejecting those that fail to meet our empirical standards for predicting. What remains are scientific theories that predict (C₁). We also ought to test theories that explain by testing how well they help us find problems to solve: we ought to refine philosophical theories (B) by rejecting those that fail to meet our empirical standards for helping us find problems to solve. What remains are scientific theories that explain (C₂). This set includes Charles Darwin’s theory of evolution, Alfred Wegener’s theory of plate tectonics, and Edward Witten’s M-theory of physics:”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We live in a world filled with deterministic chaotic systems, complex adaptive systems, and opportunities to learn by doing. If we are to live wisely in this complex world, we need to test theories by how well they perform their roles in decision-making. We need to refine narratives (A) by rejecting those that fail to meet our empirical standards for predicting. What remains are scientific theories that predict (C₁). We also need to refine philosophical theories (B) by rejecting those that fail to meet our empirical standards for helping us find problems to solve. What remains are scientific theories that explain (C₂). This set includes Charles Darwin’s theory of evolution, Alfred Wegener’s theory of plate tectonics, and Edward Witten’s M-theory of physics:”

Chapter 2, Science as Refined Everyday Thinking, last paragraph

Changed “worshipped at Newton’s shrine believed” to “worship at Newton’s shrine believe” in the second to last sentence.

Added “Scientific research is a never-ending process.” to the end of the paragraph.

Chapter 2, Refining Everyday Thinking, second paragraph

Deleted “the issue of” in the first sentence.

Changed “concept of wealth” to “theory of consumption” in the first sentence.

Chapter 2, Refining Everyday Thinking, third paragraph, first two sentences

“Rather than addressing the issue of how we turn consumer goods into progress toward our ultimate ends using Carl Menger’s subjectivist concept of wealth we can address it using a humanist concept of wealth. We can replace Menger’s subjectivist theory of consumption with the set of theories of consumption that look to human nature — our internal programming — to explain what motivates us.”

were changed to:

“We can avoid this problem by replacing Menger’s subjectivist theory of consumption with theories of consumption that look to human nature — our internal programming — to explain what motivates us.”

Chapter 2, Refining Everyday Thinking, fourth paragraph

Changed “owe it to ourselves” to “ought” in the first sentence.

Deleted “in order” in the first sentence.

Deleted “commonly refer to as” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Deleted “of abstraction” in the third sentence (two occurrences).

Changed “Hence, we” to “We” in the fourth sentence.

Chapter 2, Refining Everyday Thinking, fifth paragraph

Changed “distinguishing” to “that we distinguish” in the second sentence.

Chapter 2, Economics as Refined Everyday Thinking, second paragraph

Changed “In determining what is wise, we” to “We” in all (two occurrences).

Deleted “both is and” in the last sentence.

Chapter 2, Economics as Refined Everyday Thinking, fourth paragraph

Changed “evolving cultures” to “cultures” in the first sentence.

Changed “systems” to “adaptive systems” in the second sentence.

Changes in Version 2005.05.30

Chapter 1, Conclusion, first paragraph

Changed “argues” to “uses a complex adaptive systems (CAS) model to argue” in the sixth sentence.

Chapter 2, Science as Refined Everyday Thinking, third paragraph, last sentence

“This idealistic definition of science tends to limit testing to parts of the Universe simple enough to be well understood.”

was appended to the fourth paragraph

Chapter 2, Science as Refined Everyday Thinking, fourth paragraph, last sentence

“From the perspective of the managerial strategy for learning, we ought to test theories by testing how well they perform their role in decision-making.”

was changed to:

“This raises the question of how we use theories in everyday thinking.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Science as Refined Everyday Thinking, eighth paragraph, third through fifth sentences

“Better predictions help us become more *efficient*. In contrast, explanations help us find problems to solve, which helps us formulate alternatives. Better explanations help us become more *effective*.”

was changed back to:

“In contrast, explanations help us find problems to solve, which helps us formulate alternatives. Better predictions help us become more *efficient* and better explanations help us become more *effective*.”

Chapter 2, Refining Everyday Thinking, first paragraph

“The managerial strategy for learning how to progress toward our ultimate ends ever more wisely calls for theories that explain based on what we would do if we were *wiser*. The Austrian school of evolutionary economics, which seeks to explain human action,² comes close to producing such theories. Austrian economists recognize that people free to manage their lives will tend to become ever wiser. Regrettably, they do not recognize that the combination of freedom and moral vision is better than freedom alone. We need an explicitly moral theory of evolutionary economics.”

was changed to:

“We predict what happens in economies based on the knowledge that economic agents currently possess. As we saw in the rapid tool setting example, if we explain what happens in economies based on the knowledge that economic agents currently possess, we will tend to blind ourselves and others to the possibility of learning. To avoid this, we need to explain what happens in economies based on how economic agents would act if they had greater knowledge of what they ought to do. In short, we need to explain based on how the wise would act.”

“The Austrian school of evolutionary economics, which seeks to explain human action,² comes closest to producing such theories. Austrian economists recognize that people free to manage their lives will tend to become ever wiser. Regrettably, they do not recognize that the combination of freedom and moral vision is better than freedom alone. We need an explicitly moral theory of evolutionary economics.”

Chapter 2, Economics as Refined Everyday Thinking, last paragraph, last sentence footnote 12

“¹² We predict what happens in economies based on the knowledge that economic agents currently possess. If we explain what happens in economies based on the knowledge that economic agents currently possess, we will tend to blind ourselves and others to the possibility of learning. To avoid this, we need to explain what happens in

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

economies based on how economic agents would act if they had greater knowledge of what they ought to do. In short, we need to explain based on how the wise would act.”

was deleted.

Chapter 4, Turbulence, last paragraph

Changed “Ignorance of the means of trade and mistrust” to “Mistrust and ignorance of the means of trade” in the last sentence.

Added the following sentence to the end of the paragraph:

“Examples include (1) distributors who do not allow their customers to exchange information with their suppliers for fear of losing their customers to their suppliers; (2) employees who do not volunteer information about foolish aspects of their jobs with their employers for fear of losing their jobs to automation; and (3) patients who do not discover their genetic predispositions for fear of losing their insurance coverage.”

Chapter 5, *Control the Money Supply Passively*, last paragraph

Changed “problem” to “problems” in the last sentence.

Appendix B, *Schweitzer's Universal Spiritual Need*, last paragraph, second through fourth sentences

“This explanation is logical in that it follows the rules for philosophical theories. It is also flawed in that it presumes the existence of the infinite Being when this metaphysical assumption is not needed to explain what it explains. This violates the philosophical standard of beauty known as Occam’s razor.”

were changed to:

“This explanation is flawed in that it presumes the existence of the infinite Being.”

Changes in Version 2005.05.31

Chapter 2, Science as Everyday Thinking, eighth paragraph, fourth sentence

Added the footnote:

² This statement links the use of knowledge in everyday thinking to the use of knowledge in decision tree models. For this statement to hold true, the problem scale must be consistent across world-views.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Adaptiveness, third paragraph

Deleted “a decision strategy,” in the last sentence.

Chapter 4, Adaptiveness, fourth paragraph

Changed “a decision strategy, management” to “such a plan, managers” in the first sentence.

Changed “Managers” to “They” in the second sentence.

Merged paragraph with the third paragraph.

Chapter 4, Adaptiveness, new fourth paragraph

Changed “Decision strategies” to “These strategies for making decisions” in the first sentence.

Chapter 4, Adaptiveness, new fifth paragraph

Changed “decision strategies” to “these decision-making strategies” in the first sentence.

Chapter 4, Adaptiveness, new sixth paragraph

Changed “decision strategies” to “decision-making strategies” in the first sentence.

Chapter 5, *Control the Money Supply Passively*, both paragraphs

“Monetary authorities face two major choices in setting strategy. The first is whether to control the supply or the price of money. The second is whether to openly declare monetary strategy far in advance (passive management) or to act without prior announcement (active management). Of the four alternatives created by these two choices, the most decentralized is to control the money supply passively.

“The case for controlling the money supply passively is not that it yields better decisions in the short run, but that it yields better decisions in the long run. When monetary authorities exercise discretion, they shift stress from one area of the economy to another and from the present to the future. This both obscures immediate problems and lessens the incentives to solve them. For example, expanding the money supply to combat a recession made worse by “sticky wages” obscures the problems that cause “sticky wages” and lessens the incentives to solve them. It buries the best problems to solve.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Monetary authorities affect economies by distorting prices. Distorting prices obscures the best problems to solve and lessens the incentives to solve them. John Maynard Keynes eloquently captured the power of monetary authorities to bury the best problems to solve in his 1919 book, *The Economic Consequences of the Peace*, “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose.”

“The best monetary policy is the one that increases the quality of decision-making the most in the long run. Monetary authorities face two major choices in setting strategy. The first is whether to control the supply or the price of money. The second is whether to openly declare monetary strategy far in advance (passive management) or to act without prior announcement (active management). Of the four alternatives created by these two choices, the least distorting is to control the money supply passively.”

Chapter 5, Free Trade, second paragraph

Changed “market economies” to “globalization” in the first sentence.

Chapter 5, Free Trade, last paragraph

Changed “program” to “programs” in the last sentence.

Chapter 5, Just Taxation, first paragraph

Changed “owe it to ourselves” to “ought” in the last sentence.

Chapter 5, Just Taxation, second paragraph, last three sentences

“Less obvious are those that induce useful knowledge. For example, governments can induce knowledge that replaces oil by taxing oil. Trustworthy governments can lower turbulence by escalating taxes over a long enough period to allow consumers to adjust gradually to the new environment.”

were changed to:

“Less obvious are those that induce useful knowledge that replaces troublesome non-knowledge resources. For example, trustworthy governments can induce knowledge that replaces oil with a minimum amount of turbulence by escalating taxes on oil over a period long enough to allow consumers to adjust gradually to the new environment.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, The Management Strategy, third paragraph

Changed “the courts” to “governments” in the fifth sentence.

Chapter 2, footnote 2

“This statement links the use of knowledge in everyday thinking to the use of knowledge in decision tree models. For this statement to hold true, the problem scale must be consistent across world-views.”

was changed to:

“Note that this neat relationship only holds for problems that can be represented by a single decision tree model. This excludes substantial changes in the problem scale or the decision-making group.”

Chapter 4, Increasing Excellence, last paragraph

“Applying new useful knowledge also causes a ripple of change to flow through an economy. These ripples interact with one another in unpredictable ways. For example, the simultaneous rise in the price of steel and fall in the price of plastic is likely to cause a more rapid substitution of plastic for steel than if the price of steel rises a month after the price of plastic falls.”

was moved up a paragraph and changed to:

“Applying new useful knowledge causes a ripple of change to flow through an economy. These ripples interact with one another in unpredictable ways. For example, the simultaneous rise in the price of steel and fall in the price of plastic is likely to cause a more rapid substitution of plastic for steel than if the price of steel rises a month after the price of plastic falls.”

Chapter 4, Turbulence, last paragraph

Changed “patients” to “people” in the last sentence.

Chapter 4, Adaptiveness, fourth paragraph

Changed “These strategies” to “Strategies” in the first sentence.

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “complex adaptive analog to a weakly chaotic system” to “CAS model” in the first sentence.

Chapter 5, Just Taxation, fifth paragraph, last two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We lack the wisdom to demand that governments force us to act wisely. The most we can hope for is the wisdom to demand that governments encourage us to act ever more wisely.”

were changed to:

“How do we best raise the general level of practical wisdom? We demand that governments encourage us to act ever more wisely.”

Chapter 5, Just Taxation, sixth paragraph

Changed “just system” to “just **political economic** system” in the first sentence.

Appendix C, fifth paragraph

Changed “**far** more difficult” to “more difficult” in the last sentence.

Changes in Version 2005.06.03

Preface, third paragraph

Changed “**scholastic** maxim is the **pragmatic** maxim” to “**tactical** maxim is the **strategic** maxim” in the second sentence.

Preface, last paragraph

Changed “**increasingly** need” to “**also** need” in the second sentence.

Chapter 2, Economics as Refined Everyday Thinking, fifth paragraph

Changed “**increasingly** popular” to “**more** popular” in the third sentence.

Chapter 4, Introduction, first paragraph

“Progress is movement toward our ultimate normative ends. **The primary means of progress in information age economies is** increasing managerial excellence. This chapter presents a complex adaptive systems (CAS) **macroeconomic** model that focuses on the relationship between progress from increasing managerial excellence and the economic turbulence it creates.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Progress is movement toward our ultimate normative ends. **We accelerate progress by** increasing managerial excellence. This chapter presents a complex adaptive systems (CAS) model that focuses on the relationship between progress from increasing managerial excellence and the economic turbulence it creates.”

Chapter 4, Increasing Excellence, first paragraph

Changed “Increasing excellence” to “Increasing **managerial** excellence” in the first sentence.

Chapter 4, Increasing Excellence, last paragraph, last sentence

“Metaphorically, a surge of **progress from increasing managerial** excellence creates a temporary wave of inflation.”

was deleted.

Chapter 4, Adaptiveness, first paragraph

Changed “Increasing excellence” to “Increasing **managerial** excellence” in the first sentence.

Chapter 4, A Crude Look at the Whole, last paragraph

Changed “**progress from** increasing managerial excellence” to “increasing managerial excellence” in the first sentence.

Changes in Version 2005.06.11

Preface, second paragraph

Changed “**this** wish” to “**my** wish **for a strategic theory**” in the first sentence.

Preface, sixth paragraph

Changed “to learn to live” to “to learn **how** to live” in the last sentence.

Preface, last paragraph

Changed “to learn to live” to “to learn **how** to live” in the second sentence.

Chapter 1, Marginalist Economics' Blind Spot, ninth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Given these advantages, it is not surprising that every world-class automobile manufacturer has reorganized its manufacturing system to set up tools rapidly.”

was deleted.

Chapter 1, Marginalist Economics' Blind Spot, last paragraph

“Although the EOQ model produces the most *efficient* order quantity, the rapid tool setting model is far more *effective* in lowering production costs.”

was appended to the preceding paragraph and changed to:

“The rapid tool setting model is far more *effective* than the EOQ model in lowering production costs.”

Chapter 1, The Managerial Strategy, second paragraph, first fourth sentences

“Our imperfect decision-making can embed mistakes into our markets, technology, and culture. The classic example is the speculative bubble, in which we embed foolishly high asset valuations. We also embed unhealthy, unsafe, or unjust cultural traditions, which can endure long after we recognize their foolishness. Slavery, skin tanning, and countless forms of conspicuous consumption spring to mind.”

were changed to:

“Our imperfect decision-making can embed mistakes into our markets, technology, legal system, and culture, which can endure long after we recognize their foolishness. Speculative bubbles, chlorofluorocarbons, the eighteenth amendment to the United States Constitution,⁶ and countless forms of conspicuous consumption spring to mind.

“⁶ The eighteenth amendment prohibited the manufacture, sale, and transportation of intoxicating beverages. It was repealed by the twenty-first amendment.”

Chapter 1, The Managerial Strategy, last paragraph

Changed “information age” to “knowledge based” in the second sentence.

Chapter 2, Economics as Refined Everyday Thinking, first paragraph

Changed “to learn to live” to “to learn how to live” in the first sentence.

Chapter 4, Conclusion, first paragraph

Changed “to learn to live” to “to learn how to live” in the first sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Appendix B, Religious Fundamentalism, second paragraph

Changed “pronouncements” to “**that** pronouncements” in the second sentence.

Changes in Version 2005.06.13

Preface, last two paragraphs

“The traditional scientific approach to studying economies is for specialists to develop and verify theories about how we satisfy our wants. The alternative put forth in this work is for specialists to develop and verify strategies for helping us to learn how to live ever more wisely.

“Modern economic science is a tactical tool for helping us to get what we want. We also need a complementary strategic tool for helping us to learn how to live ever more wisely. We can create such a tool by expanding economic science’s research program to include all knowledge useful in living wisely. We need this expanded research program to discover and disclose the strategic use of tactical intellectual tools, which tends to blind us to better problems to solve.”

were deleted.

Chapter 2, Science as Refined Everyday Thinking

Changed “**Refined**” to “**Refining**” in the title sentence.

Chapter 2, Science as Refined Everyday Thinking, fourth paragraph

Changed “theories” to “**knowledge derived from** theories” in the last sentence.

Chapter 2, Refining Everyday Thinking, entire section

Moved this section to behind the following section.

Chapter 2, Economics as Refined Everyday Thinking

Changed “**Refined**” to “**Refining**” in the title sentence.

Chapter 2, Refining Everyday Thinking, second through fourth paragraphs

“**The Austrian school of evolutionary economics, which seeks to explain human action,⁶ comes closest to producing such theories. Austrian economists recognize that people free to manage their lives will tend to become ever wiser. Regrettably, they do not recognize that the combination of freedom and moral vision is better than freedom alone. We need an explicitly moral theory of evolutionary economics.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“To progress toward our ultimate ends most readily, we need to consider how we turn consumer goods into progress toward our ultimate ends. Addressing this issue using theories requires that we make controversial assumptions about our ultimate ends. The most important of these issues concerns whether an immaterial part of us survives the death of our bodies. The founder of Austrian economics, Carl Menger, chose to avoid these controversial assumptions by defining ‘wealth’ as consumer goods and the resources to produce consumer goods. Supporters of this subjectivist theory of consumption believe it to be value-neutral. It actually supports the current state of the world by tending to blind us to the possibility of learning to live more wisely.

“We can avoid this problem by replacing Menger’s subjectivist theory of consumption with theories of consumption that look to human nature — our internal programming — to explain what motivates us.⁷ In biological terms, we can base our theories of consumption on the set of all “teleonomic theories.”⁸ We can then tighten these loose theories by culling members of this set.⁹

“⁶ Mises, Ludwig von, *Human Action*, (Chicago: Contemporary Books, 1966).”

were changed to:

“To live wisely, we need to consider all knowledge useful in living wisely.⁶ We can do so by looking to human nature — our internal programming — to explain what we need to live wisely.⁷ In biological terms, we can base our theories of wise behavior on the set of all “teleonomic theories.”⁸ We can then tighten these loose theories by culling members of this set.⁹

“⁶ Addressing this issue using theories requires that we make controversial assumptions about our ultimate ends. The most important of these issues concerns whether an immaterial part of us survives the death of our bodies. Carl Menger, the person who provided modern economics with its theory of consumption, chose to avoid these controversial assumptions by defining ‘wealth’ as consumer goods and the resources to produce consumer goods. Supporters of this definition of wealth believe it to be value-neutral. It actually supports the current state of the world by tending to blind us to the possibility of learning to live more wisely.”

Chapter 2, footnote 7

Changed “what motivates us” to “what we need” in the last sentence.

Chapter 2, Refining Everyday Thinking, new third paragraph, second through fourth sentences

“We ought to cull all teleonomic theories that focus on a single level of abstraction. Until we understand the complex relationships between our bodies and our minds and our spirits, focusing on one level will tend to blind us to needs that emerge on other levels. We ought to cull (1) teleonomic theories based solely on sociobiology, which

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

focus on our bodies; (2) teleonomic theories based solely on postmodernism, which focus on our minds; and (3) teleonomic theories based solely on our need to relink with the infinite Being, which focus on our spirits.”

were changed to:

“Until we understand the complex relationships between our bodies and our minds and our spirits, **we ought to cull all teleonomic theories that focus on any one of these levels of abstraction.** Focusing on **any one of these** levels will tend to blind us to needs that emerge on other levels. **Hence, we ought to cull** (1) teleonomic theories based solely on sociobiology, which focus on our bodies; (2) teleonomic theories based solely on postmodernism, which focus on our minds; and (3) teleonomic theories based solely on our need to relink with the infinite Being, which focus on our spirits.”

Appendix B, Human Needs, last paragraph

Changed “truth” to “truth (**“a God’s eye view of the Universe”**)” in the fourth sentence.

Appendix B, Human Needs, last paragraph, last two sentences

“The wise of other cultures could have **different means of satisfying their spiritual needs.** **In other words, they could have** very different spiritual beliefs.”

were changed to:

“The wise of other cultures could have very different spiritual beliefs.”

Appendix B, Schweitzer's Universal Spiritual Need, first paragraph

Changed “truth (**“a God’s eye view of the Universe”**)” to “truth” in the last sentence.

Changes in Version 2005.06.16

(These changes were inspired by Michael Lissack’s comment about confusing ‘strategy’ and ‘perspective.’)

Preface, second through fourth paragraphs

“I have since learned that my wish for a strategic theory was foolish. Rather than strategic theories, we **ought** (owe it to ourselves) to seek strategies for learning. **Unlike theories, which cannot address the uncertainty of basic assumptions, strategies for learning can address all uncertainty.**

“**The idea that a strategy ought to replace a theory conflicts with the maxim that it takes a theory to beat a theory. More useful is the maxim that it takes an intellectual**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

tool to beat an intellectual tool. Strategies for learning wisely can beat theories for allocating efficiently: *Toyota's batch production strategy beat all batch production theories.*

“At the dawn of the industrial age, Adam Smith’s example of a pin factory showed the wisdom of pursuing the virtuous circle of the division of labor and the expansion of market size. Today, Toyota’s strategy for learning shows the wisdom of pursuing the virtuous circle of good people and good products: Good people produce good products. Good products, *including good intellectual tools*, produce good people. Given this new reality, we **ought** to learn more about what makes people good. We ought to learn more about practical wisdom.”

were changed to:

“I have since learned that my wish for a strategic theory was foolish. **I did not understand the wisdom of thinking in composite world-views, much less systems of theories. The wise understand that light is neither a particle nor a wave, yet they find it useful to think of light as a particle under certain circumstances and as a wave under other circumstances. The wise temper idealism with pragmatism.**

“**When I was young and inexperienced, I did not temper idealism with pragmatism. I did not distinguish between *strategic theories* and *strategies for learning*. A *strategic theory* is an abstract model of reality that we use to define a general plan for progressing toward an ultimate end. A *strategy for learning* is a general plan for progressing toward an ultimate end that (1) is based on sets of abstract models of reality and (2) contains plans for refining these sets of abstract models. Unlike a strategic theory, which cannot address the uncertainty of its basic assumptions, a strategy for learning can address the uncertainty of the basic assumptions of the abstract models in its sets of abstract models. Strategic theories *define* ultimate ends. Strategies for learning *refine* ultimate ends. Rather than strategic theories, we owe it to ourselves to seek strategies for learning.**

“At the dawn of the industrial age, Adam Smith’s example of a pin factory showed the wisdom of pursuing the virtuous circle of the division of labor and the expansion of market size. Today, Toyota’s strategy for learning **how to produce ever more wisely** shows the wisdom of pursuing the virtuous circle of good people and good products: Good people produce good products. Good products, *including good intellectual tools*, produce good people. Given this new reality, we **owe it to ourselves** to learn more about what makes people good. We ought to learn more about practical wisdom.”

Chapter 1, Conclusion, first paragraph

Changed “**evolutionary** economic **explanations**” to “**economics**” in the third sentence.

Chapter 2, Refining Everyday Thinking, second paragraph, end

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Deleted the footnote:

“Pragmatists refine everyday thinking. Idealists define ultimate ends. Pragmatic idealists refine ultimate ends.”

Chapter 5, Introduction, first paragraph

Changed “a matter of who” to “a matter of **deciding** who” in the first sentence.

Chapter 5, *Control the Money Supply Passively*, first paragraph

Deleted “**and lessens the incentives to solve them**” in the second sentence.

Changed “**bury**” to “**obscure**” in the third sentence.

Chapter 5, *Control the Money Supply Passively*, second paragraph

Changed “setting strategy” to “**defining a strategy for helping economic agents to learn how to decide ever more wisely**” in the first sentence.

Changed the fourth sentence from:

“The first is whether to control the **supply** or the price of money. The second is whether to **openly** declare **monetary strategy** far in advance (**passive management**) or to act without prior announcement (**active management**).”

to:

“The second is whether to **manage passively or actively**. **Should monetary authorities declare how they will act under various conditions far** in advance or **be free to surprise economic agents by acting** without prior announcement?”

Changes in Version 2005.04.20

Preface, first paragraph

Changed “**tactical** theories” to “theories” in the last sentence.

Preface, fourth paragraph

Added the sentence to the beginning of the paragraph:

“Strategies for learning focus our attention on what we ought to learn.”

Changed “**new reality**” to “**virtuous circle**” in the fourth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Preface, last paragraph

“Most specialists in scientific research believe that science describes the world as it is and that practical wisdom prescribes how the world ought to be. In the words of Immanuel Kant, “Science is organized knowledge. Wisdom is organized life.” From this perspective, ‘the science of practical wisdom’ is an oxymoron. It is time for a new perspective.”

was deleted.

Chapter 1, The Managerial Strategy, second paragraph, fourth sentence

“Speculative bubbles, chlorofluorocarbons, the **eighteenth amendment** to the United States Constitution,⁶ and countless forms of conspicuous consumption spring to mind.

“⁶ The **eighteenth amendment prohibited the manufacture, sale, and transportation of intoxicating beverages. It was repealed by the twenty-first amendment.**”

was changed to:

“Speculative bubbles, chlorofluorocarbons, the **three fifths clause** in the United States Constitution,⁶ and countless forms of conspicuous consumption spring to mind.

“⁶ The **three fifths clause counted slaves as three fifths of a person for the purpose of determining representation in the House of Representatives and Electoral College. It took the bloodiest war in United States history to erase this stain from the Constitution.**”

Chapter 1, The Managerial Strategy, last paragraph, fourth sentence

Changed “the **best** means of pursuing **them**” to “the means of pursuing **our ultimate ends ever more wisely**” in the fourth sentence.

Chapter 2, Economics as Refining Everyday Thinking, last paragraph, last two sentences

“Until all of us act wisely, we ought to distinguish between intellectual tools for helping us **follow our teleonomic programming** and intellectual tools for helping us predict **how others will follow their teleonomic programming. It’s just good common sense.**”

were changed to:

“Until all of us act wisely, we ought to distinguish between intellectual tools for helping us **to formulate alternatives** and intellectual tools for helping us **to evaluate alternatives by helping us to predict.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, footnote 6

Changed “**person**” to “**economist**” in the third sentence.

Chapter 2, Refining Everyday Thinking, first paragraph

“We predict what happens in economies based on the knowledge that economic agents currently possess. As we saw in the rapid tool setting example, if we explain what happens in economies based on the knowledge that economic agents currently possess, we will tend to blind ourselves and others to the possibility of learning. To avoid this, we need to explain what happens in economies based on how economic agents would act if they had greater knowledge of what they ought to do. In short, we need to explain based on how the wise would act.”

was inserted after the first sentence of the last paragraph of the previous section.

Chapter 2, footnote 10 (*A Theory of Justice*)

Added “, **chapter III.**”

Chapter 2, Refining Ultimate Ends, new fifth paragraph, first two sentences

“**From this strategic perspective, all other normative ends are subordinate.** Justice based on Schweitzer’s reverence for life, **which considers the needs of all living things,** is **by definition** the ideal balance of social justice, international justice, generational justice, and interspecies justice.”

were changed to:

“Justice based on Schweitzer’s reverence for life is the ideal balance of social justice, international justice, generational justice, and interspecies justice.”

Chapter 5, *Control the Money Supply Passively*, first paragraph, last sentence

“John Maynard Keynes eloquently captured the power of monetary authorities to obscure the best problems to solve in his 1919 book, *The Economic Consequences of the Peace*: “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose.””

was changed to:

“John Maynard Keynes eloquently captured the power of monetary authorities to obscure the best problems: “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose.”⁴

⁴ Keynes, John Maynard, *The Economic Consequences of the Peace*, (London, Macmillan and Co., Limited, 1919) reprinted in The World War I Document Archive, *Post 1918*, <<http://www.gwpda.org/1918p/keynespeace.htm>> (18 June 2005).

Changes in Version 2005.06.23

Chapter 1, The Managerial Strategy, last paragraph, fourth sentence

Chapter 1, footnote 6

Changed “**erase**” to “**cleanse**” in the third sentence.

Chapter 1, The Managerial Strategy, last paragraph, fourth sentence

“Practical wisdom includes a **strategic vision of our ultimate ends and** the means of pursuing our ultimate ends **ever more wisely.**”

was deleted.

“Practical wisdom includes **a conceptual framework for thinking clearly about the best** means of pursuing our ultimate ends.”

Acknowledgments, ninth paragraph, third sentence

“He owed his idealism to his mother, who drummed her **Congregationalist** ideals into her Grinnell High School history students, including Harry Hopkins, and into her three sons.”

was changed to:

“He owed his idealism to his **Congregationalist** mother, who drummed her **Social Gospel movement** ideals into her Grinnell High School history students, including Harry Hopkins, and into her three sons.”

Chapter 1, The Managerial Strategy, second paragraph

Deleted “, **which can endure long after we recognize their foolishness**” from the first sentence.

Chapter 2, Economics as Refining Everyday Thinking, last paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Until all of us act wisely, we ought to distinguish between intellectual tools for helping us to **formulate alternatives** and intellectual tools for helping us to **evaluate alternatives by helping us to predict.**”

was changed to:

“*Until all of us act wisely, we ought to distinguish between intellectual tools for helping us to **predict** and intellectual tools for helping us to **explain.***”

Chapter 4, Conclusion, first paragraph

Deleted “, **which is unwise and unjust**” from the last sentence

Afterword, sixth paragraph

Changed “**unjust**” to “**unfair**” in the last sentence.

Afterword, eighth paragraph

Changed “normative **ultimate** end” to “**ultimate** normative end” in the last sentence.

Appendix B, Balanced Excellence, second paragraph

Changed “normative end of **revering** life” to “**ultimate** normative end of **reverence for life**” in the first sentence.

Changed “normative end” to “**ultimate** normative end” in the last sentence.

Changes in Version 2005.06.27

Preface, third paragraph

Changed “*strategic theory*” to “strategic theory” in the second sentence.

Changed “*strategy for learning*” to “strategy for learning” in the third sentence.

Acknowledgments, ninth paragraph, second and third sentences

“The eighth is my **entrepreneur** father, John Huntington Harris, who succeeded better than most at balancing pragmatism and idealism. He owed his pragmatism to his paternal grandfather, a successful **Grinnell**, Iowa entrepreneur whose father and grandfather had been **merchant** sea captains **from Barnstable, Massachusetts**. He owed his idealism to his mother, who drummed her **Congregationalist** ideals into her **Grinnell High School** history students, including Harry Hopkins, and into her three sons.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

were changed to:

“The eighth is my father, John Huntington Harris, who succeeded better than most at balancing pragmatism and idealism. He owed his pragmatism to his paternal grandfather, a successful Iowa entrepreneur whose father and grandfather had been **Yankee** sea captains. He owed his idealism to his mother, who drummed her **Congregationalist** ideals into her students, including Harry Hopkins, and into her three sons.”

Acknowledgments, ninth paragraph, seventh sentence

Changed “high school and college” to “**Grinnell High School and Grinnell College**” in the seventh sentence.

Chapter 2, Science as Refining Everyday Thinking, fourth through eighth paragraphs

“This idealistic definition of science tends to limit testing to parts of the Universe simple enough to be well understood. In contrast, pragmatists believe that science ought to concern the never-ending process of discovering **useful** knowledge. This raises the question of how we use knowledge derived from theories in everyday thinking.”

“Theories produce predictions and explanations. A prediction is knowledge of what is likely to happen. An explanation is knowledge of why things happen as they do.

“**Some theories predict better than they explain. Quantum mechanics provides incredibly accurate statistical predictions of subatomic events without explaining their causes equally well. Rather than better means of predicting what quantum mechanics predicts, physicists today seek to explain what links the subatomic to the cosmological.**

“**Other theories explain better than they predict. Chaos theory provides a means of explaining *deterministic chaotic systems* without being able to predict these systems equally well. Predicting the long term “weather” (trajectory in phase space) that we know initial conditions with infinite precision, which is impossible. The best we can hope to do is to predict the “climate” (trajectory pattern in phase space).**

“Predictions and explanations help us in different ways. Predictions help us assign probabilities to uncertain events, which helps us evaluate alternatives. **In contrast, explanations help us find problems to solve, which helps us formulate alternatives. Better predictions help us become more *efficient* and better explanations help us become more *effective*.**³ A better means of predicting the demand for strawberry shortcake, which fluctuates with the availability of fresh strawberries, would have allowed Chicago baker James Dewar to schedule his sponge cake production line more efficiently. Dewar redefined this scheduling problem as an off-season production

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

capacity problem, which he solved by inventing a year-round sponge cake product, the Hostess Twinkie. In current business vernacular, his better explanation helped him to “think outside the box.””

were changed to:

“This idealistic definition of science tends to limit testing to parts of the Universe simple enough to be well understood.

“In contrast, pragmatists believe that science ought to concern the never-ending process of discovering knowledge **useful in everyday thinking**. This raises the question of how we use the knowledge derived from theories in everyday thinking.”

“Theories produce predictions and explanations. A prediction is knowledge of what is likely to happen. An explanation is knowledge of why things happen as they do.³ Predictions and explanations help us in different ways. Predictions help us assign probabilities to uncertain events, which helps us evaluate alternatives. Explanations help us find problems to solve, which helps us formulate alternatives. Better predictions help us become more *efficient* and better explanations help us become more *effective*.³ **For example, a** better means of predicting the demand for strawberry shortcake, which fluctuates with the availability of fresh strawberries, would have allowed Chicago baker James Dewar to schedule his sponge cake production line more efficiently. Dewar redefined this scheduling problem as an off-season production capacity problem, which he solved by inventing a year-round sponge cake product, the Hostess Twinkie. In current business vernacular, his better explanation helped him to “think outside the box.”

“³ Some theories predict better than they explain. Quantum mechanics provides incredibly accurate statistical predictions of subatomic events without explaining their causes equally well. Rather than better means of predicting what quantum mechanics predicts, physicists today seek to explain what links the subatomic to the cosmological. Other theories explain better than they predict. Chaos theory provides a means of explaining *deterministic chaotic systems* without being able to predict these systems equally well. Predicting the long term “weather” (trajectory in phase space) that we know initial conditions with infinite precision, which is impossible. The best we can hope to do is to predict the “climate” (trajectory pattern in phase space).”

Chapter 2, Science as Refining Everyday Thinking, new sixth paragraph, first two sentences

“We live in a world **filled with deterministic chaotic systems, complex adaptive systems, and opportunities to learn by doing**. If we are to live wisely **in this complex world**, we need to test theories by how well they perform their roles in decision-making.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We live in a **complex** world. If we are to live wisely, we need to test theories by how well they perform their roles in decision-making.”

Chapter 2, Science as Refining Everyday Thinking, new seventh paragraph

Changed “**pragmatic approach**” to “**decision-oriented process**” in the first sentence.

Changes in Version 2005.06.30

Preface, second paragraph

Changed “**systems** of theories” to “**sets** of theories” in the second sentence.

Acknowledgments, ninth paragraph

“The eighth is my father, John Huntington Harris, who succeeded better than most at balancing pragmatism and idealism. He owed his pragmatism to his paternal grandfather, a successful Iowa entrepreneur whose father and grandfather had been Yankee sea captains. He owed his idealism to his Congregationalist mother, who drummed her Social Gospel ideals into her history students, including Harry Hopkins, and into her three sons. Despite my father’s great ability to quickly get to the root of most matters, he could not comprehend what I had written about ethics and economics. He attributed this to my style, particularly to my use of such unfamiliar terms as ‘paradigm’ and ‘recursionist economics.’ A year and a half after his death I recognized that my style was too intellectual. I also recognized that there was a more substantial problem. Like his Grinnell High School and Grinnell College classmate, George Leland Bach, my father believed in the primacy of decision rules. He was looking for moral values expressed as decision rules, not for a moral vision expressed as a strategy for learning. He did not grasp that **in information age economies what matters most is moral vision, not moral values.** The greater our potential for progress is, the greater our need to **envision** progress.”

was changed to:

“The eighth is my father, John Huntington Harris, who succeeded better than most at balancing pragmatism and idealism. He owed his pragmatism to his paternal grandfather, a successful Iowa entrepreneur whose father and grandfather had been Yankee sea captains. He owed his idealism to his Congregationalist mother, who drummed her Social Gospel ideals into her **high school** history students, including Harry Hopkins, and into her three sons. Despite my father’s great ability to quickly get to the root of most matters, **which had helped him become one of the US Army Air Corps Statistical Control Group and Management Control Group “whiz kids,”** he could not comprehend what I had written about ethics and economics. He attributed this to my style, particularly to my use of such unfamiliar terms as ‘paradigm’ and ‘recursionist economics.’ A year and a half after his death I recognized that my style

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was too intellectual. I also recognized that there was a more substantial problem. Like his Grinnell High School and Grinnell College classmate, George Leland Bach, my father believed in the primacy of decision rules. He was looking for moral values expressed as decision rules, not for a moral vision expressed as a strategy for learning. He did not grasp that the greater our potential for progress is, the greater **is** our need to **imagine** progress. **In knowledge based economies, what matters most is moral vision, not moral values.**”

Acknowledgments, tenth paragraph

Changed “(Hayek on Hayek, 134-5)” to “[*Hayek on Hayek, An Autobiographical Dialogue*, (Chicago: University of Chicago Press, 1994) p 134-5]” in the last sentence.

Chapter 1, The Managerial Strategy, title

Changed “**The Managerial Strategy**” to “**Pursuing our Ultimate Ends**” in the title.

Chapter 1, Pursuing our Ultimate Ends, last paragraph

Changed “The strategy” to “The **managerial** strategy **for pursuing our ultimate ends**” in the last sentence.

Chapter 2, Economics as Refining Everyday Thinking, fourth paragraph

Changed “the models of reality that we use to guide our actions” to “**our normative models** (the models of reality that we use to guide our actions)” in the second sentence.

Chapter 2, Economics as Refining Everyday Thinking, fifth paragraph

Changed “**businesses**” to “**human organizations**” in the first sentence.

Chapter 2, Refining Everyday Thinking, first paragraph, last sentence

“We can then tighten **these** loose theories by culling members of this set.”

was changed to:

“We can then tighten **our** loose theories **of wise behavior** by culling members of this set **of theories**.”

Chapter 6, first paragraph

Changed “**managerial** strategy” to “strategy for learning” in the third sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changed “**managerial** strategy” to “strategy for learning” in the fourth sentence.

Changes in Version 2005.07.02

Entire document

Changed “knowledge based” to “knowledge-based” (3 occurrences).

Preface, last paragraph

Changed “**what makes people good**” to “**what produces good people**” in the sixth sentence.

Acknowledgment, ninth paragraph

Deleted “**which had helped him become one of the US Army Air Corps Statistical Control Group and Management Control Group “whiz kids,”**” in the fourth sentence.

Changed “**more substantial**” to “**bigger**” in the seventh sentence.

Chapter 1, Mainstream Economics’ Blind Spot, eighth paragraph

Changed “**determine**” to “**calculate**” in the fourth sentence.

Changed “**makes**” to “**turns**” in the fourth sentence.

Chapter 1, Mainstream Economics’ Blind Spot, last paragraph

Changed “**requires**” to “**calls for**” in the fifth sentence.

Changed “**more effective**” to “**better**” in the last sentence.

Chapter 2, Science as Refining Everyday Thinking, second paragraph

Changed “**making an intuitive connection between our experiences and**” to “**linking our experiences to**” in the second sentence.

Chapter 2, Economics as Refining Everyday Thinking, second paragraph

Deleted “**, the fact that using knowledge does not use it up,**” in the first sentence.

Chapter 2, Economics as Refining Everyday Thinking, fifth paragraph

Changed “the conditions **that make them useful**” to “the conditions **on which they are based**” in the fifth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Economics as Refining Everyday Thinking, last paragraph

Deleted “currently” in the second and fourth sentences.

Chapter 3, Introduction, first paragraph

“Managerial excellence is a matter of choosing wisely. Some concepts derived from marginalist economics tend to blind us to better subordinate ends. This chapter proposes managerial alternatives to five of these concepts: wealth, consumption, trade, production, and profit.”

was changed to:

“We progress toward our ultimate ends by means of decision-making. When we believe that the non-knowledge resources that we need to pursue our ultimate ends are abundant, we do not feel the need to decide wisely. Princes and princesses who do not imagine the world beyond their palace walls do not feel the need to decide wisely. They do not understand how the resources they waste might be used to help others. If we accept Schweitzer’s normative ultimate end of reverence for life, our needs are the needs of all life. Our needs are infinite. We owe it to ourselves to decide ever more wisely.

“As the rapid tool setting and high definition television examples showed, the marginalist economic conceptual framework tends to blind us to better subordinate ends. This chapter proposes managerial alternatives to five marginalist concepts: wealth, consumption, trade, production, and profit.”

Chapter 3, Wealth, first paragraph, last sentence

“Unlike the marginalist definition, the managerial definition of wealth considers practical wisdom.”

was changed to:

“Unlike marginalists, managers consider practical wisdom.”

Chapter 3, *Pleasure and Pain*, sixth paragraph

“Deriving pleasure from an activity requires the physical capability, mental capability, spiritual capability, time, material goods, and knowledge of how to perform it. Common pleasurable activities require common capabilities, material goods, and knowledge. Watching a beautiful sunset is a common pleasure. Deriving pleasure from other activities can require making investments in knowledge or material goods. Finding pleasure in playing chess requires investing in knowledge of how to play the game.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“**Finding** pleasure in an activity may call for investing time and money in training. **Finding pleasure in running competitively calls for investing in the physical capacity to run competitively.** Finding pleasure in playing chess calls for investing in knowledge of how to play chess.”

Chapter 3, *Pleasure and Pain*, last paragraph

Deleted the second sentence:

“**In terms of our needs model, joy is a matter of satisfying human needs.**”

Changed “all **of** our needs” to “all our needs” in the last sentence.

Chapter 3, *Virtuous Circles*, sixth paragraph

“Pleasure is not only an end in itself but also a means to **increase** joy. **Increasing the pleasure of** a good activity **increases our desire for that** activity. Recreational swimmers find pleasure in swimming. Swimming is a good activity when it satisfies their need for physical exercise. They want the pleasure of swimming not only for itself, but also because it **makes** them want an activity that satisfies a current need.

“Joy is not only an end in itself but also a means to **increase** pleasure. **It directly increases** our **potential for pleasure by increasing our** energy of body, clarity of mind, and wholeness of spirit. **These make it easier** to lose ourselves in **an** activity, and **allow us to** act longer and more often. Joy **indirectly increases our potential for pleasure in two ways.** **First, it increases the pleasure of learning and training, which in turn increases our potential to derive pleasure from other activities. Second, it gives us the increased energy, clarity, and wholeness** to manage our lives better, which gives us more resources for **performing** pleasurable activities.

“**Learning to find pleasure in activities that are good for us encourages us to do these activities. Performing these activities in turn gives us the potential to do more. Pursuing this virtuous circle increases not only pleasure and joy but also our abilities, knowledge, and non-knowledge goods.** Misfortune, ignorance, and material scarcity tend to break this circle.”

were changed to:

“Pleasure is not only an end in itself but also a means to joy. **Finding** pleasure **in** a good activity **helps us to want the** activity more. Recreational swimmers find pleasure in swimming. Swimming is a good activity when it satisfies their need for physical exercise. They want the pleasure of swimming not only for itself, but also because it **helps** them **to** want an activity that satisfies a current need.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Joy is not only an end in itself but also a means to pleasure. Joy raises our energy of body, clarity of mind, and wholeness of spirit. Energy, clarity, and wholeness help us to (1) lose ourselves in activity; (2) act longer and more often; (3) lose ourselves in learning and training; and (4) manage our lives better, which gives us more resources for pleasurable activities.

“Pleasure is a means to joy and joy is a means to pleasure. Pursuing the virtuous circle of pleasure and joy creates wealth. Misfortune, ignorance, and material scarcity tend to break this virtuous circle.”

Chapter 3, *Practical Wisdom*, first paragraph

Changed “requires” to “calls for” in the second sentence.

Changed “a moderate amount of good fortune” to “a little good luck” in the second sentence.

Chapter 3, *Practical Wisdom*, second paragraph, second sentence

“First, it can cause panic, delirium, and illness, all of which can impair our perception, intuition, and reason.”

was changed to:

“First, it can cause panic, delirium, and illness. These can impair our perception, intuition, and reason.”

Chapter 3, *Human Capital, Work, and Leisure*, first paragraph

Changed “a disagreeable activity” to “an unpleasant activity” in the first sentence.

Chapter 3, *Human Capital, Work, and Leisure*, first paragraph

Changed “any activity” to “any activity” in the first sentence.

Chapter 3, *Trade*, second paragraph

“Wealth producing organizations emerge from relatively high fixed cost, low variable cost trading relationships. In industrial age economies, the most prominent form of wealth producing organization is the business firm. In information age economies, the pace of change makes business firms less prominent. The need to adapt quickly to change creates the need to lower the fixed costs of trade. As these costs fall, business firms become less “firm.” In rapidly changing sectors in which transportation and communications costs remain major factors, geographical clusters such as Hollywood and the Silicon Valley become more prominent than firms. In sectors in which transportation and communication costs are no longer major factors, the sector itself

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

takes the leading role. Wall Street, The City, and Chicago's pits **are rapidly becoming "the international financial market."**

was changed to:

"Wealth producing organizations emerge from high fixed cost, low variable cost trading relationships. In industrial age economies, the most prominent form of wealth producing organization is the business firm. In information age economies, business firms **are** less prominent. The need to adapt quickly to change creates the need to lower the fixed costs of trade. As these costs fall, business firms become less "firm." In rapidly changing sectors in which transportation and communications costs remain major factors, geographical clusters such as Hollywood and the Silicon Valley become more prominent than firms. In sectors in which transportation and communication costs are no longer major factors, the sector itself takes the leading role. **The international bond market has moved from** Wall Street, The City, and Chicago's trading pits **to cyberspace.**"

Chapter 3, *Trust*, second paragraph

Changed "**information age** economies" to "**knowledge based** economies" in the first sentence.

Changed "**This is because** knowledge" to "**K**nowledge" in the second sentence.

Changed "**the substitution of** knowledge for non-knowledge resources" to "**substituting** knowledge for non-knowledge resources" in the last sentence.

Chapter 3, *Trust*, third paragraph

Changed "**increase it**" to "**build trust**" in the second sentence.

Changed "**establish**" to "**create**" in the third sentence.

Chapter 3, *Three Common Misperceptions*, second paragraph

Changed "**make** wise **purchasing decisions**" to "**purchase** wisely" in the first sentence.

Chapter 3, *Three Common Misperceptions*, second paragraph

Deleted "**made from wood**" in the third sentence (2 occurrences).

Chapter 3, *Three Common Misperceptions*, third paragraph, fourth and fifth sentences

"Playing basketball well requires teamwork. Players compete by cooperating well."

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

were deleted.

Chapter 3, *Three Common Misperceptions*, fourth paragraph, second and third sentences

“Consumers in the Soviet Union wasted billions of hours annually **in stores that made them stand** in line three times **to make a purchase**: once to select **an** item, a second time to pay for it, and a third to collect it. **They** endured this because they had no alternative.”

was changed to:

“Consumers in the Soviet Union wasted billions of hours annually **standing in lines**. **Many purchases involved standing** in line three times: once to select **the** item, a second time to pay for it, and a third to collect it. Soviet consumers endured this because they had no alternative.”

Chapter 3, Production, first paragraph

Changed “**useful knowledge as well as products**” to “**both products and knowledge of how to build products more wisely**” in the fourth sentence.

Chapter 4

Changed “**increasing** excellence” to “**improving managerial** excellence” throughout the chapter (4 occurrences).

Changed “**increasing** managerial excellence” to “**improving** managerial excellence” throughout the chapter except the title (4 occurrences).

Chapter 4, Introduction, first paragraph, last sentence

“This chapter presents a complex adaptive systems (CAS) model that focuses on the relationship between progress from **improving** managerial excellence and the economic turbulence **it** creates.”

was changed to:

“**Improving managerial excellence creates turbulence in the flow of economic resources**. This chapter presents a complex adaptive systems (CAS) model that focuses on the relationship between increasing managerial excellence and the economic turbulence **that improving managerial excellence** creates.”

Chapter 4, Turbulence, third paragraph

Changed “**require**” to “**call for**” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Increasing Excellence, second paragraph

Changed “**Alternatively**” to “**Or**” in the last sentence.

Chapter 4, Adaptiveness, fourth paragraph

Changed “have a **strong effect**” to “**strongly affect**” in the first sentence.

Changed “**much** to cut **employment**” to “**many jobs** to cut” in the second sentence.

Chapter 4, Avalanche Catastrophes, third paragraph

Deleted “**due to adding sand**” in the fourth sentence.

Changed “**This appears to indicate that** fluidity has” to “**Fluidity appears to have**” in the fifth sentence.

Changed “**increase**” to “**rise**” in the last sentence.

Chapter 5, *Control the Money Supply Passively*, second paragraph

Changed “**increases**” to “**improves**” in the first sentence.

Changes in Version 2005.07.04

Acknowledgment, eighth paragraph

“**In the late nineties, he** suggested that I stop trying to convert economists and write a book for the Harvard Business Review / Economist magazine audience.”

was changed to:

“**Brian** suggested that I stop trying to convert economists and write a book for the Harvard Business Review / Economist magazine audience **in the late nineties.**”

Acknowledgment, ninth paragraph

Changed “**He**” to “**My father**” in the fourth sentence.

Acknowledgment, tenth paragraph

Deleted “**p**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Pursuing our Ultimate Ends, third paragraph

Changed “carry out the alternative that makes the most productive” to “make the wisest” in the sixth sentence.

Chapter 1, Pursuing our Ultimate Ends, first paragraph

Changed “progress toward” to “pursue” in the first sentence.

Chapter 1, Overview, first paragraph

Changed “progress toward” to “pursue” in the first sentence.

Changed “progress toward” to “pursue” in the last sentence.

Chapter 2, footnote 8

Changed “progress toward” to “pursue” in the second sentence (2 occurrences).

Chapter 3, *Practical Wisdom*, first paragraph

Changed “a little good luck” to “moderate good fortune” in the second sentence.

Chapter 3, *Practical Wisdom*, second and third paragraphs

Reversed order of these two paragraphs.

Changes in Version 2005.07.06

Chapter 1, Pursuing our Ultimate Ends, second paragraph

Changed “Speculative bubbles” to “The dot.com bubble,” in the second sentence.

Chapter 2, Science as Refining Everyday Thinking, third paragraph, third and fourth sentences

“Idealists believe that a good scientific theory is one that logically and elegantly predicts and explains everything about a part of the Universe. Accordingly, idealists refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Idealists believe that a good scientific theory is one that logically and elegantly predicts and explains everything about a part of the Universe. **This belief leads us to refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting.**”

Chapter 2, Science as Refining Everyday Thinking, third paragraph, last sentence

“**This idealistic definition of science tends to limit testing to parts of the Universe simple enough to be well understood.**”

was deleted.

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph, last sentence

“**This raises the question of how we use the knowledge derived from theories in everyday thinking.**”

was changed to:

“**This belief forces us to ask how we use the knowledge that we derive from theories.**”

Chapter 2, Economics as Refining Everyday Thinking, fifth paragraph

Changed “**imperfections**” to “**flaws**” in the fifth sentence.

Chapter 3, Practical Wisdom, third paragraph

Changed “**cause us to act foolishly**” to “**overwhelm practical wisdom**” in the first sentence.

Changed “**. These**” was changed back to “**, all of which**” in the second and third sentences.

Chapter 3, Practical Wisdom, fourth paragraph, third and fourth sentences

“Discipline is the least thorough **and** least costly. **It is also the least susceptible to strong appetites and emotions, which can overwhelm our perception, intuition, and reason.**”

were changed to:

“Discipline is the least thorough, least costly, **and** least susceptible to **deprivation.**”

Chapter 3, Trade, last paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The international **bond** market has moved **from Wall Street, The City, and Chicago’s trading pits** to cyberspace.”

was changed to:

“The international **currency** market has moved to cyberspace.”

Changes in Version 2005.07.09

Acknowledgments, sixth paragraph

Changed “Ohno” to “Ohno, **the assembly manager who imagined what became the Toyota Production System**” in the first sentence.

Acknowledgments, seventh paragraph

Moved “in the late nineties” from the end to the beginning of the last sentence.

Afterword, first paragraph

Changed “**very** different” to “different” in the second sentence.

Changed “**importance of distinguishing**” to “**difference**” in the third sentence.

Changed “**importance of culture and strategic vision**” to “culture” in the fourth sentence.

Changed “**importance of distinguishing**” to “**difference**” in the fifth sentence.

Changed “**the question of** whether” to “whether” in the fifth sentence.

Afterword, second paragraph

Changed “**describes the difference in terms of child rearing**” to “**promotes a parenting model of the current divide**” in the second sentence.

Afterword, third paragraph

Changed “**describes the difference in terms of how each side views the size of problems relative to our human ability to solve them**” to “**promotes a problem solving model of the current political divide**” in the first sentence.

Deleted “**relatively**” in the second and third sentences.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed the sixth and seventh sentences from:

“Regulating commuter airlines like major airlines would **make flying commuter airlines more expensive**. This **in turn** would cause some people to switch from flying to driving.”

to:

“Regulating commuter airlines like major airlines would raise the price of flying on commuter aircraft. This **rise in price** would cause some people to switch from flying to driving.”

Afterword, fourth paragraph, first four sentences

“Lakoff’s and Sowell’s explanations are not as disparate as they first appear. Those on the left break down the universal problem of how we live good lives into smaller pieces than those on the right do. From the left-wing perspective, *means* are relatively trivial; hence the focus is on “feminine” *ends*. From the right-wing prospective, *ends* are relatively distant (“cosmic”); hence the focus on “masculine” *means*.”

were changed to:

“Those on the left and those on the right view break down the world differently. Left-wingers break down the world into simple events. Right-wingers break down the world into simple processes. Left-wingers focus on immediate *ends*. Right-wingers focus on *means* to distant, and often undefined, ultimate ends.”

Afterword, fifth paragraph

Changed “chasm between those **right** and those on the **left**” to “**left** and those on the **right**” in the first sentence.

Afterword, sixth paragraph

Deleted “**of the current political divide**” in the first sentence.

Changed “**increasing**” to “**improving**” in the second and fourth sentences.

Deleted “**, hence unending turbulence**” in the first sentence.

Deleted the third sentence:

“**Thriving under turbulent conditions calls for “masculine” qualities.**”

Changed “**eliminating**” to “**shutting down**” in the fourth sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Afterword, last paragraph

Changed “increasing” to “improving” in the fifth sentence.

Changed “In terms of the current political spectrum” to “In the current political spectrum” in the fifth sentence.

Appendix B, Human Needs, last paragraph

Changed “very different” to “different” in the fifth sentence.

Appendix B, *The Role of Beliefs in Satisfying Needs*, first paragraph, last sentence

“In general, the higher (less immediate) the need, the more important our beliefs are in satisfying it.”

was deleted.

Appendix B, *Schweitzer’s Universal Spiritual Need*, fourth paragraph

Changed “concept of justice” to “system” in the fifth sentence.

Appendix B, *Practical Benefits of Magical Mysticism*, second paragraph

Changed “has advantages as well as disadvantages” to “also has advantages” in the fifth sentence.

Appendix B, *Practical Benefits of Magical Mysticism*, fourth paragraph

Changed “complete ethical mysticism” to “ethical mysticism” in the last sentence.

Appendix B, *Sacrifice*, first paragraph

Changed “relatively unsanctioned” to “unsanctioned” in the first sentence.

Appendix B, *Religious Fundamentalism*, first paragraph

Changed “most straightforward” to “simplest” in the second sentence.

Changed “creation” to “birth” in the last sentence.

Appendix B, *Religious Fundamentalism*, second paragraph

Changed “The existence of” to “Belief in” in the second sentence.

Appendix C, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**provides**” to “**yields**” in the first sentence.

Changed “**number**” to “**quantity**” in the second sentence.

Changes in Version 2005.07.13

Preface, Ever Leaner Production, third paragraph, last paragraph

“**Rather than strategic theories, we owe it to ourselves to seek strategies for learning.**”

was deleted.

Preface, last paragraph

Changed “**ought**” to “**owe it to ourselves (ought)**” in the first sentence.

Changed the last two sentences from:

“Given this virtuous circle, we **owe it to ourselves to learn more about good intellectual tools. We** ought to learn more about practical wisdom.”

to:

“Given this virtuous circle, we ought to learn more about practical wisdom.”

Acknowledgments, third paragraph

Changed “**he**” to “**Jim**” in the last sentence.

Chapter 1, Mainstream Economics’ Blind Spot, eighth paragraph

Changed “function” to “**mathematical** function” in the first sentence.

Chapter 2, Science as Refining Everyday Thinking, seventh paragraph

“Consider how we would have used this decision-oriented process to refine early modern theories about the solar system. Copernicus’s **simpler, more elegant, and less thoroughly developed** theory of planets traveling around the sun in circular orbits could not predict better than the best Ptolemaic theory, which had the sun and other planets traveling around the earth in epicyclical orbits. We would have **rejected** Copernicus’s theory as a theory that **predicts**, but **we would have accepted it** as a **means of explaining the solar system. Copernicus’s theory** later proved its worth as a theory that explains by helping Kepler formulate his theory of planets traveling around the sun in elliptical orbits.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Consider how we would have used this decision-oriented process to refine early modern theories about the solar system. Copernicus’s theory of planets traveling around the sun in circular orbits could not predict better than the best Ptolemaic theory, which had the sun and other planets traveling around the earth in epicyclical orbits. We would have accepted Copernicus’s theory as a theory that **explains**, but **not** as a **theory that predicts**. It later proved its worth as a theory that explains by helping Kepler formulate his theory of planets traveling around the sun in elliptical orbits.”

Chapter 2, Science as Refining Everyday Thinking, eighth paragraph, first five sentences

“Kepler’s theory was **superior to its contemporaries in simplicity, elegance, and ability to predict**. We would have accepted it as a theory that predicts. We would have **also** accepted **it** as a theory that explains. Kepler’s theory later proved its worth as a theory that explains by helping Newton formulate his theories of gravity and mechanics. **Given the greater** depth and breadth of **these theories**, we would have accepted them as **the leading** theories that explain, **but** would not have **enshrined** them **as the sacred truth** as Alexander Pope did in his **intended** epitaph for Newton:”

were changed to:

“Kepler’s theory was **able to predict better than the best Ptolemaic theory**. We would have accepted it as a theory that predicts. **Elliptical orbits are as simple and elegant as circular orbits**. We would have accepted **Kepler’s theory** as a theory that explains. Kepler’s theory later proved its worth as a theory that explains by helping Newton formulate his theories of gravity and mechanics.

“**Newton’s theories greatly expanded the** depth and breadth of **Kepler’s theory**. We would have accepted them as **theories that predict and as** theories that explain. We would not have **deemed** them **to be** the sacred truth as Alexander Pope did in his epitaph for Newton:”

Chapter 5, Introduction, first paragraph

“**Policy making is a matter of deciding who makes what decisions under what incentives**. **Excellence in policy making** is a matter of continuously improving the quality of decision-making. What **constitutes** a good strategy for **deciding who makes what decisions under what incentives, one that** continuously improves the quality of decision-making? This chapter considers **several** factors: **decentralization**, free trade, and just taxation.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“**Governing well** is a matter of continuously improving the quality of decision-making. What **makes up** a good strategy for **governing well**? This chapter considers **three** factors: **decentralized decision-making**, free trade, and just taxation.”

Chapter 5, Decentralization, title

Changed title to “**Decentralized Decision-Making**.”

Chapter 5, Decentralized Decision-Making, first paragraph

“**The Toyota experience teaches us that efficiency frontiers yield more readily to improvisational harmony than to formal orchestration. As Friedrich Hayek observed sixty years ago**, decentralized decision-making **systems** tend to make better use of knowledge than centralized **ones**.² The following provides three prescriptions for decentralizing decision-making wisely.”

was changed to:

“**Sixty years ago Friedrich Hayek wrote that** decentralized decision-making tends to make better use of knowledge than centralized **decision-making. This is especially true when the knowledge that we need to decide wisely is knowledge that others cannot put into words**.² The following provides three prescriptions for decentralizing decision-making wisely.”

Chapter 5, *Consider the Justice of Interventions*, first paragraph

“**All governments provide a framework for** who makes what decisions under what incentives. **From a static perspective, this is a matter of deciding which behaviors of individuals are just or unjust.** “Rational” policy makers pass laws that prescribe just behavior or proscribe unjust behavior whenever the direct benefits of enforcing laws exceed the direct costs of enforcing them. In contrast, “wise” policy makers **consider not only these costs and benefits but also the costs and benefits of learning.** They choose between prescribing a behavior **that helps us pursue happiness** and letting us learn that the behavior helps us **pursue happiness. Similarly, they choose between** proscribing a behavior **that hinders our pursuit of happiness** and letting us learn that the behavior **hinders our pursuit of happiness. What matters is the justice of interventions, not behaviors.**”

was changed to:

“**Government policy makers decide** who makes what decisions under what incentives. **Those who fail to consider learning approach this issue much differently than those who consider learning.** “Rational” policy makers **focus on justice of the behavior of individuals. They** pass laws that prescribe just behavior or proscribe unjust behavior whenever the direct benefits of enforcing laws exceed the direct costs of enforcing them. In contrast, “wise” policy makers **focus on the justice of the interventions of**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

governments. They choose between prescribing a **helpful** behavior and letting us learn that the behavior helps us. They **also** choose between proscribing a **harmful** behavior and letting us learn that the behavior **harms us**. “**Wise**” **policy makers consider** not only the costs and benefits of enforcing laws but also the costs and benefits of learning.”

Chapter 5, *Consider the Justice of Interventions*, second paragraph, first three sentences

“**Judging government intervention is difficult.** Legislators can choose to err on the side of passing an unjust law or not passing a just law. Two arguments favor erring on the side of not **intervening**.”

were changed to:

“Policy makers can choose to err on the side of passing an unjust law or not passing a just law. Two arguments favor erring on the side of **not passing a just law**.”

Chapter 5, *Control the Money Supply Passively*, second paragraph

“The best monetary policy is the one that **improves the quality of decision-making the most in the long run**. Monetary authorities face two major choices **in defining a strategy for helping economic agents to learn how to decide ever more wisely**. The first is whether to control the supply or the price of money. The second is whether to manage passively or actively. Should monetary authorities declare how they will act under various conditions far in advance or be free to surprise economic agents by acting without prior announcement? Of the four alternatives created by these two choices, the least distorting is to control the money supply passively.”

was changed to:

“The best monetary policy is the one that best helps us learn how to pursue happiness ever more wisely. Monetary authorities face two major **policy** choices. The first **choice** is whether to control the supply or the price of money. The second **choice** is whether to manage passively or actively. Should monetary authorities declare how they will decide far in advance or be free to surprise economic agents? Of the four alternatives created by these two policy choices, the least distorting, **hence most helpful to learning**, is to control the money supply passively.”

Chapter 5, *Provide Moral Vision*, first two paragraphs

“**Successful decentralization requires a common vision. Only a foolish manager delegates decision-making authority without first explaining what is expected of subordinates. Similarly, only a foolish government decentralizes decision-making authority without explaining what is expected of its citizens. A wise government**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

provides its citizens with a moral vision of how to pursue happiness in a freely progressing society.

“Moral vision is especially important in information age economies. As we accumulate wealth, we tend to live higher in our hierarchy of needs, where identifying our current need is more difficult. The higher we are in this hierarchy, the more we need a vision to help us know what to do. Further, as the general level of wealth rises, the pace of change tends to quicken, which makes pursuing happiness more difficult. A clear moral vision helps us cope with accelerating change.”

were changed to:

“Just as wise managers provide decision-makers with a strategic vision, wise leaders provide citizens with a moral vision. A moral vision is especially important in wealthy economies. As we accumulate wealth, we live higher in our hierarchy of needs, where identifying our current need is more difficult. The higher we are in this hierarchy, the more we need a vision to help us know what to do. Further, as the general level of wealth rises, the pace of change tends to quicken, which makes pursuing happiness more difficult. A clear moral vision helps us cope with accelerating change.”

Chapter 5, Just Taxation, first paragraph

Changed “disrupt” to “distort” in the first sentence.

Changed the second sentence from:

“By creating incentives to act wisely, just forms of taxation disrupt decision-making in ways that promote progress.”

to:

“Just forms distort decision-making by creating incentives for us to act wisely.”

Chapter 5, Just Taxation, second paragraph

Changed “escalating” to “raising” in the last sentence.

Chapter 5, Just Taxation, third paragraph

Changed “beneficial” to “just” in the first sentence.

Chapter 5, Just Taxation, sixth paragraph

Changed “political economic system” to “political system” in the first sentence.

Chapter 5, Conclusion, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Government policy makers administer justice by deciding who makes what decisions under what incentives. Excellence in policy making is a matter of continuously improving the quality of decision-making, which includes promoting excellence by replacing government with practical wisdom. The best government is the one that results in the greatest improvement in the quality of decision-making. Until we understand this and choose our policy makers accordingly, we will not get governments that encourage the better angels of our natures.”

was changed to:

“Governing well is a matter of continuously improving the quality of decision-making. Until we choose our leaders by how well they govern, we will not get governments that encourage the better angels of our natures. The more we exercise our better angels, the less government we need.”

Afterword, fourth paragraph

Changed “and often undefined, ultimate ends” to “ends” in the fourth sentence.

Afterword, sixth paragraph

Changed “unending progress” to “unending turbulence” in the second sentence.

Afterword, last paragraph

Changed “information age” to “strategy-for-learning” in the first sentence.

Changed “the current political spectrum” to “current political parlance” in the last sentence.

Appendix A, Ever Leaner Production, first paragraph

Changed “envisioned” to “imagined” in the third sentence.

Appendix A, Ever Leaner Production, second paragraph

Changed the first sentence:

“Ohno’s imaginary factories required the knowledge of how to (1) reduce setup costs to insignificance, (2) achieve continuous production quality in batch production, (3) coordinate production precisely, which is to say, reduce work-in-process (WIP) inventory to the absolute minimum, and (4) maintain high rates of machine tool availability.”

to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Ohno’s imaginary **batch production** factories **called for** the knowledge of how to (1) **cut** setup costs to insignificance, (2) **match** continuous production quality, (3) coordinate production **processes** precisely, and (4) maintain high rates of machine tool availability.”

Deleted “, **which proved more beneficial in the long run**” in the last sentence.

Appendix A, Ever Leaner Production, third paragraph, first sentence

“Toyota first used **this system** to realize Ohno’s **vision** of equaling American production costs and quality while continuing to produce vehicles in small quantities.”

was changed to:

“Toyota first used **Ohno’s vision** to realize Ohno’s **goal** of equaling American production costs and quality while continuing to produce vehicles in small quantities.”

Appendix A, Ever Leaner Production, last paragraph, second sentence

“**The result of this ongoing process is an ever leaner manufacturing system.**”

was deleted.

Appendix A, Ever Leaner Production, last paragraph

Changed “**the Toyota Production System**” to “**Ohno’s vision**” in the last sentence.

Changed “**explanation requires**” to “**metaphor calls for**” in the last sentence.

Appendix A, *Traditional Manufacturing Systems*, fourth paragraph

Changed “**number**” to “**quantity**” in the first sentence.

Changes in Version 2005.07.16

Chapter 1, Marginalist Economics' Blind Spot, last paragraph

Changed “**far better**” back to “**more effective**” in the last sentence.

Chapter 2, Science as Refining Everyday Thinking, third paragraph

Changed “**one that logically and elegantly** predicts and explains” to “**a logical and elegant theory** that predicts and explains” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Science as Refining Everyday Thinking, third paragraph, second to last sentence

“Dewar **redefined this scheduling problem as** an off-season production capacity problem, which he solved by inventing a year-round sponge cake product, the Hostess Twinkie.”

was changed to:

“**Rather than a scheduling problem,** Dewar **saw** an off-season production capacity problem, which he solved by inventing a year-round sponge cake product, the Hostess Twinkie.”

Chapter 2, Science as Refining Everyday Thinking, last paragraph

Changed “**Scientific research**” to “**Science**” in the last sentence.

Chapter 2, Economics as Refining Everyday Thinking, second paragraph

“The inexhaustibility of knowledge makes it impossible to separate what happens today from what happens a thousand years from now. **We ought to consider not only the living but also future generations. Further,** the low cost of copying many types of useful knowledge makes it impossible to separate what happens in our society from what happens in other societies. **We ought to consider not only members of our society but also all other members of the community capable of using the knowledge that it creates.** All human activity **ought to be** part of the scientific research program of, by, and for all intelligent life.”

was changed to:

“The inexhaustibility of knowledge makes it impossible to separate what happens today from what happens a thousand years from now. **The** low cost of copying many types of useful knowledge makes it impossible to separate what happens in our society from what happens in other societies. All human activity **is** part of the scientific research program of, by, and for all intelligent life.”

Chapter 2, Economics as Refining Everyday Thinking, last paragraph

Changed “**As we saw in the rapid tool setting example, if**” to “**If**” in the third sentence.

Chapter 3, Profit

“Profit is the return on **practical wisdom**. We profit from acting wisely. **The profits from consuming wisely are just as real as those from trading or producing wisely. In the words of Benjamin Franklin, “A penny saved is a penny earned.”**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“To live wisely is to seek to live ever more wisely. We owe it to ourselves to be entrepreneurs in the business of life.”

was changed to:

“Profit is the return on **useful knowledge**. We profit from acting wisely. To live wisely is to seek to live ever more wisely. We owe it to ourselves to be entrepreneurs in the business of life.”

Chapter 4, Conclusion, first paragraph, end

Added the sentences:

“Those who give up essential liberty to purchase a little safety sow the seeds of catastrophe. As Benjamin Franklin wrote, they deserve neither liberty nor safety.”

Chapter 5, *Control the Money Supply Passively*, second paragraph

“The best monetary policy is the one that best helps us learn how to pursue happiness ever more wisely. Monetary authorities face two major policy choices. The first choice is whether to control the supply or the price of money. The second **choice** is whether to manage passively or actively. **S**hould monetary authorities declare how they will decide far in advance or be free to surprise economic agents? Of the four alternatives created by these two policy choices, the least distorting, hence most helpful to learning, is to control the money supply passively.”

was changed to:

“The best monetary policy is the one that best helps us learn how to pursue happiness ever more wisely. Monetary authorities face two major policy choices. The first choice is whether to control the supply or the price of money. The second is whether to manage passively or actively: **s**hould monetary authorities declare how they will decide far in advance or be free to surprise economic agents? Of the four alternatives created by these two policy choices, the least distorting, hence **the** most helpful to learning, is to control the money supply passively.”

Chapter 6, first paragraph

“*The Science of Practical Wisdom* **promotes** a strategy for learning how to live ever more wisely. This strategy **for learning differs markedly from mainstream economic theories. Where mainstream microeconomic theories help us evaluate alternatives, this strategy helps us formulate them. And where mainstream macroeconomic theories encourage government policy makers to lower economic turbulence, this strategy encourages policy makers to create an environment that allows us pursue happiness ever more readily. It tells us that policy makers should judge interventions of**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

government rather than the actions of the governed and that they should err on the side of not intervening justly rather than intervening unjustly.

“This strategy for learning also tells us that by becoming a part of something bigger than ourselves, we can become more than we are, but if we help others foolishly, we can do far more harm than good. Whether Adam Smith’s “invisible hand” is clumsy and brutal or adroit and humane is in our minds as well as in our hearts and hands. Properly conceived, the free enterprise system is coherent and moral.”

was changed to:

“This work puts forth a strategy for learning how to live ever more wisely. This strategy aims at creating an environment that allows us pursue happiness ever more readily. It displaces intellectual tools that aim at providing us with ever more consumer goods and services. It complements tools that help us evaluate alternatives by predicting what happens in economies.

“We owe it to ourselves to help others pursue happiness. When we help others foolishly we create catastrophes. Whether Adam Smith’s “invisible hand” is clumsy and brutal or adroit and humane is in our minds as well as in our hearts and hands. Wisely conceived, the free enterprise system is coherent and moral.”

Appendix B, *Secular Humanism*

“Secular humanists often use science to dismiss our spiritual need for mystical oneness. In doing so, they confuse the metaphysical assumptions of scientific theories with reality. Denying our need for mystical oneness encourages the flourishing of deeply flawed means of satisfying it. These include Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.”¹⁰

was changed to:

“Secular humanists often use science to dismiss our spiritual need for mystical oneness. They confuse logical conflicts between the metaphysical assumptions of scientific theories that predict and those of religiously inspired theories that explain. There is no logical conflict between refining everyday thinking (science) and the quest to mystically link/relink with something greater than ourselves (religion).¹⁰

“Denying our need for mystical oneness encourages the flourishing of deeply flawed means of satisfying it. These include Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.””

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2005.07.19

Entire document

Changed “knowledge based” to “knowledge-based” in all (2 occurrences).

Preface, first paragraph, third sentence

“It was only after we finished the last case that he cautiously recommended three rules that he used to test the morality of decision alternatives: (1) the golden rule (*Do unto others as you would have them do unto you.*); (2) the television rule (*Assume that your actions will become widely known.*); and (3) the anti-expediency rule (*Don’t eat your seed corn.*)”

was changed to:

“It was only after we finished the last case that he cautiously recommended three rules that he used to test the morality of decision alternatives. **These were** (1) the golden rule (*Do unto others as you would have them do unto you.*); (2) the television rule (*Assume that your actions will become widely known.*); and (3) the anti-expediency rule (*Don’t eat your seed corn.*)”

Preface, first paragraph, last sentence

“I wanted an overarching theory of moral philosophy, a strategic theory that would **tell me when the theories I used to solve problems were blinding me to more useful truths.**”

was changed to:

“I wanted an overarching theory of moral philosophy, a “strategic theory” that would **allow me to “think outside the boxes” created by the “tactical theories” for solving given problems that I had learned in business school.**”

Preface, second and third paragraphs

“I have since learned that my wish for a strategic theory was foolish. I did not understand the wisdom of **thinking in composite world-views, much less** sets of theories. The wise understand that light is neither a particle nor a wave, yet they find it useful to think of light as a particle under certain circumstances and as a wave under other circumstances. **The wise temper idealism with pragmatism.**

“When I was young and inexperienced, **I did not temper idealism with pragmatism. I** did not distinguish between *strategic theories* and *strategies for learning*. A strategic theory is an abstract model of reality that we use to define a general plan for progressing toward an ultimate end. A strategy for learning is a general plan **for**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

progressing toward an ultimate end that (1) is based on sets of abstract models of reality and (2) contains plans for refining these sets of abstract models. Unlike a strategic theory, which cannot address the uncertainty of its basic assumptions, a strategy for learning can address the uncertainty of the basic assumptions of the abstract models in its sets of abstract models. Strategic theories *define* ultimate ends. Strategies for learning *refine* ultimate ends.”

were changed to:

“I have since learned that my wish for a strategic theory was foolish. I did not understand the wisdom of **using** sets of theories **to learn through experience**. **The wise use the most useful theory that they know, but hope to learn more**. They understand that light is neither a particle nor a wave, yet they find it useful to think of light as a particle under certain circumstances and as a wave under other circumstances. **They hope to learn more about light**.

“When I was young and inexperienced, I did not distinguish between *strategic theories* and *strategies for learning*. A strategic theory is an abstract model of reality that we use to define a general plan for progressing toward an ultimate end. **We base strategic theories on what we know**. **Strategic theories *define* ultimate ends**. **In contrast, a strategy for learning is a general plan for refining sets of *strategic theories***. **We base strategies for learning on what we hope to know**. Strategies for learning *refine* ultimate ends. **Unlike strategic theories, which cannot address the uncertainty of their basic assumptions, strategies for learning can address the uncertainty of the assumptions of their strategic theories**. Strategies for learning help us to “think outside the box.””

Preface, last paragraph

Deleted “(ought)” in the first sentence.

Changed “ought” to “owe it to ourselves” in the last sentence.

Acknowledgments, second paragraph

“I would like to acknowledge nine people who **have** helped me find the problems that led to this **treatise**. The first is Frederick Sontag, Pomona College’s much beloved **professor of philosophy**. Fred has **long** encouraged me to become more than I am. **In helping me become a better person, he** has been extremely generous with his most precious resource, his time.”

was changed to:

“I would like to acknowledge nine people who helped me find the problems that led to this **book**. The first is Frederick Sontag, Pomona College’s much beloved philosopher.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

For the last third of a century Fred has encouraged me to become more than I am. Fred has been extremely generous with his most precious resource, his time.”

Acknowledgments, third paragraph

“The second is James Likens. In the early seventies the Pomona College economics department was dominated by Neo-Keynesians. The immediate economic problem was stagflation, which did not fit neatly into the Hicks ISLM model. After hearing few objections to Nixon’s wage and price controls from the professors teaching macroeconomics, I vowed to take no elective macroeconomics courses. This meant taking every microeconomics course taught by Jim, whom I found to be the most inquisitive professor in the department. Jim frequently told us that social scientists can tell many stories about this or that complex phenomenon and that economists don’t do dynamics well.”

was changed to:

“The second is James Likens. When I was an undergraduate economics major, the most pressing problem in economics was stagflation. After hearing few objections to Nixon’s wage and price controls from the professors teaching macroeconomics, I vowed to take no elective macroeconomics courses. This meant taking most of my elective courses from Jim. Jim frequently told us that social scientists tell many stories about this or that complex phenomenon. He also told us that economists don’t do dynamics well.”

Acknowledgments, fourth paragraph

Deleted “at Pomona” in the second sentence.

Acknowledgments, sixth paragraph

“The fifth is Taiichi Ohno, the assembly manager who imagined what became the Toyota Production System. In the summer of 1984 I was head of information systems and human resources, what today would be called the chief knowledge officer, at Star Forms, our family owned business forms manufacturing company. Star Forms was then thirteen years into what was to be a fourteen year run of 33% annual sales growth and 34% annual return on equity. We achieved this remarkable record by acting and learning faster than our competitors. A lecture by Taiichi Ohno convinced me that by Toyota standards we were not organized to learn.”

was changed to:

“The fifth is Taiichi Ohno, the Toyota assembly manager who first imagined lean production. In the summer of 1984, I was head of information systems and human resources at Star Forms, our family owned business forms manufacturing company. Star Forms was then thirteen years into what was to be a fourteen-year run of 33%

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

annual sales growth and 34% annual return on equity. We achieved this remarkable record by acting and learning faster than our competitors **did**. A lecture by Taiichi Ohno convinced me that we **had much to learn about learning**.”

Acknowledgments, seventh paragraph

“The sixth is Howard Sherman, **former OSS counterintelligence agent, philosophy professor, Midas executive, Supercuts entrepreneur, and founder of the Santa Fe Center for Emergent Strategies**. Howard introduced me to Einstein’s epistemology, **thereby freeing me from the dogmatism of self-evident truth**.”

was to

“The sixth is **the late philosopher-entrepreneur** Howard Sherman. Howard introduced me to Einstein’s theory of knowledge, **which weaned me from my belief in self-evident truth**.”

Acknowledgments, eighth paragraph

“The seventh is **Santa Fe Institute economist** W. Brian Arthur, who values his search for useful truth more than his professional reputation. Brian and I have been discussing **positive feedback involving efficiency in consumption** since the early nineties. In the late nineties **Brian** suggested that I **stop trying to convince economists and** write a book for the Harvard Business Review / Economist magazine audience.”

was to

“The seventh is W. Brian Arthur, **an economist** who values his search for useful truth more than his professional reputation. Brian and I have been discussing **practical wisdom** since the early nineties. In the late nineties, he suggested that I write a book for the Harvard Business Review / Economist magazine audience.”

Acknowledgments, ninth paragraph, fourth sentence

“Despite my father’s great ability to **quickly** get to the root of most matters, he could not comprehend what I had written **about ethics and economics**.”

was changed to:

“Despite my father’s great ability to get to the root of most matters, he could not comprehend what I had written.”

Acknowledgments, tenth paragraph

Deleted: “, **which describes the advantages and disadvantages of thinking in composite world-views**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Mainstream Economics' Blind Spot, third paragraph, last sentence

Inserted the following sentence:

“For example, once we learned to see the world from Newton’s perspective of invariant space and time, it is difficult to see from Einstein’s perspective of invariant light speed.”

Chapter 1, Mainstream Economics' Blind Spot, fourth paragraph, first sentence

“All economic conceptual frameworks are founded on concepts that define the *end (goal) of economics* and *excellence in means*.”

was changed to:

“We frame practical world-views with concepts that define *ends* and *excellence in means*.”

Chapter 1, Managerial Excellence, third paragraph, third sentence

Changed “smoke” to “consume” in the third sentence.

Changes in Version 2005.07.25

Preface, first paragraph, last sentence

Changed “core values” to “values” in the third sentence.

Changed “cautiously recommended” to “told us” in the fourth sentence.

Changed “the morality of decision alternatives” to “his decisions” in the fourth sentence.

Preface, first paragraph, last sentence

“I wanted an overarching theory of moral philosophy, a “strategic theory” that would allow me to “think outside the boxes” created by the “tactical theories” for solving given problems that I had learned in business school.”

was changed to the following paragraph:

“I had learned many problem-solving tools in business school. I knew that these “tactical” tools could lead me astray, just as the Black-Scholes option pricing model later would later lead the people at Long Term Capital Management astray. I wanted a

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

strategic plan based on an overarching theory of moral philosophy to help me know when these tactical tools were leading me astray. I wanted a theory to live by.”

Preface, new third paragraph

“I have since learned that my wish for a strategic theory was foolish. I did not understand the wisdom of using sets of theories to learn through experience. The wise use the most useful theory that they know, but hope to learn more. They understand that light is neither a particle nor a wave, yet they find it useful to think of light as a particle under certain circumstances and as a wave under other circumstances. They hope to learn more about light.”

was changed to:

“I have since learned that my wish for a strategic plan based on a theory was foolish. Such a plan would not be able to test the assumptions of its theory. It would deny testing core beliefs against experience. It would deny science.”

Preface, new fourth paragraph

“When I was young and inexperienced, I did not distinguish between *strategic theories* and *strategies for learning*. A strategic theory is an abstract model of reality that we use to define a general plan for progressing toward an ultimate end. We base strategic theories on what we know. In contrast, a strategy for learning is a general plan for refining sets of strategic theories. We base strategies for learning on what we hope to know. Strategic theories *define* ultimate ends. Strategies for learning *refine* ultimate ends. Unlike strategic theories, which cannot address the uncertainty of their basic assumptions, strategies for learning can address the uncertainty of the assumptions of their strategic theories. Strategies for learning help us to “think outside the box.””

was changed to:

“Rather than a strategic plan based on a theory, I ought to have wished for a strategic plan based on a means of refining theories. Such a plan would embrace testing core beliefs against experience. It would embrace science.”

Preface, last paragraph, first sentence

“Strategies for learning focus our attention on what we owe it to ourselves to learn.”

was made a separate paragraph and changed to:

“For lack of a better term, I call strategic plans for refining theories *strategies for learning*. Strategies for learning focus our attention on what we ought to learn.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Preface, last paragraph

Changed “owe it to ourselves” to “ought” in the last sentences.

Preface, end

Added the following paragraphs:

“I wrote this book for people who want to learn to pursue their ultimate ends ever more wisely. I have tried to make it as simple as possible, but not simpler. The first three chapters concern how we pursue our ultimate ends. The first chapter introduces a managerial strategy for learning how to pursue our ultimate ends ever more wisely. The second chapter proposes a decision-oriented approach to science, which is part of the managerial strategy. The third offers managerial alternatives for several potentially misleading marginalist economic concepts.

“The fourth and fifth chapters concern how policy makers can help us pursue our ultimate ends. The fourth uses a *complex adaptive systems* (CAS) model to argue that the primary policy issue ought to be how we can pursue our ultimate ends ever more wisely with the least turbulence. The fifth outlines how government policy makers ought to address this issue.

“The science of practical wisdom is a scientific research program for pursuing our ultimate ends ever more wisely. It is not economic science. It is what economic science ought to be.”

Acknowledgments, fourth paragraph

Changed “it is best left” to “economists ought to leave it” in the third sentence.

Acknowledgments, last paragraph

Changed “critiqued” to “reviewed” in the second sentence.

Chapter 1, Title

Moved “(designations, concepts)” from the first sentence of the first paragraph back to the title quotation.

Chapter 1, Mainstream Economics' Blind Spot, fourth paragraph

Changed “practical world-views” to “useful world-views” in the first sentence.

Changed “at reaching a given end” to “to reach a given end” in the last sentence.

Chapter 1, Mainstream Economics' Blind Spot, fifth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**In doing so, it**” to “**This focus**” in the last sentence.

Chapter 1, Mainstream Economics' Blind Spot, seventh paragraph

Changed “*rapid tool setting*” to “*rapid tool setting (RTS)*” in the fourth sentence.

Changed “**rapid tool setting**” to “**RTS**” in the second to last sentence.

Changed “learning to set up” to “learning to set up **tools**” in the last sentence.

Chapter 1, Mainstream Economics' Blind Spot, eighth paragraph

Changed “**rapid tool setting**” to “**RTS**” in the first sentence.

Changed “**very** disturbing” to “disturbing” in the second sentence.

Changed “**very** special case” to “special case” in the sixth sentence.

Chapter 1, Mainstream Economics' Blind Spot, last paragraph

Changed “**rapid tool setting**” to “**RTS**” in the first sentence.

Changed “small batches of parts **for almost immediate assembly**” to “small batches of parts” in the third sentence.

Changed “days **worth** of parts” to “days of parts” in the fifth sentence.

Changed “they” to “long setup times” in the sixth sentence.

Deleted the last sentence: “**The rapid-tool-setting model is more effective than the EOQ model in lowering production costs.**”

Chapter 1, Managerial Excellence, first paragraph

Deleted “**marginalist**” and “**managerial**” in the first sentence.

Italicized “**subordinate**” in the first sentence (2 occurrences).

Changed “**managerial** pair of concepts” and “pair of **managerial** concepts” in the second sentence.

Moved paragraph to the end of the section.

Chapter 1, Managerial Excellence, first paragraph, footnote

Deleted “**being considered**” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Managerial Excellence, new first paragraph

“Unlike the marginalist concept of efficiency, the managerial concept of efficiency and effectiveness includes learning through experience. Consider the late twentieth century problem of setting standards for analog television. After considering the problem for decades, the Japanese settled on a high definition analog standard. A few years later the Americans settled on a more versatile digital standard. Although digital television was far more expensive than analog, the Americans recognized that the cost of digital technology was likely to fall much faster than the cost of analog technology. By considering what they were likely to learn, the Americans found a more effective problem to solve.”

was changed to:

“Toyota’s experience with RTS also shows us how a high cost process with great potential for learning can be better than a low cost process with little potential for learning. We see this in the broadcast standard decisions the Japanese and American governments made in the nineties. The Japanese chose an analog standard for high definition television. A few years later, the Americans chose a digital standard for video. Although digital video was far more expensive than analog television, the Americans recognized that the cost of digital video was likely to fall much faster than the cost of analog television. By considering what they were likely to learn, the Americans found a more effective problem to solve.”

and moved to the end of the previous section.

Chapter 1, Managerial Excellence, new first paragraph

Changed “the term “rational”” to “the term ‘rational’” in the first sentence.

Changed ““wise”” to “the term ‘wise’” in the second sentence.

“For example, the decision to consume cigarettes efficiently is “rational,” but “foolish.” The “wise” choice is not to smoke.”

were changed to:

““Rational” people consume cigars efficiently. “Wise” people do not smoke.”

Chapter 1, Pursuing our Ultimate Ends, first paragraph, last four sentences

“We do not decide perfectly. Our imperfect decision-making wastes resources. But, given an attitude based on an understanding of the value of learning, we learn from our mistakes. Given a learning attitude, waste is a regrettable by-product of learning through experience.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“We often make mistakes. If we understand the value of learning, we learn from our mistakes. If we understand the value of learning, waste is a regrettable by-product of learning through experience.”

Chapter 1, Pursuing our Ultimate Ends, second paragraph

Changed “Our imperfect decision-making can” to “We often” in the first sentence.

Changed “chlorofluorocarbons” to “three-fifths” in the second sentence.

Changed “power plants based on nuclear submarine designs” to “nuclear power plants based on submarine designs” in the second sentence.

Changed “three fifths” to “three-fifths” in the second sentence and footnote.

Changed “for the purpose of” to “for” in the first sentence of the footnote.

Chapter 1, Pursuing our Ultimate Ends, last paragraph

“We can improve the quality of decision-making by improving the factors of wise decision-making. Three of these strategic assets are especially important in knowledge-based economies. The first is practical wisdom — our willingness and ability to act wisely. Practical wisdom includes a conceptual framework for thinking clearly about the best means of pursuing our ultimate ends. The second is trust, which includes trust in our predictions about what governments will do, hence the rule of law. The third is the liberty to make the wisest use of our resources without unjustly interfering with others’ liberty to do the same. The managerial strategy for pursuing our ultimate ends put forth in this work aims at improving decision-making by improving these and other factors of wise decision-making.”

was changed to:

“We can improve decision-making by improving the factors of decision-making. Three of these factors are especially useful in knowledge-based economies. The first is a conceptual framework for thinking clearly about the best means of pursuing our ultimate ends. The second is trust, which includes trust in our predictions about what governments will do, hence the rule of law. The third is the liberty to pursue our ultimate ends without unjustly interfering with others’ liberty to pursue their ultimate ends. Practical wisdom, trust, and liberty help us adapt to change.”

Chapter 1, Overview

Deleted the entire section:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“This chapter introduced a managerial strategy for learning how to pursue our ultimate ends ever more wisely. The next two chapters expand on this strategy. *New Foundations* proposes new foundations for science and economics. *Managerial Concepts* offers managerial alternatives for several potentially misleading marginalist concepts and apparent precepts. The final two chapters discuss policy. *Progress and Turbulence* uses a complex adaptive systems (CAS) model to argue that the primary policy issue ought to be how we can pursue our ultimate ends with the least turbulence. *Government Policy* outlines how government policy makers ought to address this issue.”

Chapter 6, first paragraph

Changed “puts forth” to “promotes” in the first sentence.

Afterword, first paragraph, first two sentences

“I wrote this book for busy, thoughtful people who believe that mainstream economics is not providing us with what we need to think clearly about information age economies. Since first publishing working drafts on the Internet six years ago, I have learned that different groups focus on different aspects of the work.”

was changed to:

“Over the last six years, I have learned that different groups focus on different aspects of this work.”

Appendix A, Organization, Procedures, and Tools, first paragraph

Changed “rapid tool setting” to “rapid tool setting (RTS)” in the last sentence.

Appendix A, Organization, Procedures, and Tools, eighth paragraph

Changed “rapid tool setting” to “RTS” in the second sentence.

Appendix A, Organization, Procedures, and Tools, last paragraph

Changed “rapid tool setting” to “RTS” in the first sentence.

Changes in Version 2005.07.26

Chapter 2, Science as Refining Everyday Thinking, third paragraph

“We further refine knowledge by scientific research. Idealists and pragmatists differ in their approach to scientific research. Idealists believe that a good scientific theory is a

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

logical and elegant theory that predicts and explains everything about a **readily understandable** part of the Universe. This **idealistic** belief leads **us** to refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):”

was changed to:

“We further refine knowledge by **testing our beliefs against experience**. Idealists and pragmatists differ in their approach to **this task**. Idealists believe that a good theory is a logical and elegant theory that predicts and explains everything about a part of the Universe. This belief leads **them** to refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):”

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

Changed “leads **us**” to “**ought to lead them**” in the last sentence.

Chapter 2, Science as Refining Everyday Thinking, fifth paragraph, last three sentences

“For example, **a better means of predicting the demand for strawberry shortcake, which fluctuates with the availability of fresh strawberries, would have allowed Chicago baker James Dewar to schedule his sponge cake production line more efficiently**. Rather than a scheduling problem, Dewar saw an off-season production capacity problem, **which he** solved by inventing a year-round sponge cake product, the Hostess Twinkie. In current business vernacular, his better explanation helped him to “think outside the box.””

was changed to the following new paragraph:

“**We tend to find problems that we know how to solve**. For example, **production people know how to schedule production lines**. Faced with uneven demand for sponge cake, **which had become a popular substitute for biscuits in strawberry shortcake**, Chicago baker James Dewar **might have sought a better means of predicting the demand for sponge cake**. Rather than a scheduling problem, Dewar saw an off-season capacity problem. **He** solved this problem by inventing a year-round sponge cake product, the Hostess Twinkie. In current business vernacular, his better explanation helped him to “think outside the box.””

Chapter 2, Science as Refining Everyday Thinking, tenth paragraph

Changed “deemed them **to be**” to “deemed them” in the third sentence.

Chapter 2, Economics as Refining Everyday Thinking, third paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Deleted “, including ever better means of studying our sensations of reality” from the second sentence.

Chapter 2, Economics as Refining Everyday Thinking, fifth paragraph

“The **complex relationship** between our normative models and reality gives rise to a wide variety of phenomena, which range from simple speculative bubbles to complex “ecosystems” of human organizations. We can think about this **relationship** as the interplay of two universal tendencies of normative models. The first is the tendency of **normative models** to become more popular. **This is caused by the combination of their self-fulfilling nature and “lock-in.”** The second is their tendency to undermine the conditions on which they are based. **This is caused by their flaws.** Repeatedly using models to guide our actions without considering how our actions change reality tends to lead us ever further away from ideal paths toward living good lives.”

was changed to:

“The **dynamic** between our normative models and reality gives rise to a wide variety of phenomena, which range from simple speculative bubbles to complex “ecosystems” of human organizations. We can think about this **dynamic** as the interplay of two tendencies of normative models. The first is their tendency to become more popular. The second is their tendency to undermine the conditions on which they are based. Repeatedly using models to guide our actions without considering how our actions change reality tends to lead us ever further away from ideal paths toward living good lives.”

Chapter 2, Economics as Refining Everyday Thinking, sixth paragraph

Changed “Fifty years ago” to “Fifty years ago,” in the first sentence.

Deleted “/ **cultural evolution**” in the first sentence.

Changed “**relinquish**” to “**give up**” in the last sentence.

Chapter 2, Refining Everyday Thinking, seventh footnote

Changed “**issue using theories**” to “**problem**” in the last sentence.

Changed “**issues**” to “**assumptions**” in the second sentence.

Changed “**controversial assumptions**” to “**controversies**” in the last sentence.

Chapter 2, Refining Everyday Thinking, second paragraph

Changed “**pursue our ultimate ends**” to “**live wisely**” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “our bodies **and our** minds and **our** spirits” to “our bodies, minds, **and** spirits” in the second sentence.

Deleted “**teleonomic**” in the fourth sentence (3 occurrences).

Chapter 2, Economics as Refining Everyday Thinking, fourth paragraph

Changed “Under these conditions” to “Under these conditions,” in the fourth sentence.

Chapter 2, Refining Everyday Thinking, sixth paragraph

Changed “**generational**” to “**intergenerational**” in all (2 occurrences).

Changed “all **of** these needs” to “all these needs” in the sixth sentence.

Added the following sentence to the end of the paragraph:

“All other forms of justice fall short of justice based on reverence for life.”

Chapter 2, Refining Everyday Thinking, sixth paragraph

Changed “**of our ultimate ends and the best means to them**” to “**ignorance**” in the last sentence.

Changes in Version 2005.07.27

Chapter 3, Introduction, first paragraph

Changed “**the resources** they waste **might be used to help** others” to “**their wastefulness affects** others” in the fourth sentence.

Changed “**decide** ever more wisely” to “**live** ever more wisely” in the last sentence.

Chapter 3, Introduction, second paragraph

“**As the RTS and high definition television examples** showed, the marginalist **economic conceptual framework** tends to blind us to better subordinate ends. This chapter proposes managerial alternatives to five marginalist concepts: wealth, consumption, trade, production, and profit.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The first chapter showed us how the marginalist concept of excellence tends to blind us to better subordinate ends. This chapter proposes managerial alternatives to five other marginalist concepts: wealth, consumption, trade, production, and profit.”

Chapter 3, Wealth, end

Added the footnote:

“² In physics, as the relative speed of objects increases beyond a practical threshold, we ought to abandon invariant space and time for invariant light speed. In economics, as change in consumer tastes over the analytical period increases beyond a practical threshold, we ought to abandon practically invariant consumer wants for practically invariant human nature. As analysts, we choose the analytical period. Following the lead of Alfred Marshall, when we wish to predict how others will act, we measure the analytical period relative to change. We speak of the short run, the long run, etc. When we wish to explain how we ought to act, we use our judgment to choose the analytical period. If we base our judgment on the ultimate normative end of reverence for life, our analytical period — our time horizon — is infinite. Given an infinite analytical period, we ought to abandon practically invariant consumer wants for practically invariant human nature.”

Chapter 3, Consumption, first paragraph

Changed “automatically lead” to “lead” in the first sentence.

Chapter 3, *Pleasure and Pain*, second paragraph

Deleted “, such as that which is the result of exercising or eating nutritious food” in the third sentence.

Chapter 3, *Pleasure and Pain*, third paragraph

Changed “An activity” to “Work” in the third sentence.

Changed “and work” to “. Work” in the third sentence.

Changed “these two extremes there is” to “these extremes is” in the new sixth sentence.

Chapter 3, *Pleasure and Pain*, sixth paragraph

Deleted “competitively” in the second sentence (2 occurrences).

Changed “capacity” to “ability” in the second sentence.

Chapter 3, Practical Wisdom, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**involves**” to “**is**” in the third sentence.

Changed “**personal characteristic**” to “**habit**” in the third sentence.

Chapter 3, *Practical Wisdom*, third paragraph

“Deprivation, which is the condition of having unsatisfied needs, can overwhelm practical wisdom. **First, it can cause panic, delirium, and illness, all of which** can impair our perception, intuition, and reason. **Second, it can bias our perception and intuition: a person suffering from severe thirst, love, or self-esteem will tend to perceive opportunities for relieving the immediate need and not to perceive other opportunities.** **Third, it can retard learning, and the resulting ignorance can cause us to act foolishly: students lacking adequate safety, nourishment, affection, or self-respect often find learning difficult.** **Fourth, it can cause strong emotions or appetites, which can lead to incontinence: anger, greed, lust, and ambition can overcome practical wisdom.** **Because we need practical wisdom to avoid deprivation, and deprivation can interfere with practical wisdom in a variety of ways, we face a variety of potential vicious circles involving practical wisdom and deprivation. Collectively these form the cycle of poverty.”**

was changed to:

“Deprivation, which is the condition of having unsatisfied needs, can overwhelm practical wisdom. **It can impair perception, intuition, and reason through panic, delirium, and illness.** It can bias our perception and intuition. It can retard learning. It can cause strong emotions or appetites, which can lead to incontinence.

“**We face a variety of potential vicious circles involving practical wisdom and deprivation. Collectively these form the cycle of poverty.”**

Chapter 3, *Two Means of Pursuing Happiness*, second paragraph

“Spinoza’s **introspective** means of pursuing happiness fits a contemplative life better than an active one. First, pleasure’s ability to overcome pain-in-being makes it harder for us to understand our needs when we are active. Second, interacting with others is a primary source of strong emotions and such emotions make it harder for us to understand our needs. **Not surprisingly,** aspiring Alexanders prefer Aristotle’s ethics and aspiring Einsteins prefer Spinoza’s.”

was changed to:

“Spinoza’s means of pursuing happiness fits a contemplative life better than an active one. **It is easier to identify our needs in a monastery than it is in a trading pit. It is not surprising that** aspiring Alexanders prefer Aristotle’s ethics and aspiring Einsteins prefer Spinoza’s.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, *Alternatives to Pursuing Happiness*, second paragraph

“Those who pursue nothing either pursue oblivion or mindlessly follow their traditions or leaders. They seldom consider whether their actions are just or efficient. **Lacking practical wisdom**, they are the most likely to fall into the cycle of poverty.”

was changed to:

“Those who pursue nothing either pursue oblivion or mindlessly follow their traditions or leaders. They seldom consider whether their actions are wise. **They** are the most likely to fall into the cycle of poverty.”

Chapter 3, *Alternatives to Pursuing Happiness*, third paragraph, first three sentences

“**This distinction** between pursuing happiness, pursuing pleasure, and pursuing nothing **is universally useful**. **We find clear reflections of it in successful Eastern cultures**. In the Hindu tradition, the Sāmkhya doctrine of the three gunas recognizes that all living things are mixtures of **the qualities of *sattva*** (lucidity), *rajas* (passion), and *tamas* (dark inertia).”

were changed to:

“**The wisdom of distinguishing** between pursuing happiness, pursuing pleasure, and pursuing nothing **has no bounds**. In the Hindu tradition, the Sāmkhya doctrine of the three gunas recognizes that all living things are mixtures of *sattva* (lucidity), *rajas* (passion), and *tamas* (dark inertia).”

Chapter 3, *Human Capital, Work, and Leisure*, first paragraph

Changed “**we are paid**” to “**other pay us**” in the first sentence.

Chapter 3, *Human Capital, Work, and Leisure*, second paragraph

Changed “**we are paid**” to “**other pay us**” in the first sentence.

Chapter 3, *Trade*, second paragraph

“**Wealth producing** organizations emerge from high fixed cost, low variable cost **trading** relationships. In industrial age economies, the most prominent form of **wealth producing** organization is the business firm. In information age economies, business firms are less prominent. The need to adapt quickly to change creates the need to lower the fixed costs of trade. As these costs fall, business firms become less “firm.” In rapidly changing sectors in which transportation and communications costs remain major factors, geographical clusters **such as Hollywood and the Silicon Valley** become more prominent than firms. In sectors in which transportation and communication

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

costs are no longer major factors, the sector itself takes the leading role. The international currency market has moved to cyberspace.”

were changed to:

“**Human** organizations emerge from high fixed cost, low variable cost relationships. In industrial age economies, the most prominent form of commercial organization is the business firm. In information age economies, business firms are less prominent. The need to adapt quickly to change creates the need to lower the fixed costs of trade. As these costs fall, business firms become less “firm.” In rapidly changing sectors in which transportation and communications costs remain major factors, geographical clusters become more prominent than firms. **Hollywood and the Silicon Valley have become more than names on a map.** In rapidly changing sectors in which transportation and communication costs are no longer major factors, the sector itself takes the leading role. The international currency market has moved to cyberspace.”

Chapter 3, Trade, third paragraph, last sentence

“Trust promotes **substituting knowledge for non-knowledge resources** by lowering the cost of protecting knowledge from theft.”

was changed to:

“Trust promotes knowledge by lowering the cost of protecting knowledge from theft.”

Chapter 3, *Three Common Misbeliefs*, first paragraph

“Three common beliefs hinder our ability to improve **excellence in trade**. The first **and most important of these** is the belief that we cannot improve **excellence in trade**. This belief tends to blind us to the potential of improving **excellence in trade**. Failing to see **this potential tends to blind us to other means of improving managerial excellence. For example, failing to see** the benefits of improving **excellence in trade** caused many American **manufacturers** to perceive the Toyota Production System as a collection of techniques for cutting work-in-process (WIP) inventory. By adopting these techniques they believed that they could catch up. They soon discovered that by the time they adopted current Japanese techniques, the Japanese had developed new ones. The Toyota system is a more than a collection of techniques for cutting WIP inventories. It is a strategy for learning.”

was changed to:

“Three common beliefs hinder our ability to improve trade. The first is the belief that we cannot improve trade. This belief tends to blind us to the potential of improving trade. Failing to see the benefits of improving trade caused many Americans to perceive the Toyota Production System as a collection of techniques for cutting work-in-process (WIP) inventory. By adopting these techniques, they believed that they

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

could catch up. They soon discovered that by the time they adopted current Japanese techniques, the Japanese had developed new ones. The Toyota system is a more than a collection of techniques for cutting WIP inventories. It is a strategy for learning.”

Chapter 3, *Three Common Misperceptions*, second paragraph

Changed “**promoting excellence in**” to “**improving**” in the first sentence.

Chapter 3, *Three Common Misperceptions*, third paragraph

“The third common belief that hinders **promoting excellence in** trade is the belief that competition **opposes** cooperation. When excellence calls for cooperation, promoting competition tends to promote cooperation. Consider **the game of basketball**. **Excellence of play, including excellence in** teamwork, tends to rise with the closeness of the score.”

was changed to:

“The third common belief that hinders **improving** trade is the belief that competition **is the opposite of** cooperation. When excellence calls for cooperation, promoting competition tends to promote cooperation. Consider **competition in team sports**. **Teamwork** tends to rise with the closeness of the score.”

Chapter 3, *Three Common Misperceptions*, last paragraph

Changed “**the item**” to “**an item**” in the second sentence.

Changed “**alternative**” to “**choice**” in the third sentence.

Chapter 3, *Production*, first paragraph

Changed “**rapid tool setting** example **in the first chapter**” to “**RTS** example” in the first sentence.

Changes in Version 2005.08.01

Chapter 1, *Mainstream Economics' Blind Spot*, seventh paragraph

Changed “setting up” to “setting up **tools**” in the fifth sentence.

Chapter 2, *Science as Refining Everyday Thinking*, fourth paragraph

Changed “**ought to** concern” to “**concerns**” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Economics as Refining Everyday Thinking, second paragraph, last sentence

“All human activity is part of the scientific research program of, by, and for all intelligent life.”

was italicized.

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

Changed “these adaptive systems” to “cultures” in the second sentence.

Chapter 4, Progress and Turbulence, title

Changed the title to “A Crude Look at the Whole.”

Chapter 4, Introduction

“Progress is movement toward our ultimate normative ends. We accelerate progress by improving managerial excellence. Improving managerial excellence creates turbulence in the flow of economic resources. This chapter presents a complex adaptive systems (CAS) model that focuses on the relationship between improving managerial excellence and the economic turbulence that improving managerial excellence creates.”

was change to:

“Knowledge in use is free. We improve excellence by replacing non-knowledge resources with knowledge. This chapter presents a simple model of the whole that focuses on improving excellence.”

Chapter 4, Improving Excellence, first paragraph

Changed “managerial excellence” to “excellence” in the first sentence.

Chapter 4, Improving Excellence, third paragraph

Changed “also causes” to “causes” in the first sentence.

Chapter 4, Improving Excellence, last paragraph

“Applying new useful knowledge is inflationary in that it takes non-knowledge scarce resources from other uses. Once applied, the new knowledge is deflationary in that it frees non-knowledge scarce resources for other uses.”

was deleted.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Turbulence, last paragraph, last sentence

“Examples include (1) distributors who do not allow their customers to exchange information with their suppliers for fear of losing their customers to their suppliers; (2) employees who do not volunteer information about foolish aspects of their jobs with their employers for fear of losing their jobs to automation; and (3) people who do not discover their genetic predispositions for fear of losing their insurance coverage.”

was changed to

“A classic example of such mistrust and ignorance is that of distributors who do not allow their customers to exchange information with their suppliers for fear of losing their customers to their suppliers. Another example is that of employees who fail to tell their employers about follow foolish procedures for fear of losing their jobs. Far less obvious are people who do not discover their genetic predispositions for fear of losing their insurance coverage. In each of these three cases, mistrust and ignorance of the means of trade prevent the flow of information that would reduce turbulence in the flow of economic resources.”

Chapter 4, Adaptiveness, first paragraph

“Improving excellence creates the need to reallocate resources. Adaptive economies are those that readily adapt to this stress. Economic adaptiveness concerns the quality of decision-making. Decisions are good not only because they move us forward but also because they relieve stress quickly and efficiently.”

was changed to:

“Adaptive people are those who relieve the stress of change wisely. Decisions are wise not only because they move us forward but also because they relieve the stress of change quickly and efficiently.”

Chapter 4, Adaptiveness, second and third paragraphs

“Many important decisions occur in organizations. Organizational decision-making is more complex than individual decision-making in that it requires a plan that outlines who performs what decision-making tasks under what incentives. In formulating such a plan, managers must consider the threats and opportunities the organization faces. They must also consider the practical wisdom of the members of their organization, available information technology, members’ time constraints, available decision tools, trade relationships, and a myriad of other factors. For example, managers must consider the costs and benefits of involving those carrying out a given decision in the problem finding and selection process. Including them in the processes of defining the problem, formulating alternatives, and selecting the best alternative raises their understanding of and approval for the chosen solution. It also tends to raise the time and expense of these decision-making processes.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Strategies for making decisions strongly affect on turbulence in the flow of economic resources. For example, in difficult times, managers of firms that pay workers on a salary-plus-bonus basis decide how much to cut bonuses rather than how many jobs to cut. This tends to lower turbulence in labor markets.”

were changed to:

“Decision-making in organizations requires a plan that outlines who performs what tasks under what incentives. These strategies for making decisions strongly affect on turbulence in the flow of economic resources. For example, in difficult times, managers of firms that pay workers on a salary-plus-bonus basis decide how much to cut bonuses rather than how many jobs to cut. This tends to lower turbulence in labor markets.”

Chapter 4, Adaptiveness, last paragraph

“In freely evolving economies, individuals and managers experiment with new decision-making methods. In the long run, the best methods are emulated and the worst are discarded. Hence, freely evolving economies tend to become ever more adaptive.”

was changed to:

“In freely evolving economies, we experiment with new decision-making methods. In the long run, we copy the best methods and throw away the worst. As we learn to decide more wisely, the economy becomes ever more adaptive.”

Chapter 4, Avalanche Catastrophes, first paragraph

“Economic avalanche catastrophes are turbulent events that involve the sudden release of stress. Examples include the collapse of the Soviet Union and the bursting of the speculative bubble.”

was changed to:

“Economies are subject to extraordinary events that suddenly release large amounts of stress. Recent “avalanche catastrophes” include the collapse of the Soviet Union, the late nineties international financial crisis, and the bursting of the dot.com bubble.”

Chapter 4, Avalanche Catastrophes, second paragraph

“Some self-organized complex systems tend toward a state in which a small event is likely to trigger a catastrophe. Physicists call this weakly chaotic phenomenon *self-organized criticality*. Experiments show that some types of sand piles are self-organized critical systems.² The slopes of these sand piles tend toward a critical value

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

as sand piles with slopes less than the critical value experience smaller avalanches **than** sand piles with slopes greater than the critical value.”

were changed to:

“Some self-organized complex systems tend toward a state in which a small event is likely to trigger a catastrophe. Physicists call this weakly chaotic phenomenon *self-organized criticality*. **There are good reasons to believe that economies are among these systems.**

“**The classic example of a** self-organized critical system is a small sand pile.² Experimenters build these piles by adding one grain of sand at a time to the center of a small circular platform. **As the experimenters add grains,** the slopes of the piles tend toward a critical value. Sand piles with slopes less than the critical value experience smaller than average avalanches. Sand piles with slopes greater than the critical value experience bigger than average avalanches.

“**Experimenters measure the size of the avalanche produced by each new grain of sand by counting the number of grains that fall away from the base of the sand pile. Once the slope of the sand pile has reached its critical slope, the size of the avalanches follows a power law. Most avalanches are small. A few are very large.**”

Chapter 4, A Crude Look at the Whole, title

Changed the title to “**Self-Organized Criticality**”

Chapter 4, Self-Organized Criticality, first paragraph

Changed “CAS” to “*complex adaptive systems (CAS)*” in the sixth sentence.

Changes in Version 2005.08.02

Chapter 4, title

Changed the title from “**A Crude Look at the Whole**” to “**The Climate.**”

Chapter 4, Turbulence, last paragraph

Changed “**Far less**” to “**Less**” in the second to last sentence.

Chapter 4, Turbulence, last paragraph

Changed “ignorance **of the means of trade**” to “ignorance” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Turbulence, last paragraph

Changed “turbulence **in the flow of economic resources**” to “turbulence” in the last sentence.

Chapter 4, Self-Organized Criticality, title

Changed the title back to “**A Crude Look at the Whole**”

Chapter 4, A Crude Look at the Whole

“Imagine **an economy filled with** free **and wise** people pursuing **happiness**. People will seek to apply new **useful** knowledge whenever they have the resources to do so. **Their new applications of useful knowledge will raise the level of** turbulence. As the level of turbulence rises, people will spend more time and other resources responding to **turbulence**, which will leave them less time and other resources for applying new useful knowledge. Given this dynamic process, the level of turbulence will tend toward a critical value. In *complex adaptive model* (CAS) terms, progress occurs at the boundary of order and chaos. Except for the occasional major avalanche catastrophe, the economy will produce an illusory trade-off between transient inflation and unemployment. It will also tend to become ever more adaptive and so progress ever more rapidly.

“This CAS model focuses on the relationship between improving **managerial** excellence and **economic** turbulence. Unlike econometric models, which try to predict how economic policies change the “weather,” it tries to predict how they change the “climate.” It tells us to focus on the cause of **economic** turbulence, poor decision-making, rather than on its symptoms, transient inflation and unemployment. When policies meant to treat these symptoms lower the quality of decision-making, they retard **progress from improving managerial** excellence.”

was changed to:

“Imagine free people pursuing **their ultimate ends ever more wisely**. People will seek to improve excellence whenever they have the **time and other** resources to do so. **Improving excellence creates** turbulence. As turbulence rises, people will spend more time and other resources responding to **it**, which will leave them less time and other resources for improving excellence. Turbulence will tend toward a critical value.

“This complex adaptive systems (CAS) model focuses on the relationship between excellence and turbulence. Unlike econometric models, which try to predict how economic policies change the “weather,” it tries to predict how they change the “climate.” It tells us to focus on the cause of turbulence, poor decision-making, rather than on its symptoms, transient inflation and unemployment. When policies meant to treat these symptoms lower the quality of decision-making, they retard excellence.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Conclusion, first paragraph

Changed “**progressing toward** our ultimate ends” to “**pursuing** our ultimate ends **ever more wisely**” in the second sentence.

Changed “**economic** turbulence” to “turbulence” in the third sentence.

Changed “**managerial** excellence” to “excellence” in the third sentence.

Changed “**progress from improving managerial** excellence” to “excellence” in the third sentence.

Changes in Version 2005.08.04

Chapter 4, Introduction

“**Knowledge in use is free. We improve excellence by replacing non-knowledge resources with knowledge.** This chapter puts forth a simple model that focuses on improving excellence.”

was changed to:

“**To live wisely is to seek to live ever more wisely, to improve excellence in living.** This chapter puts forth a simple model that focuses on improving excellence **in living.**”

Chapter 4, Adaptiveness, last paragraph

Changed “more wisely” to “**ever** more wisely” in the last sentence.

Chapter 4, Avalanche Catastrophes, second paragraph

Deleted the last sentence: “**There are good reasons to believe that economies are among these systems.**”

Chapter 4, Avalanche Catastrophes, third and fourth paragraphs

“The classic example of a self-organized critical system is a small sand pile.² **Experimenters build these piles by adding one grain of sand at a time to the center of a small circular platform. As the experimenters add grains,** the slopes of the piles tend toward a critical value. Sand piles with slopes less than the critical value experience smaller than average avalanches. Sand piles with slopes greater than the critical value experience bigger than average avalanches.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Experimenters measure the size of the avalanche produced by each new grain of sand by counting the number of grains that fall away from the base of the sand pile. Once the slope of the sand pile has reached its critical slope, the size of the avalanches follows a power law. Most avalanches are small. A few are very large.”

were changed to:

“The classic example of a self-organized critical system is a small sand pile built by adding one grain at a time to the center of a small circular platform.² The slopes of these piles tend toward a critical value. Sand piles with slopes less than the critical value experience smaller than average avalanches. Sand piles with slopes greater than the critical value experience bigger than average avalanches. Once the slope of the sand pile has reached its critical slope, the size of the avalanches follows a distribution similar to that of earthquakes. There are many more tiny ones than small ones; many more small ones than medium ones; many more medium ones than large ones; and many more large ones than huge ones.”

Chapter 4, Avalanche Catastrophes, end

Inserted the following paragraph

“Assuming that economies are self-organized critical systems, how do we wisely use the knowledge that we glean from computer models of self-organized critical systems? As decision-makers, we ought to use this knowledge to help us make better decisions. As policy makers, we ought to use this knowledge to help us make better rules for living ever more wisely. In both cases, we ought to test our beliefs against experience.”

Chapter 4, A Crude Look at the Whole, first paragraph

Changed “People pursuing our ultimate ends ever more wisely” to “They will seek to improve excellence in living” in the first sentence.

Changed “excellence” to “excellence in living” in the second sentence.

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “complex adaptive systems” to “simple” in the first sentence.

Changed “economic policies” to “policies” in the first sentence.

Changed “excellence” to “excellence in living” in the last sentence.

Chapter 4, Conclusion, first paragraph

Changed “pursuing our ultimate ends” to “seeking to live” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**managerial** excellence” to “excellence **in living**” in the third sentence.

Changed “excellence” to “excellence **in living**” in the third sentence.

Changes in Version 2005.08.06

Preface, eighth paragraph

Changed “**pursue our ultimate ends ever more wisely with the least turbulence**” to “**improve the quality of decision-making**” in the second sentence.

Chapter 4, title

Changed the title from “The **Climate**” to “The **Gales of Creative Destruction.**”

Chapter 4, Introduction

“To live wisely is to seek to live ever more wisely, to improve excellence in living. This chapter puts forth a simple model that focuses on improving excellence in living.”

was deleted.

Chapter 4, Improving Excellence, title

Changed the title to “**Living Wisely.**”

Chapter 4, Living Wisely

“**Improving excellence** is a matter of converting new information into new applications of knowledge.”

was changed to:

“**To live wisely is to seek to live ever more wisely. To live ever more wisely** is a matter of converting new information into new applications of knowledge.”

Chapter 4, Living Wisely, last paragraph, last two sentences

“A small rise in the price of a raw material might cause firms to react as marginalist theory predicts. **Or, it might** have no immediate effect or **it** might trigger a firm to adopt a new process that changes the industry.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“A small rise in the price of a raw material might (1) cause firms to react as marginalist theory predicts; (2) have no immediate effect; or (3) trigger a firm to adopt a new process that changes the industry.”

Chapter 4, Turbulence, second paragraph

Changed “creates” to “worsens” in the first sentence.

Deleted the second sentence: “The amount and form of turbulence depends on individual decisions.”

Chapter 4, Turbulence, third paragraph

Deleted “follow” in fifth sentence.

Changed “losing their jobs” to “losing their jobs. (See Appendix A.)” in the fifth sentence.

Changed “reduce turbulence” to “cut turbulence” in the last sentence.

Chapter 4, Adaptiveness, first two paragraphs

Merged the first two paragraphs.

Deleted the second sentence: “Decisions are wise not only because they move us forward but also because they relieve the stress of change quickly and efficiently.”

Changed “Increasing the factors” to “Improving the factors” in the new second sentence.

Changed “increase our ability” to “improve our ability” in the new second sentence.

Changed “implement” to “carry out” in the last sentence.

Chapter 4, Adaptiveness, new second paragraph

Changed “plan that outlines” to “strategy for” in the first sentence.

Chapter 4, Adaptiveness, new third paragraph

Changed “response” to “responses” in the first sentence.

Chapter 4, Avalanche Catastrophes

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Economies are subject to extraordinary events that suddenly release large amounts of stress. Recent “avalanche catastrophes” include the collapse of the Soviet Union, the late nineties international financial crisis, and the bursting of the dot.com bubble.

“Some self-organized complex systems tend toward a state in which a small event is likely to trigger a catastrophe. Physicists call this weakly chaotic phenomenon *self-organized criticality*.

“The classic example of a self-organized critical system is a small sand pile built by adding one grain at a time to the center of a small circular platform.² The slopes of these piles tend toward a critical value. Sand piles with slopes less than the critical value experience smaller than average avalanches. Sand piles with slopes greater than the critical value experience bigger than average avalanches. Once the slope of the sand pile has reached its critical slope, the size of the avalanches follows a distribution similar to that of earthquakes. There are many more tiny ones than small ones; many more small ones than medium ones; many more medium ones than large ones; and many more large ones than huge ones.

“Decreasing the fluidity (adaptiveness) of a self-organized critical sand pile by wetting the sand steepens the critical slope. For a time, this appears to lesson the danger of avalanches. This is an illusion. Once a wet sand pile reaches its critical slope, its fluidity does not affect the number or size of catastrophes.³ Fluidity appears to have little effect on the number or size of catastrophes. There are two reasons why this is not the case. First, external events can release stress: knocking over a wet sand pile creates a worse catastrophe than knocking over a dry one of equal mass. Second, fluidity can rise: as a wet sand pile dries out, it becomes less stable.

“Assuming that economies are self-organized critical systems, how do we wisely use the knowledge that we glean from computer models of self-organized critical systems? As decision-makers, we ought to use this knowledge to help us make better decisions. As policy makers, we ought to use this knowledge to help us make better rules for living ever more wisely. In both cases, we ought to test our beliefs against experience.”

² Weakly chaotic behavior is more predictable than is fully chaotic behavior. Uncertainty grows according to a power law for a weakly chaotic system, but exponentially for a fully chaotic one. If, for instance, it takes one hundred observations to predict two time units ahead, one thousand observations would allow us to predict twenty time units ahead for a weakly chaotic system, but only four time units ahead for a fully chaotic one. Bak, Per and Kan Chen “Self-Organized Criticality”, *Scientific American*, Jan. 1991: 46-53.”

³ Bak, Per and Kan Chen “Self-Organized Criticality”, *Scientific American*, Jan. 1991: 46-53.”

was deleted.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, A Crude Look at the Whole, first paragraph

“Imagine free people seeking to live **ever more** wisely. They will seek to improve excellence in living whenever they have the **time and other** resources to do so. **Improving excellence** creates turbulence. As turbulence rises, people will spend more **time and other** resources responding to it, which will leave them **less time and other** resources for **improving excellence**. Turbulence will tend toward a critical value.”

was changed to:

“Imagine free people seeking to live wisely. They will seek to **live ever more wisely, to substitute knowledge for non-knowledge resources**, whenever they have resources to do so. Living ever more wisely creates turbulence. As turbulence rises, people will spend resources responding to it, which will leave them **fewer** resources for living ever more wisely. Turbulence will tend toward a critical value.”

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “excellence” to “excellence **in living**” in the first sentence.

Added the following paragraph to the end of the paragraph:

“We can think of an economy as a complex network of applied knowledge. Early efforts to explain this network, which include the theories of *self-organized criticality*² and *modular scale-free networks*,³ are intriguing. In coming years, researchers are likely to learn much from studying computer models of networks. Wise people will use this knowledge to live ever more wisely. Wise policy-makers will use this knowledge to improve policies for living ever more wisely. Both will test this knowledge against experience.”

² Bak, Per and Kan Chen “Self-Organized Criticality”, *Scientific American*, Jan. 1991: 46-53.”

³ Barabási, Albert-László *Linked, How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*, (New York: Plume, 2003), 227-241.”

Chapter 5, Decentralized Decision-Making, first paragraph

Changed “Sixty years ago **Friedrich** Hayek” to “Sixty years ago, **F. A.** Hayek” in the first sentence.

Chapter 6, first paragraph

Changed “learning **how** to” to “learning to” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 6, first paragraph

“This work promotes a strategy for learning to live **ever more** wisely. This strategy **aims at creating an environment that allows us pursue happiness ever more readily. It displaces intellectual tools** that aim at providing us with **ever more** consumer goods and services. It complements **tools** that help us **evaluate alternatives by predicting** what happens in economies.”

was changed to:

“This work promotes a strategy for learning to live wisely. This strategy **replaces theories** that aim at providing us with consumer goods and services. It complements **theories** that help us predict what happens in economies.”

Chapter 6, second paragraph

Changed “**pursue happiness**” to “**live wisely**” in the first sentence.

Changed “foolishly” to “foolishly,” in the second sentence.

Changes in Version 2005.08.10

Preface, second paragraph

Changed “**an overarching** theory” to “**a** theory” in the last sentence.

Preface, eighth paragraph, second sentence

“The fourth **uses a complex adaptive systems (CAS) model** to argue that the primary policy issue ought to be how we can improve the quality of decision-making.”

was changed to:

“The fourth **argues** that the primary policy issue ought to be how we can improve the quality of decision-making.”

Chapter 3, Practical Wisdom, last paragraph, beginning

Added the sentence: “**To pursue happiness is to live wisely.**”

Chapter 3, Two Means of Pursuing Happiness, title

Changed the title from “Two Means of **Pursuing Happiness**” to “Two Means of **Living Wisely.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, Two Means of Living Wisely

Changed “pursuing happiness” to “living wisely” in all (2 occurrences).

Chapter 3, Alternatives to Pursuing Happiness, title

Changed the title from “Alternatives to Pursuing Happiness” to “Alternatives to Living Wisely.”

Chapter 3, Two Means of Living Wisely, first paragraph

“The wise pursue happiness by pursuing the virtuous circle of pleasure and joy. The major alternatives to pursuing happiness are pursuing pleasure and pursuing nothing. Those who pursue pleasure too often choose to mask pain-in-being with pleasure, which breaks the virtuous circle of pleasure and joy. Their pursuit of pleasure makes them vulnerable to the vicious circle of mindlessly responding to a need with an activity that fails to satisfy it.”

was changed to:

“The wise pursue the virtuous circle of pleasure and joy. The major alternatives are pursuing pleasure and pursuing nothing. Those who pursue pleasure too often choose to mask pain-in-being with pleasure, which breaks the virtuous circle of pleasure and joy. Their pursuit of pleasure makes them vulnerable to mindlessly responding to a need with an activity that fails to satisfy it.”

Chapter 3, Two Means of Living Wisely, last paragraph

“The wisdom of distinguishing between pursuing happiness, pursuing pleasure, and pursuing nothing has no bounds. In the Hindu tradition, the Sāmkhya doctrine of the three gunas recognizes that all living things are mixtures of *sattva* (lucidity), *rajas* (passion), and *tamas* (dark inertia). When lucidity prevails, we pursue happiness; when passion prevails, we pursue pleasure; and when dark inertia prevails, we pursue nothing. In the Taoist tradition, pursuing happiness is a matter of maintaining a dynamic balance of yin (joy / pleasure-in-being) and yang (pleasure / pleasure-in-acting). Those who pursue pleasure have too much yang. Those who pursue nothing have too much yin.”

was changed to:

“The wisdom of pursuing pleasure and joy has no bounds. In the Hindu tradition, the Sāmkhya doctrine of the three gunas recognizes that all living things are mixtures of *sattva* (lucidity), *rajas* (passion), and *tamas* (dark inertia). When lucidity prevails, we pursue pleasure and joy; when passion prevails, we pursue pleasure; and when dark inertia prevails, we pursue nothing. In the Taoist tradition, living wisely is a matter of maintaining a dynamic balance of yin (joy / pleasure-in-being) and yang (pleasure /

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

pleasure-in-acting). Those who pursue pleasure have too much yang. Those who pursue nothing have too much yin.”

Chapter 3, Trust, second paragraph, second sentence

“Knowledge assets are more difficult to protect from theft than non-knowledge assets: (1) many forms of knowledge can be easily duplicated, which makes them easy to steal; (2) stealing knowledge does not prevent its owner from using it, which makes the theft of knowledge easier to hide; and (3) the legal recourse for stolen knowledge tends to be more expensive than it is for scarce resources, where evidence of theft is more clear-cut and the legal precedents tend to be better established.”

was changed to:

“Knowledge assets are more difficult to protect from theft than non-knowledge assets. Thieves can easily copy many forms of knowledge, which makes them easy to steal. Stealing knowledge does not prevent its owner from using it, which makes the theft of knowledge easier to hide. The legal recourse for stolen knowledge tends to be more expensive than it is for scarce resources, where evidence of theft is more clear-cut and the legal precedents tend to be better established.”

Chapter 4, Conclusion, first paragraph, second sentence

“These two beliefs are not the most useful for seeking to live ever more wisely.”

was changed to:

“ These beliefs are not the most useful for living ever more wisely.”

Chapter 4, Conclusion, second paragraph

Changed “learning how to” to “learning to” in the first sentence.

Chapter 5, Introduction

“Governing well is a matter of continuously improving the quality of decision-making. What makes up a good strategy for governing well? This chapter considers three factors: decentralized decision-making, free trade, and just taxation.”

was changed to:

“Governing wisely is a matter of improving the lives of the governed by improving the quality of decision-making. What makes up a good strategy for governing wisely? This chapter considers three factors: decentralized decision-making, free trade, and just taxation.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 5, *Provide Moral Vision*, first five sentences

“Just as wise business leaders provide decision-makers with a strategic vision, wise government leaders provide citizens with a moral vision. A moral vision is especially important in wealthy economies. As we accumulate wealth, we live higher in our hierarchy of needs, where identifying our current need is more difficult. The higher we are in this hierarchy, the more we need a vision to help us know what to do. Further, as the general level of wealth rises, the pace of change tends to quicken, which makes pursuing happiness more difficult.”

were changed to:

“Wise leaders use a common vision to coordinate decision-making. What a strategic vision is to business, a moral vision is to government. Moral vision is especially important in wealthy economies. As we become wealthier, we live higher in our hierarchy of needs, where it is harder to know what we need. Further, as all of us become wealthier, the pace of change tends to quicken, which makes pursuing happiness more difficult.”

Chapter 5, *Decentralized Decision-Making*

“Sixty years ago, F. A. Hayek wrote that decentralized decision-making tends to make better use of knowledge than centralized decision-making. This is especially true when the knowledge that we need to decide wisely is knowledge that others cannot put into words.² The following provides three prescriptions for decentralizing decision-making wisely.”

was changed to:

“We cannot express much important knowledge. Sixty years ago, F. A. Hayek used this fact to explain why decentralized decision-making tends to make better use of knowledge than centralized decision-making does.² The following prescribes three means for decentralizing wisely.”

Chapter 5, *Consider the Justice of Interventions*, first paragraph

Changed “consider learning” to “do” in the first sentence.

Chapter 5, *Consider the Justice of Interventions*, second paragraph, third through eighth sentences

“First, to be effective, governments must be trusted to act wisely. When governments intervene foolishly, they undermine their effectiveness. The classic example is the attempt to prohibit the sale of alcohol in the United States during the nineteen twenties. Second, unjust interventions tend to benefit a few people greatly and to harm many people only a little. This makes them nearly impossible to rescind.³ New Deal

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“emergency” agricultural marketing orders still benefit **established** producers at the expense of the rest of the planet.”

were changed to:

“First, **when** governments intervene foolishly, they undermine their effectiveness. The **foolish** attempt to prohibit the sale of alcohol undermined the effectiveness of government in the United States. Second, interventions **that** benefit a few people greatly and harm many people only a little **are** nearly impossible to rescind.³ New Deal “emergency” agricultural marketing orders still benefit producers at the expense of the rest of the planet.”

Chapter 5, *Control the Money Supply Passively*

“Monetary authorities affect economies by distorting prices. Distorting prices obscures the best problems to solve. John Maynard Keynes **eloquently captured the power of monetary authorities to obscure the best problems to solve**: “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose.”⁴

“The best monetary policy is the one that best helps us learn **how to pursue happiness**. Monetary authorities face two major policy choices. The first choice is whether to control the supply or the price of money. The second is whether to manage passively or actively: should **monetary** authorities declare how they will decide far in advance or be free to surprise economic agents? Of the four alternatives created by these two **policy** choices, the least distorting, hence the most helpful to learning, is to control the money supply passively.”

was changed to:

“Monetary **policy makers** affect economies by distorting prices. Distorting prices obscures the best problems to solve. John Maynard Keynes **warns us of the great danger in this power to obscure the best problem to solve**: “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose.”⁴

“The best monetary policy is the one that best helps us learn how to **live wisely**. **Policy makers** face two major choices. The first choice is whether to control the supply or the price of money. The second is whether to manage passively or actively: should **policy makers** declare how they will decide far in advance or be free to surprise economic agents? Of the four alternatives created by these two choices, the least distorting, hence the most helpful to learning, is to control the money supply passively.”

Chapter 5, *Free Trade, first two paragraphs*

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“All cultures are mixtures of lucidity, passion, and dark inertia. When lucidity prevails, we pursue happiness; when passion prevails, we pursue pleasurable activity; and when dark inertia prevails, we follow our traditions or leaders. Given the wisdom of pursuing happiness, we might expect there to be a trend toward lucidity. Although such a tendency exists, there is little evidence to support a discernible trend.

“The evidence supports a different trend, the trend from dark inertia toward passion, which we associate with urbanization, industrialization, and globalization. We can see this trend clearly in England, the first country to industrialize, where the organizing principle of the predominant culture gradually shifted from the medieval ideal of fulfilling one’s role in God’s plan to a crassly hedonistic version of Jeremy Bentham’s utilitarian ideal of “the greatest good for the greatest number.” This trend away from maintaining traditions toward pursuing pleasurable activity has been repeated all over the world.”

were changed to:

“Given the wisdom of living wisely, we might expect there to be a trend toward seeking to live wisely. The history of the last three hundred years supports a very different trend. We see this trend clearly in England, where the dominant culture shifted from the ideal of fulfilling one’s role in God’s plan to a crassly hedonistic version of Jeremy Bentham’s ideal of “the greatest good for the greatest number.” Other industrializing countries followed England. We have learned to associate this trend toward seeking pleasure with industrialization, urbanization, and globalization.”

Chapter 5, Free Trade, new second paragraph

Changed “more lucid” to “wiser” in the first sentence.

Changed “lucidity” to “seeking to live wisely” in the second sentence.

Changed “but rather” to “but” in the second sentence.

Deleted the fourth sentence: “Barriers to trade are those things that make forming, changing, or dissolving relationships difficult or expensive.”

Changed “lucidity” to “wisdom” in the fifth and sixth sentences.

Chapter 5, Free Trade, last paragraph

Changed “organization” to “source” in all (3 occurrences).

Changed “people” to “their clients” in the last sentence.

Changed “customers” to “clients” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 5, Just Taxation, first three paragraphs

“All forms of taxation distort decision-making. Just forms distort decision-making by creating incentives for us to act wisely. We ought to demand that governments tax us as justly as culture and information technology permit.

“The most obvious forms of just taxation are those that discourage undesirable activities. These include taxes on consuming tobacco and damaging the environment. Less obvious are those that induce useful knowledge that replaces troublesome non-knowledge resources. For example, trustworthy governments can induce knowledge that replaces oil with a minimum amount of turbulence by raising taxes on oil over a period long enough to allow consumers to adjust gradually to the new environment.

“The least just taxes are those that discourage desirable activities. High on this list are taxes on incomes, which discourage acquiring useful knowledge and taking risks.”

were changed to:

“Taxes change our actions. Just taxes hinder foolish actions or foster wise ones. Unjust taxes hinder wise actions or foster foolish ones. Taxes on alcohol and tobacco, which discourage us from consuming these things, are just. Taxes on training, which discourage us from acquiring knowledge, are unjust.

“In theory, taxes on income are unjust in that they discourage us from using our knowledge to help others live wisely and from risking our resources to help others live wisely. In reality, we are not perfectly wise. Some of us earn our incomes helping others live foolishly. All of us spend at least some of our incomes foolishly. Are income taxes unjust?”

Chapter 5, Just Taxation, last four last paragraphs

“The case for ending corporate income taxes is clear. The burden of these taxes falls on customers and owners. It would be better to tax customers and owners in ways that promote lucidity.

“The case for ending personal income taxes is more problematic. If we were perfectly wise, we would share our wealth wisely. There would be no need for governments to force us to do so. Regrettably, we are not perfectly wise. How do we best raise the general level of practical wisdom? We demand that governments encourage us to act wisely.

“A just political system ensures minimum standards of individual welfare and ever wiser means of raising the general welfare. Governments best ensure minimum standards of individual welfare and markets best ensure ever wiser means of raising the general welfare.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“A just system might combine a government run safety net program paid for by progressive income taxes with a tax exempt universal welfare savings account program. The universal welfare savings account would allow tax free spending for qualified retirement, medical, unemployment, and educational expenses. It would also allow unlimited giving to qualified charitable organizations. After the last owner of the account dies, all funds not willed to qualified charitable organizations would be taxed at rate at least as progressive as that of the income tax system. Ideally, the government safety net program would shrink to insignificance but would never be dissolved. Like a militia, it would remain available for emergencies.”

were changed to:

“The case against corporate income taxes is clear. These taxes discourage corporate decision-makers from taking risks and acquiring knowledge, yet their burden falls on corporate customers and owners. It would be better to tax customers and owners in ways that foster wise actions.

“The case against personal income taxes is not clear. If we were perfectly wise, we would share our wealth wisely. There would be no need for governments to force us to do so. Regrettably, we are not perfectly wise. How do policy makers foster wisdom?

“Policy makers face two problems in taxing us in ways that foster wise actions. The first is how to ensure that all of us are well enough off to acquire practical wisdom. The second is how to foster the wisest means of fostering wise actions.

“Government agencies best ensure that we have what we need to acquire practical wisdom. Market competition, in combination with moral vision, is the best way to foster wise actions in people able to acquire practical wisdom. How best can policy makers combine these two means of fostering wise actions?

“Policy makers might combine (1) a government run safety net program, (2) a progressive income tax system, and (3) a tax-exempt universal welfare savings account program. The safety net program would ensure that all of us have what we need to acquire practical wisdom. The progressive income tax system would fund the government safety net program. The welfare savings account would allow income tax-free withdrawals for qualified welfare expenses. These expenses would include retirement, medical, unemployment, and educational expenses for the owners of the account and their dependents. They would also include unlimited giving to private charities. All other withdrawals would be income. After the last owner of the account dies, the government would tax all funds not willed to charities at a rate at least as progressive as that of the income tax system. Ideally, the private charities, guided by the superior wisdom of their contributors, would drive the government out of the business of providing welfare. The government safety net program, like a militia, would remain available for emergencies.”

Afterword, third paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “problem solving” to “problem-solving” in the first sentence.

Changed “right wingers” to “right-wingers” in the last sentence.

Appendix C, first paragraph

Changed “**seek happiness**” to “**live wisely**” in the second sentence.

Appendix C, fifth paragraph

Changed “**happiness**” to “**live wisely**” in the first sentence.

Changes in Version 2005.08.12

Preface, second paragraph, last sentence

“I wanted a theory to live by.” was moved to the end of the first paragraph.

Preface, seventh paragraph

Changed “**how** to pursue **our** ultimate ends” to “to pursue ultimate ends” in the fourth sentence.

Deleted “, **which is part of the managerial strategy**” in the fifth sentence.

Acknowledgments, fifth paragraph

Changed “**at the Stanford Graduate School of Business**” to “**in business school**” in the first sentence.

Chapter 1, Pursuing our Ultimate Ends, title

Deleted “our.”

Chapter 1, Pursuing Ultimate Ends, first paragraph, footnote

Replaced HTML version hyperlink with footnote. This mistake occurred when posting information from the HTML version to the Adobe version on August 10, 2005.

Chapter 1, Pursuing Ultimate Ends, last paragraph

Changed “adapt to change” to “**initiate and** adapt to change” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

“In contrast, pragmatists believe that science **concerns** the **never-ending** process of **discovering** knowledge useful in everyday **thinking**. This **pragmatic** belief ought to lead **them** to ask how we use theoretical knowledge”

was changed to:

“In contrast, pragmatists believe that science **is** the process of **finding and testing** knowledge useful in everyday life. This belief ought to lead **pragmatists** to ask how we ought to use the knowledge that we derive from theories.”

Chapter 2, Refining Everyday Thinking, ninth footnote

Added missing second paragraph to HTML version.

Chapter 3, Introduction

Changed “**decide**” to “**live**” in the last sentence.

Chapter 3, Practical Wisdom

Changed “**its** advantages” to “advantages” in the second sentence.

Chapter 3, Trade, first paragraph

Changed “**setting up**” to “**starting**” in the last sentence.

Chapter 3, Trade, second paragraph

Changed “**international currency market has moved**” to “**City, Wall Street, and the Chicago pits are moving**” in the last sentence.

Chapter 5, Decentralize Decision-Making, first paragraph

Changed “**express**” to “**communicate**” in the first sentence.

Changed “**fact**” to “**simple fact**” in the second sentence.

Chapter 5, Provide Moral Vision, first paragraph

Changed “**pursuing happiness**” to “**living wisely**” in the last sentence.

Chapter 5, Just Taxation, sixth paragraph

Changed “Market **competition**” to “**Competition**” in the second sentence.

Changes in Version 2005.08.13

Chapter 1, Pursuing Ultimate Ends, last paragraph, second sentence

“The first is a conceptual framework for thinking clearly about the best means of pursuing our ultimate ends.”

was changed back to:

“The first is **practical wisdom — our willingness and ability to act wisely. Practical wisdom includes** a conceptual framework for thinking clearly about the best means of pursuing our ultimate ends.”

This corrects a mistake introduced on July 27, 2005.

Afterword, first paragraph

“Over the last six years, I have learned that different groups focus on different aspects of this work. **When I discuss it with environmentalists and theologians, the topic that generates the most interest is the difference between economic growth and progress toward Albert Schweitzer’s normative end of reverence for life. When I discuss it with business and military leaders, the topic of greatest interest is culture in “fast” organizations. With scientists investigating complex adaptive systems, it is the difference between theories that predict and those that explain.** I have also learned that if the discussion lasts long enough, it usually drifts to politics, especially to whether I am “liberal” or “conservative” in the way that these terms **are used in the United States**. My curt answer is that these **industrial age** terms are not the **best** tools for thinking about **information age** politics.”

was changed to:

“Over the last six years, I have learned that different groups focus on different aspects of this work. I have also learned that if the discussion lasts long enough, it usually drifts to politics, especially to whether I am “liberal” or “conservative” **in the way that people in the United States use these terms**. My curt answer is that these terms are not the most useful tools for thinking about politics.”

Afterword, second paragraph

“Two academics, **left-wing linguist** George Lakoff and **right-wing economist** Thomas Sowell, provide partial explanations of the current political divide. In his book, *Moral Politics: What Conservatives Know That Liberals Don’t*, Lakoff **promotes a parenting model of the current divide**. Left-wingers want governments to be more like nurturing mothers than like strict fathers. They value the “feminine” qualities of compassion,

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

care, sensitivity, and social responsibility higher than the “masculine” qualities of independence, self-reliance, discipline, and individual responsibility. Lakoff believes that the nurturing mother model is superior because current scientific research favors it.”

was changed to:

“Two academics, George Lakoff and Thomas Sowell, provide partial explanations of the current political divide. In his book, *Moral Politics: What Conservatives Know That Liberals Don’t*, Lakoff sees the divide in terms of child rearing. Left-wingers want governments to be more like nurturing mothers than like strict fathers. They value the “feminine” qualities of compassion, care, sensitivity, and social responsibility higher than the “masculine” qualities of independence, self-reliance, discipline, and individual responsibility. Current research favors the nurturing approach to child rearing.”

Afterword, third paragraph

“In *A Conflict of Visions, Ideological Origins of Political Struggles*, Sowell promotes a problem-solving model of the current political divide. Left-wingers see the world filled with simple problems that are not being solved. In contrast, right-wingers see the world filled with complex and amorphous problems, which are best solved through decentralized decision-making. We can see this difference in the differing responses to a series of commuter airline crashes several years ago. Left-wingers asked why commuter airlines were not subject to the same regulations as major airlines. Right-wingers recognized a more complex problem. Regulating commuter airlines like major airlines would raise the price of flying on commuter aircraft. This rise in price would cause some people to switch from flying to driving. Driving is much more dangerous than flying. Right-wingers asked whether regulating commuter airlines like major airlines would result in more highway deaths than it saved preventing airline crashes.”

was changed to:

“In *A Conflict of Visions, Ideological Origins of Political Struggles*, Sowell portrays the divide in terms of problem solving. Left-wingers see the world filled with simple problems that are not being solved. Right-wingers see the world filled with complex and amorphous problems, which are best solved through decentralized decision-making. A few years ago a number of commuter airplanes crashed in due to a buildup of ice on their wings. Left-wingers asked why commuter airlines were not subject to the same regulations as major airlines. Right-wingers asked whether regulating commuter airlines like major airlines would save lives. They recognized that regulating commuter airlines like major airlines would raise the price of flying on commuter aircraft. This rise in price would cause some people to switch from flying to driving. Driving is much more dangerous than flying. Would regulating commuter airlines like major airlines cause more deaths on the highway than it saved in the air?”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Afterword, fourth paragraph, first five sentences

“Those on the left and those on the right **break down** the world differently. Left-wingers **break down the world into** simple events. Right-wingers **break down the world into** simple processes. **Left-wingers focus on immediate ends.** Right-wingers focus on **means** to distant ends.”

were changed to:

“Those on the left and those on the right **perceive** the world differently. Left-wingers **see** simple events. **They focus on immediate ends.** Right-wingers **see** simple processes. **They** focus on **means** to distant ends.”

Afterword, fifth paragraph, first four sentences

“We can bridge the chasm **between those on the left and those on the right** by recognizing that the **United States owes its greatness to its citizens’** free pursuit of a good life. **The useful knowledge that we create by pursuing this dynamic process** benefits us, others around the world, **and** future generations. **When used to displace scarce resources used by other species, it also benefits** other species. Regrettably, putting **new** knowledge to use creates economic turbulence.”

were changed to:

“We can bridge the chasm by recognizing that the free pursuit of a good life creates **knowledge that** benefits us, others around the world, future generations, **and, with greater wisdom,** other species. Regrettably, putting knowledge **into** use creates turbulence.”

Afterword, sixth paragraph

“**Recognizing this dynamic process exposes problems on both sides.** **For** those on the left, **the major problem is** that **an ultimate end based on** reverence for life calls for unending turbulence **from improving excellence.** A nanny state that protects its **charges** by prohibiting change **shuts down progress from improving excellence.** **This** is unfair to **our future selves,** other societies, future generations, and other species.”

was changed to:

“**Those on the left ought to know** that reverence for life calls for unending turbulence. A nanny state that **seeks to** protect its **people** by postponing change is unfair to **its people,** other societies, future generations, and other species.”

Afterword, seventh paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “For those on the right, the major problem is” to “Those on the right ought to know” in the first sentence.

Afterword, last paragraph, first four sentences

“My political and cultural position is difficult to describe to those who do not share my strategy-for-learning perspective. When talking to those on the right, I claim to be a “process conservative” in that I seek to preserve the United States’ dynamic tradition of freedom and progress toward reverence for life. When talking to those on the left, I claim to be a “classical liberal progressive” in that I favor classical liberal means and ever more inclusive definitions of who “we” are. Although I am comfortable making these two claims, I am more comfortable defining my position by defining whom I oppose.”

were changed to:

“The long answer to whether I am a “conservative” or a “liberal” is that I am a radical centrist. I seek to preserve the United States’ tradition of freedom and progress toward reverence for life. I favor classical liberal means and inclusive definitions of who “we” are.”

Afterword, last paragraph, last sentence

Deleted: “In current political parlance, I am a radical centrist.”

Changes in Version 2005.08.15

Chapter 1, Pursuing Ultimate Ends, last paragraph

Changed “help us initiate and adapt to change” to “are strategic assets in our pursuit of our ultimate ends” in the last sentence.

Appendix B, Introduction, first paragraph

Changed “a good life” to “living a good life” in the last sentence.

Appendix B, Introduction, second paragraph

Changed “perspective” to “view” in the first and third sentences.

Changed “freestanding personal computers” to “computers” in the first sentence.

Appendix B, Introduction, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**logically incompatible** belief systems” to “belief systems” in the first sentence.

Appendix B, Human Needs, second paragraph

“Abraham Maslow used this insight **into human nature** as the foundation for his **humanistic** psychology. Maslow believed that all humans share common needs and that these needs form a hierarchy based on immediacy. From this **perspective**, a good life is a life spent as high in this hierarchy of needs as possible.”

were changed to:

“Abraham Maslow used this insight as the foundation for his psychology. Maslow believed that all humans share common needs and that these needs form a hierarchy based on immediacy. From this **view**, a good life is a life spent as high in this hierarchy of needs as possible.”

Appendix B, Human Needs, third paragraph

Deleted “**he speculated that**” in the third sentence.

Appendix B, Human Needs, last paragraph

Changed “**modern Westerners**” to “**people**” in the fourth sentence.

Deleted the last two sentences: “**Maslow recognized that his conclusions were not universal. The wise of other cultures could have different spiritual beliefs.**”

Appendix B, *The Role of Beliefs in Satisfying Needs*, entire section

“Our beliefs influence what we perceive. Bushmen shown an electrocardiogram printout are likely to see a meaningless line on a piece of paper; bankers are likely to see an artifact of modern medicine; and cardiologists are likely to see health or disease.

“Our beliefs also influence how we interpret what happens to us as we go through life. If we believe that bad things only happen to bad people, a personal crisis is likely to cause us to question our worth, but if we believe that every crisis is a combination of threat and opportunity, we are likely to look for opportunity.

“Some of our beliefs are critical to our structure of beliefs. When these key beliefs are challenged, we feel threatened. When we stop believing in them, we undergo a crisis that causes us to reevaluate other beliefs.

“Beliefs that concern our ultimate ends are key beliefs. If we believe that we are put on this earth to please ourselves, we are likely to seek a life filled with pleasurable

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

activity, but if we believe that we are here for a higher purpose we are likely to seek to discover and fulfill that purpose.

“Our beliefs about reality play a role in satisfying even our most basic physical needs: the belief that we are in mortal danger may lead to panic, which increases our need for oxygen. Our beliefs play a larger role in satisfying our mental needs and a major role in satisfying our spiritual needs.”

was deleted.

Appendix B, *Schweitzer's Universal Spiritual Need*, first paragraph

“Maslow saw this highest need as an ill-defined collection of needs, which he labeled the need for “self-actualization.” Unlike Maslow, Albert Schweitzer was not reticent in identifying the highest human need, which he believed to be the spiritual need for union with something greater than ourselves. Schweitzer called this the need for “mystical oneness.” The satisfaction of this need allows us to transcend our normal consciousness and experience awe, rapture, and bliss. It is this need that Maslow’s self-actualizers seek to satisfy when they seek truth, beauty, and goodness.”

was changed to:

“Albert Schweitzer boldly identified our highest need as the need for union with something greater than ourselves. He called this the need for “mystical oneness.” The satisfaction of this need allows us to transcend our normal consciousness and experience awe, rapture, and bliss. Maslow’s self-actualizers seek to satisfy this need when they seek truth, beauty, and goodness.”

Appendix B, *Schweitzer's Universal Spiritual Need*, second paragraph, first four sentences

“Schweitzer saw two means of satisfying the need for mystical oneness: “magical” and “ethical mysticism.” Magical mysticism is the union of self with the infinite Being that comes through renouncing the world and life. This is the essence of Brahmanic mysticism, an ancestor of modern Hinduism, Jainism, and Buddhism. In contrast, ethical mysticism is the union of self with the infinite Being that comes through embracing the world and life.”

were changed to:

“Schweitzer saw two means of satisfying our need for mystical oneness. Ethical mysticism is the union that comes through embracing the world and life. Magical mysticism is the union of self with the infinite Being that comes from renouncing the world and life.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix B, *Schweitzer's Universal Spiritual Need*, fourth paragraph, last two sentences

“The result was a system **in which** people’s roles in **their** society **are fixed** at birth. **Clearly**, this means of allocating labor is a tremendous hindrance to progress toward our ultimate ends.”

were changed to:

“The result was a system **that fixed** people’s roles in society at birth. **This** means of allocating labor is a tremendous hindrance to progress toward our ultimate ends.”

Appendix B, *Schweitzer’s Universal Spiritual Need*, last paragraph

“Schweitzer explains that humans have a need for mystical oneness — a religious impulse — that we can satisfy by relinking to the infinite Being by either renouncing or embracing the world and life. This explanation is flawed in that it presumes the existence of the infinite Being. Belief in the existence of the infinite Being is a matter of faith, not of reason. The philosophically correct assumption is that humans have a need for mystical oneness that we satisfy either by embracing the world and life or by embracing the complete absence of the world and life (oblivion).”

was switched with the first paragraph of the next section less its last two sentences:

“Schweitzer saw slow evolution away from magical mysticism toward ethical mysticism in Indian and Western European thought. In Indian thought, he saw slow evolution away from the predominance of magical mysticism in ancient Hindu teachings, which denied the reality of this world, to that of the ethical mysticism in Japanese Buddhist sects, which early Jesuit missionaries denounced as being Lutheran.⁴ In Western European thought, he saw magical mysticism dominating in the late Hellenic and Medieval periods; ethical mysticism making a revival in the Renaissance; and ethical mysticism becoming supreme during the Enlightenment.⁵”
~~Secular humanists interpret these historical trends as the triumph of clear thinking over magical thinking. This interpretation ignores the practical benefits of magical mysticism.”~~

Appendix B, *Practical Benefits of Magical Mysticism*, title

Changed title to: “*Schweitzer’s Mistakes*.”

Appendix B, *Schweitzer’s Mistakes*, new first paragraph

“Schweitzer explains that humans have a need for mystical oneness — a religious impulse — that we can satisfy by relinking to the infinite Being by either renouncing or embracing the world and life. This explanation is flawed in that it presumes the existence of the infinite Being. Belief in the **existence of the** infinite Being is a matter

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

of faith, not of reason. The philosophically correct assumption is that humans have a need for mystical oneness that we satisfy either by embracing the world and life or by embracing the complete absence of the world and life (oblivion).”

was changed to:

“Schweitzer made two philosophical mistakes. The first was to assume the existence of an infinite Being. Belief in the infinite Being is a matter of faith, not of reason. The philosophically correct assumption is that humans have a need for mystical oneness that we satisfy either by embracing the world and life or by embracing the complete absence of the world and life (oblivion).”

Appendix B, *Schweitzer’s Mistakes*, second paragraph, first three sentences

“Magical mysticism also has advantages. Its unworldly focus can help us cope with worldly stress and disappointments. Further, it can help us improve the performance of a difficult activity by allowing us to detach ourselves from the activity and the results of that activity.”

was changed to:

“Schweitzer’s second mistake was to deny the practical benefits of magical mysticism. Magical mysticism provides us with three benefits. First, its unworldly focus can help us cope with worldly stress and disappointments. Second, it can help us improve performance.”

Appendix B, *Schweitzer’s Mistakes*, third paragraph

Changed “airline disaster” to “airliner” in the second sentence.

Appendix B, *Schweitzer’s Mistakes*, fourth paragraph

“Further, the magical mystical experience may result in a more useful belief system. We commonly associate these experiences with religious conversions triggered by divine action. More amenable to analysis are epiphanies triggered by worldly events. The classic example is Archimedes’s sudden discovery of the principle of displacement. Such epiphanies raise many questions about the complex interplay of changes in belief systems, world-view, and consciousness.”

was changed to:

“The third benefit of magical mysticism is its potential to change our belief systems for the better. The classic example is Archimedes’s discovery of the principle of displacement. Such epiphanies raise many questions about the complex interplay of changes in belief systems, world-view, and consciousness.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix B, *Schweitzer's Mistakes*, last paragraph, first two sentences

“Changes in belief systems, especially in the meaning of concepts, can elevate consciousness. We experience this elevation in consciousness when we laugh at jokes that play on inconsistencies in our conceptual frameworks.”

was changed to:

“We elevate our consciousness when we laugh at jokes that play on inconsistencies in our conceptual frameworks.”

Appendix B, *Balanced Excellence*, first paragraph

“Mystics of many faiths believe that the temporal end of mystical oneness with the infinite Being during life is needed to reach the ultimate end of mystical oneness with the infinite Being after life. Given this belief, a life well lived must include the temporal end of mystical oneness.”

was changed to:

“Mystics of many faiths believe that mystical oneness with the infinite Being during life is needed to reach the ultimate end of mystical oneness with the infinite Being after life. Given this belief, a good life must include the temporal end of mystical oneness.”

Appendix B, *Balanced Excellence*, second paragraph, last three sentences

“Indeed, these two ends usually complement one another. But there are practical conflicts. The temporal end of mystical oneness and ultimate normative end of reverence for life compete for scarce resources, especially for time.”

were changed to:

“Indeed, these two ends often complement one another. However, they compete for scarce resources, especially for time.”

Appendix B, *Sacrifice*, title

Changed title to: “*Heroism*.”

Appendix B, *Heroism*, third paragraph, first sentence

“In modern times, most ritual deaths have been promoted by illiberal leaders, leaders who have centralized decision-making beyond what is wise.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“In modern times, illiberal leaders, leaders who have centralized decision-making beyond what is wise, **promoted most ritual deaths.**”

Appendix B, *Heroism*, third paragraph

Changed “**encourage**” to “**promote**” in the second sentence.

Appendix B, *Secular Humanism*, both paragraphs

“Secular humanists often **use science to dismiss our spiritual need for mystical oneness. They confuse logical conflicts between the metaphysical assumptions of scientific theories that predict and those of religiously inspired theories that explain. There is no logical conflict between refining everyday thinking (science) and the quest to mystically link/relink with something greater than ourselves (religion).**¹⁰”

“Denying our need for mystical oneness **encourages the flourishing of** deeply flawed means of satisfying it. These include Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.”

“¹⁰ Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist humanism.”

were changed to:

“Secular humanists often **cite science as their reason for dismissing** our need for mystical oneness.¹⁰ Denying our need for mystical oneness **fosters** flawed means of satisfying it. These include Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Secular humanists ought to heed Einstein’s warning, “Science without religion is lame.”

“¹⁰ **There is no conflict between refining everyday thinking (science) and the quest to mystically link/relink with something greater than ourselves (religion).** Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist humanism.”

Appendix B, *Religious Fundamentalism*, first paragraph

Changed “**birth**” to “**creation**” in the last sentence.

Appendix B, *Religious Fundamentalism*, second paragraph

Changed “**the universe and our place in it**” to “**how we ought to live**” in the first sentence.

Appendix C, first five paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Imagine that biologist searching for new medicines in the Amazon discovers a miraculous herb tea that yields a harmless one-time transcendent experience that promotes lucidity. Those driven to win acceptance or admiration start to live wisely; those addicted to mind-altering drugs gain the fortitude to kick their habits; and those suffering from compulsive behaviors come to escape the traps in which they are ensnared.

“The immediate effect of releasing this product would be a drop in the demand for some goods and a rise in the demand for others. Some parts of the economy would contract and other parts would expand. Resources would flow from the contracting sectors to the expanding ones. This adjustment process would be neither immediate nor costless. Economists would record an immediate fall in aggregate production and rise in unemployment. Mainstream economic science would portray one of the most important advances in human history as a disaster.

“This little “thought experiment” exposes the foolishness of addressing strategic issues using the tactical conceptual framework of marginalist economics. Mainstream economists do so because they believe that it is better to have a poor measure of aggregate production than none at all.

“Economists face two major technical problems in measuring aggregate production. The first concerns measuring the value of inputs when measuring services. According to this logic, hiring a surgical team to remove a brain tumor for twenty thousand dollars is twice as valuable as hiring the same team to do the same surgery for ten thousand dollars. The second concerns measuring changes in quality of goods and services. How much more valuable is a one thousand dollar personal computer purchased today than a similarly priced personal computer purchased ten years ago?

“From a strategic perspective, all consumer goods and services are means to living wisely. The problem of measuring inputs rather than outputs is universal. Worse, measuring the satisfaction of human needs is more difficult than measuring the satisfaction of consumer wants.”

were changed to:

“Imagine a pill that improves practical wisdom. The immediate effect of releasing this product would be a drop in the demand for some goods and a rise in the demand for others. Some parts of the economy would contract and other parts would expand. Resources would flow from the contracting sectors to the expanding ones. This adjustment process would be neither immediate nor costless. Economists would record an immediate fall in aggregate production and rise in unemployment. Mainstream economic science would portray one of the most important advances in human history as a disaster. Our national income accounting system fails to capture improvements in practical wisdom.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Our national income accounting system also fails to capture improvements in trust, leisure skills, trading methods, and much production technology. The problems with our accounting system are deeper and broader than most economists believe them to be.”

“Economists recognize problems in measuring services and improvements in quality. Most economists do not recognize that all consumer goods and services are means to living wisely. The problem of measuring services is universal. Worse, the problem of measuring quality is far more difficult than most economists believe it to be.”

Appendix C, last paragraph

“An accounting truism holds that accounting systems promote what **is measured** at the expense of what **is not measured**. Soviet central planners learned this the hard way. When they set screw factory quotas by the quantity of screws produced, the factories produced too few big screws and too many small screws. When they set quotas by the weight of screws produced, the factories produced too many big screws and too few small screws. **National income accounting statistics fail to capture improvements in practical wisdom, trust, leisure skills, trading methods, and much production technology. In the end, the solution to this measurement problem will be the same as that of Soviet central planning, which is the replacement of the decision-making system with a system that is less dependent on problematic measurements.**”

was changed to:

“An accounting truism holds that accounting systems promote what **we measure** at the expense of what **we do not measure**. Soviet central planners learned this the hard way. When they set screw factory quotas by the quantity of screws produced, the factories produced too few big screws and too many small screws. When they set quotas by the weight of screws produced, the factories produced too many big screws and too few small screws. **The solution to our accounting problems will be the same as the solution to the Soviet accounting problems. We will replace our decision-making system with one that is less dependent on problematic measurements. The question is whether we will wait for a crisis before making this change.**”

Changes in Version 2005.08.18

Chapter 1, Mainstream Economics' Blind Spot, last paragraph

Changed “*more effective*” to “**better**” in the last sentence.

Appendix A, Introduction, both paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Just-In-Time (JIT) Manufacturing/Lean Manufacturing/Toyota Production System has become something of a joke among economists. Many believe that it represents the early information age equivalent of Adam Smith’s early industrial age pin factory, which Smith used to introduce the virtuous circle of the division of labor and the expansion of market size. The joke is that economists cannot agree on the system’s name, much less what makes it special.

“Like Smith’s pin factory, the Toyota system straddles two economic epochs. Where Smith’s pin factory combined pre-industrial age technology with industrial age batch manufacturing organization and management, JIT/Lean Manufacturing/Toyota Production System combines industrial age batch manufacturing technology with information age organization and management. Toyota managers focus on continual improvement (*kaizen*) in production, trade, and consumption. From this learning-by-doing perspective, more production of saleable product is not always more productive. Less “production” can be more productive.”

were changed to:

“Toyota team members have a strategy for learning. From their learn-by-doing view, more production of saleable product is not always more productive. Less can be more.”

Appendix A, Ever Leaner Production, all paragraphs

“In the early postwar years, Japan’s small market for trucks and Toyota’s lack of capital forced Toyota to produce trucks in small batches. Taiichi Ohno, the person most credited for inventing the Toyota system, recognized that Toyota could never catch up to the giant American firms by using traditional batch or mass production technology. Instead he imagined a means of capturing the scale economies of mass production in Toyota’s small factories. Capturing scale economies without large scale appears paradoxical. As is often the case, this paradox disappears with a change in perspective. Toyota’s scale economies would come from producing batches of similar goods rather than large numbers of identical goods. Batches of similar parts would flow like continuous production of identical parts.

“Ohno’s imaginary batch production factories called for the knowledge of how to (1) cut setup costs to insignificance, (2) match continuous production quality, (3) coordinate production processes precisely, and (4) maintain high rates of machine tool availability. It was impossible for Ohno and his team to invent this knowledge directly. Instead, they developed a means of inventing manufacturing technology.

“Toyota first used Ohno’s vision to realize Ohno’s goal of equaling American production costs and quality while continuing to produce vehicles in small quantities. Toyota and other Japanese firms have since used it to learn to build higher quality products at lower costs, build a large variety of products without raising costs, design easier to build products, and introduce new products quickly.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The essence of Ohno’s vision is the ongoing process of folding in a continuous process manufacturing system on itself and then smoothing out the resulting wrinkles. Understanding this metaphor calls for understanding something about the trade-offs involved in designing production systems.”

were changed to:

“In the early postwar years, Japan’s small market for trucks and Toyota’s lack of capital forced Toyota to produce trucks in small batches. Taiichi Ohno knew that Toyota could never catch up to the giant American firms by using traditional means. Instead, he imagined a means of capturing the scale economies of mass production in Toyota’s small factories. Scale economies would come from producing batches of similar goods rather than large numbers of identical goods. Batches of similar parts would flow like continuous production of identical parts.

“Ohno’s vision called for the knowledge of how to (1) cut setup costs to insignificance, (2) match continuous production quality, (3) coordinate production processes precisely, and (4) maintain high rates of machine tool availability. Ohno and his team did not know how to invent this knowledge. Instead, they invented a means of inventing this knowledge.

“Toyota first used Ohno’s strategy for learning to equal American costs and quality while continuing to produce in small quantities. Toyota and others have since used it to learn to (1) build higher quality products at lower costs, (2) build a large variety of products without raising costs, (3) design easier to build products, and (4) introduce new products quickly.

“The essence of this strategy is folding and smoothing. Production teams fold processes in on themselves and then smooth out the wrinkles.”

Appendix A, *Traditional Manufacturing Operations*, title

Change “Manufacturing” to “Production.”

Appendix A, *Traditional Production Operations*, first paragraph

“Traditional manufacturing systems consist of a series of separate production operations. These operations include such things as cutting, grinding, printing, stamping, painting, bending, assembling, sewing, gluing, soldering, and welding. The movement and storage activities that connect production operations form production links. Some of these links are rigid in that they provide those operating the production system no choice. Others are flexible in that they allow production team members the choice of when and where the output of the operation flows.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Production systems are networks of production operations (cutting, stamping, assembling, etc.) and the moving and storing operations that link them together. Some of these links are flexible in that they allow team members to choose when and where the product flows. Others are rigid in that they do not allow team members to choose when and where the product flows.”

Appendix A, *Traditional Production Operations*, second paragraph

Changed “operators” to “team members” in the last sentence.

Appendix A, *Traditional Production Operations*, third paragraph

Changed “operators” to “team members” in the third sentence.

Appendix A, *Traditional Production Operations*, fourth paragraph, last sentence

“These systems contain at least one flexible production link.”

was changed to:

“These systems are complex in operation in that team members face at least one flexible production link choice. Team members must decide when and where to move product.”

Appendix A, *Traditional Production Operations*, fifth paragraph

“Traditional custom manufacturing, which is commonly known as job shop manufacturing, has two major advantages: flexibility and low capital costs. Most job shops use general-purpose machine tools grouped into departments by type or function. Work flows from department to department according to the demands of the job. Capital costs tend to be low because general purpose machine tools permit operators to use the same tool to make a variety of parts and there is little machinery dedicated to transferring work-in-process from one operation to another. Offsetting these two advantages are high direct labor, waste, inventory, and indirect unit costs. Direct labor costs per unit are high because there is little automation and because workers require special skills, spend much time setting up machines, and waste time waiting for parts and work. Waste costs per unit are high because every machine setup is an opportunity to make mistakes. Inventory holding costs per unit are high because production links are loose. Indirect costs per unit are high because the ad hoc links connecting production operations require more scheduling, material handling, accounting, and supervising. Traditional custom manufacturing is complex both in form and in operation.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Traditional custom manufacturing, which is **also** known as job shop manufacturing, **is complex in form and operation**. It has two major advantages: flexibility and low capital costs. Most job shops use general-purpose machine tools grouped into departments by type **of machine**. Work flows from department to department. Capital costs tend to be low because general-purpose machine tools permit operators to use the same tool to make a variety of parts. **Further**, there is little machinery dedicated to transferring work-in-process from one operation to another. Offsetting these two advantages are high direct labor, waste, **work-in-process (WIP) holding**, and indirect unit costs. Direct labor costs per unit are high because workers **(1)** require special skills, **(2)** spend much time setting up machines, and **(3)** waste time waiting for parts and work. Waste costs per unit are high because every **tool** setup is an opportunity to make mistakes. **WIP** holding costs per unit are high because **flexible** production links store **WIP**. Indirect costs per unit are high because **flexible production** links require more scheduling, material handling, accounting, and supervising.”

Appendix A, *Traditional Production Operations*, last paragraph

“In contrast, continuous manufacturing processes, **such as paper mills and oil refineries**, are **essentially** complicated machines **dedicated to turning out large amounts of a narrow range of products with few workers**. They are complex in form but not in operation. Compared to **traditional custom manufacturing**, they sacrifice flexibility and capital to lower other costs.”

was changed to:

“In contrast, continuous manufacturing processes, **which produce such things as paper clips and graham crackers**, are **in essence** complicated machines. They are complex in form but not in operation. Compared to job shops, they sacrifice flexibility and capital to lower other costs.”

Appendix A, *Folding In Production Operations*, first paragraph

“Imagine a world in which operational simplicity **always** trumps **capital equipment and labor costs**. **In this imaginary world, all manufacturing would be river-like continuous processes producing a single type of product**. There would be no **intermingling of parts or subassembly production**. If each of the four wheels requires five wheel bolts, there are twenty identical wheel bolt subassembly production lines. **Further, there would be no intermingling of finished goods production**. If the market demands a single pink limousine per year, a firm would produce it on a **freestanding pink limousine production line**.”

was changed to:

“Imagine a world in which operational simplicity trumps **all other production concerns**. **Each final product would have its own river-like continuous production line**. **The pink, four wheel drive, club cab, lemon yellow leather interior, diesel V8, pickup**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

truck production line would have twenty-four identical wheel bolt assembly lines, six for each of the four wheels.”

Appendix A, *Folding In Production Operations*, second paragraph

“In the real world production **system designers must** balance the costs of operational **simplicity, capital equipment, and labor. Wise designers lower capital and labor costs without increasing operational complexity by** grouping the production of identical parts together **while maintaining a rigid link to the rest of the production process. Metaphorically,** they fold in identical parts of the river-like **continuous manufacturing** process on top of each other.”

was changed to:

“In the real world, production **teams** balance the costs of operational **complexity against other costs. Among other things, they** group the production of identical parts together. **In effect,** they fold in identical parts of the **imaginary** river-like processes on top of each other.”

Appendix A, *Folding In Production Operations*, third paragraph

“Production **system designers** can also fold in similar parts of **manufacturing** process on top of each other. This **requires batching the production** of identical parts using machine tools capable of producing a variety of similar parts. Producing in batches **makes the most** of capital equipment. **But it requires additional labor and increased operational complexity. Someone needs to decide the size of the batch. In job shops, someone also needs to decide where each batch goes next.”**

was changed to:

“Production **teams** can also fold in similar parts of **production** process on top of each other. This **is a matter of producing batches** of identical parts on machine tools capable of producing a variety of similar parts. Producing in batches **lowers the cost** of capital equipment and **raises the cost of direct and indirect** labor.”

Appendix A, *Folding In Production Operations*, last paragraph

“For the folding in **of similar parts of the manufacturing process on top of each other** to be wise, the benefits of **lowering capital equipment costs** must **overwhelm** the costs **associated with increasing labor and operational complexity.** The lower the production rate, the greater the relative benefits of **lowering capital equipment costs** become. **From this perspective, a traditional** job shop is simply countless continuous process **manufacturing** lines folded in on themselves.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“For the folding in to be wise, the benefits of **folding in** must **be greater than** the costs of **folding in**. The lower the production rate, the greater the relative benefits of folding in become. **A** job shop is simply countless continuous process production lines folded in on themselves.”

Appendix A, *Smoothing Flows*, first paragraph, last sentence

Changed “**the image that**” to “**what**” in the third sentence.

Appendix A, *Smoothing Flows*, first paragraph, last sentence

“For those who understand the **Toyota** system **to be a means of producing production technology rather than simply a collection of techniques for lowering WIP inventory**, this smoothing process is far more impressive.”

was changed to:

“For those who understand the system, this smoothing process is far more impressive.”

Appendix A, *Smoothing Flows*, third paragraph

“The Toyota system combines a simple, elastic, and robust means of linking production operations (*dual kanban*) with the guiding principle of continual improvement (*kaizen*). The elasticity of the dual kanban production links allows the production system to stretch to fit problems that are too complex for production engineers to solve alone, **the kind of problems created by folding in large parts of a production system. The production engineers’ ignorance of how to make the system work smoothly manifests itself as excessive WIP inventory stored in stretched production links. The production team renders this ignorance by gradually tightening the stretched links.** Tightening **these** links creates small production problems that team members are able to solve. Solving these problems **creates improved procedures, organization, machine tools, operator training, manufacturing quality, and product design. Applying this new knowledge ends the need for excessive WIP inventory, thereby restoring the stretched production link.**”

was changed to:

“The Toyota system combines a simple, elastic, and robust means of linking production operations (*dual kanban*) with the guiding principle of continual improvement (*kaizen*). The elasticity of the dual kanban production links allows the system to stretch to fit problems that are too complex for production engineers to solve alone, **such as those created by folding in parts of the system. Stretching these links increases WIP inventory.** Tightening **stretched** links creates small production problems that team members are able to solve. Solving these problems **improves the system. The**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

system swallows and digests complex problems much as a snake swallows and digests mice.”

Appendix A, *Smoothing Flows*, last paragraph

“The benefits of smooth flow do not end at the **production line**. The Toyota system maintains a smooth flow of finished goods to the customer **by setting the production rate to the rate that customers demand products**. **Metaphorically**, customer purchases pull work-in-process through the production system. In theory, there is only one operating mode: on. **In practice, variations in the production rate may require building discretionary reserve capacity into the system, which increases operational complexity.**”

was deleted.

Appendix A, *Organization, Procedures, and Tools*

Changed “**manning**” to “**staffing**” in the second, fifth, and sixth paragraphs.

Appendix A, *Visibility*, first paragraph, first paragraph

Changed commas to colons in the seventh sentence.

Changes in Version 2005.08.19

Acknowledgments, first paragraph

Changed “To this” to “To this,” in the last sentence.

Acknowledgments, ninth paragraph

Changed “**the greater our potential for progress is, the greater is** our need to imagine progress” to “our need to imagine progress **rises with the pace of progress**” in the second to last sentence.

Chapter 2, *Science as Refining Everyday Thinking*, third footnote

Changed “can be represented” to “**we** can represent” in the first sentence.

Chapter 2, *Economics as Refining Everyday Thinking*, fifth paragraph

Changed “**they are based**” to “**we** base **them**” in the fourth sentence.

Chapter 2, *Refining Everyday Thinking*, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “This tolerance **is based**” to “**We base** this tolerance” in the last sentence.

Chapter 4, Turbulence, second paragraph

Changed “**But** if” to “**However,** if” in the third sentence.

Chapter 4, Adaptiveness, second paragraph

Changed “**And** if a line proves unpopular, **it**” to “**If** a line proves unpopular, **the firm**” in the third sentence.

Chapter 4, A Crude Look at the Whole, last paragraph

Changed “ **complex** network of **applied** knowledge” to “network of knowledge” in the first sentence.

Afterword, third paragraph

Changed “are not **being** solved” to “**we** are not sol**ving**” in the second sentence.

Changed “**are** best solved” to “**we** best solve” in the third sentence.

Changed “it saved**d**” to “it **would** save” in the last sentence.

Appendix A, *Folding In Production Operations*, first paragraph

Changed “four wheel” to “four-wheel” in the third sentence.

Appendix B, *Schweitzer’s Universal Spiritual Need*, third paragraph

Changed “**And** when” to “**When**” in the last sentence.

Appendix B, *Schweitzer’s Universal Spiritual Need*, fifth paragraph

Changed “**But**” to “**However**” in the second sentence.

Appendix B, *Schweitzer’s Mistakes*, last paragraph

Changed “asks” to “asks,” in the second sentence.

Changes in Version 2005.08.27

Preface, seventh paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“I wrote this book for people who want to learn to pursue their ultimate ends ever more wisely. I have tried to make it as simple as possible, but not simpler. The first three chapters concern how we pursue our ultimate ends. The first chapter introduces a managerial strategy for learning to pursue ultimate ends ever more wisely. The second chapter proposes a decision-oriented approach to science. The third offers managerial alternatives for several potentially misleading marginalist economic concepts.”

was changed to:

“Science is knowledge of how things are. Wisdom is knowledge of how things ought to be. Practical wisdom is knowledge of how best to move “us” toward how things ought to be. Practical wisdom is knowledge of the best means of pursuing “our” ultimate ends.

“None of “us” has complete knowledge of how best to pursue “our” ultimate ends. “We” must learn how to improve “our” means of pursuing “our” ultimate ends as “we” by pursue “our” ultimate ends. “We” must learn by doing. How do “we” best organize “ourselves” to learn by doing? *Who decides? On what basis?*”

“This little book addresses these two fundamental questions. I have tried to make things as simple as possible, but not simpler. This called for writing in the first person plural while slowly unfolding who “we” are.

“The first three chapters concern how we pursue our ultimate ends. The first chapter introduces a managerial strategy for learning to pursue ultimate ends ever more wisely. The second chapter proposes a decision-oriented approach to science. The third offers managerial alternatives for several potentially misleading marginalist economic concepts.”

Acknowledgments, seventh paragraph

Added the following clause: “, the Santa Fe Institute’s “official unofficial philosopher” during the nineties” to the first sentence.

Acknowledgments, ninth paragraph

Changed ““paradigm”” to “ ‘paradigm,’ ‘decision-oriented pragmatism,’ ” in the fifth sentence.

Chapter 1, Mainstream Economics’ Blind Spot, third paragraph,

Changed “mechanics from Newton’s perspective of invariant space and time, it is difficult to see mechanics from Einstein’s perspective of invariant light speed” to “wealth as consumer goods and the resources to produce consumer goods, it is difficult to see wealth as anything else” in the fourth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Mainstream Economics' Blind Spot, sixth paragraph,

Changed “definition of excellence in means tends to blind us by studying the **marginalist** economic order quantity” to “**marginalist** definition of excellence in means tends to blind us by studying the economic order quantity” in the first sentence.

Chapter 1, Mainstream Economics' Blind Spot, ninth paragraph

Changed “**This** calls” to “**Long setups** call” in the fourth sentence.

Changed “setup **times**” to “**setups** call” in the fifth and sixth sentences.

Chapter 1, Mainstream Economics' Blind Spot, last paragraph

Changed “the Japanese” to “**that** the Japanese” in the second sentence.

Chapter 1, Pursuing Ultimate Ends, first paragraph

Changed “decision-making” to “decision-making, **the process that begins with finding a problem to solve and ends with learning from the experience**” in the first sentence.

Chapter 1, Pursuing Ultimate Ends, second paragraph

Changed “**technology**, legal system, and culture” to “**technolog**ies****, legal systems, and cultures” in the first sentence.

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

Italicized the last sentence: “*This belief ought to lead pragmatists to ask how we ought to use the knowledge that we derive from theories.*”

Chapter 2, Science as Refining Everyday Thinking, second to last paragraph

Changed “**We**” to “**However, we**” in the third sentence.

Chapter 2, Science as Refining Everyday Thinking, last paragraph

Italicized the last sentence: “*Science is a never-ending process.*”

Chapter 2, Economics as Refining Everyday Thinking, second paragraph

Changed “**The cost**” to “**Further, the cost**” in the second sentence.

Chapter 2, Economics as Refining Everyday Thinking, third paragraph

Added “(**idealism, pragmatism, decision-oriented pragmatism**)” to the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Economics as Refining Everyday Thinking, last paragraph

Added “, *which help us evaluate alternatives,*” to the last sentence.

Added “, *which help us formulate alternatives,*” to the last sentence.

Chapter 2, Refining Everyday Thinking, first paragraph

Added “, *which includes knowledge useful in consuming wisely,*” to the first sentence.

Chapter 3, Introduction, first paragraph

“We pursue our ultimate ends by means of decision-making. When we believe that the non-knowledge resources that we need to pursue our ultimate ends are abundant, we do not feel the need to decide wisely. Princes and princesses who do not imagine the world beyond their palace walls do not feel the need to decide wisely. They do not understand how their wastefulness affects others. If we accept Schweitzer’s normative ultimate end of reverence for life, our needs are the needs of all life. Our needs are infinite. We owe it to ourselves to live ever more wisely.”

was deleted.

Chapter 3, Introduction, new first paragraph, first sentence

“The first chapter **showed us how** the marginalist concept **of excellence** tends to blind us to better subordinate ends.”

was changed to:

“The first chapter showed us how the marginalist **conceptual framework** tends to blind us to better subordinate ends. **It then proposed a managerial alternative to the marginalist concept of excellence.**”

Changes in Version 2005.09.03

Preface, second paragraph

Deleted “**“tactical”**” in the second sentence.

Deleted “**a strategic plan based on**” in the last sentence.

Deleted “**option pricing**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “these tactical tools” to “the tools I used to solve problems” in the last sentence.

Preface, third paragraph

Changed “a theory” to “a theory of moral philosophy” in the first sentence.

Preface, fourth paragraph

Changed “a theory” to “a theory of moral philosophy” in the first sentence.

Preface, fourth paragraph

Changed “for” to “based on means of” in the first sentence.

Preface, sixth paragraph

Changed “practical wisdom” to “living wisely” in last first sentence.

Preface, last six paragraphs

“Science is organized knowledge of how things are. Wisdom is organized knowledge of how things ought to be. Practical wisdom is organized knowledge of how best to move us toward how things ought to be. Practical wisdom is knowledge of the best means of pursuing our ultimate ends.

“None of “us” has complete knowledge of how best to pursue “our” ultimate ends. “We” must learn how to improve “our” means of pursuing “our” ultimate ends as “we” by pursue “our” ultimate ends. “We” must learn by doing. How do “we” best organize “ourselves” to learn by doing? *Who decides? On what basis?*”

“This little book addresses these two fundamental questions. I have tried to make things as simple as possible, but not simpler. This called for writing in the first person plural while slowly unfolding who “we” are.”

“The first chapter introduces a managerial strategy for learning to pursue ultimate ends ever more wisely. The second chapter proposes a decision-oriented approach to science. The third offers managerial alternatives for several potentially misleading marginalist economic concepts.

“The fourth and fifth chapters concern how policy makers can help us pursue our ultimate ends. The fourth argues that the primary policy issue ought to be how we can improve the quality of decision-making. The fifth outlines how government policy makers ought to address this issue.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The science of practical wisdom is a **scientific research program for pursuing our ultimate ends ever more** wisely. It is not economic science. It is what economic science ought to be.”

were changed to:

“The science of practical wisdom is a **strategy for learning to live** wisely. It is not economic science. It is what economic science ought to be.”

Chapter 1, Marginalist Economics' Blind Spot, first paragraph

Changed “**the task at hand**” to “**what we are doing**” in the first sentence.

Chapter 2, Economics as Refining Everyday Thinking, fourth paragraph

Italicized the last two sentences: “*We base our normative models on reality. Our actions change reality.*”

Chapter 2, Refining Everyday Thinking, eighth footnote

“**The explanations that we use to think about how best to satisfy our needs and those that we use to identify our needs must both fit together and work together. We can insure that these two types of explanations fit together** by defining our needs and ultimate ends tautologically: *our needs are those things we need to pursue our ultimate ends and our ultimate ends are what we pursue when we satisfy our needs.* **We can insure they work together by requiring that we are motivated to satisfy our needs. Theories that look to our internal programming to explain what we need satisfy both of these requirements.**”

was changed to:

“**We can separate our definitions of our needs from our explanations of how best to satisfy our needs** by defining our needs and ultimate ends tautologically: *our needs are those things we need to pursue our ultimate ends and our ultimate ends are what we pursue when we satisfy our needs.*”

Chapter 2, Refining Everyday Thinking, ninth footnote, second paragraph, last two sentences

“**The next economic era is most likely to be defined** by our ability to change our genetic programming. A major challenge of the information age must be to accumulate the wisdom we will need to meet the challenges of the coming era.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We are most likely to define the next economic era by our ability to change our genetic programming. A major challenge of the information age must be to accumulate the wisdom we will need to meet the moral challenges of the coming era.”

Chapter 2, Conclusion, last paragraph

Changed “ignorance” to “ignorance of our ultimate ends and the best means to them” in the last sentence.

Chapter 3, last paragraph, first sentence

Added the footnote: “⁵ This simple *ex post* definition includes Frank Knight’s return on risk-taking as the return on knowledge of when to take risks.”

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “excellence in living” to “progress” in the first and last sentences.

Chapter 4, A Crude Look at the Whole, last paragraph

“We can think of an economy as a network of knowledge. Early efforts to explain this network, which include the theories of *self-organized criticality*² and *modular scale-free networks*,³ are intriguing. In coming years, researchers are likely to learn much from studying computer models of networks. Wise people will use this knowledge to live ever more wisely. Wise policy-makers will use this knowledge to improve policies for living ever more wisely. Both will test this knowledge against experience.”

was changed to:

“We can think of an economy as a network of knowledge. Early efforts to explain this network, which include the theories of *self-organized criticality*² and *modular scale-free networks*,³ are intriguing. Vilfredo Pareto’s famous power law distribution of income, along with these theories, point to a power law distribution of creative-destructive events (“catastrophes”). If this is the case, we ought to expect the occasional major event to violate the “natural” level of turbulence, much as the occasional tropical storm violates the “natural” level of wind on Bonaire.

“In coming years, researchers are likely to learn much from studying computer models of networks. Wise people will use this knowledge to live ever more wisely. Wise policy-makers will use this knowledge to improve policies for living ever more wisely. Both will test this knowledge against experience.”

Chapter 4, Conclusion, first paragraph

Changed “improving excellence in living” to “progress” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**excellence in living**” to “**progress**” in the second sentence.

Changed “sow” to “**retard progress. Arguably, they also** sow” in the third sentence.

Chapter 5, Introduction, first paragraph

Changed “**decentralized decision-making**” to “**decentralization**” in the last sentence.

Chapter 5, Decentralized Decision-Making, title

Changed title to “Decentralization.”

Chapter 5, Free Trade, second paragraph

Changed “wisdom” to “**practical** wisdom” in the last sentence.

Chapter 5, Just Taxation, fifth paragraph

Changed “**is the best way to foster**” to “**best ensures**” in the second sentence.

Chapter 6, first paragraph

“**This work promotes** a strategy for learning to live wisely. This strategy replaces theories that aim at providing us with consumer goods and services. **It complements theories that help us predict what happens in economies.**”

was changed to:

“**The science of practical wisdom is** a strategy for learning to live wisely. **It embraces theories that help us predict what happens in economies and** replaces theories that aim at providing us with consumer goods and services. **It reforms matters of authority (Who rules? By what authority do rulers rule?) into matters of practical wisdom (Who decides? On what basis do decision-makers decide?).** If we accept its definitions of science (the process of refining everyday thinking) and religion (the quest to link or relink to something greater than ourselves), it reconciles science and religion.”

Chapter 6, second paragraph

Changed “**We**” to “**The science of practical wisdom tells us that we**” in the first sentence.

Changed “**When**” to “**It also tells us that when**” in the second sentence.

Appendix A, Organization, Procedures, and Tools, sixth paragraph

Changed “**insures**” to “**ensures**” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix B, Secular Humanism, first paragraph, first sentence

“Secular humanists often cite science as their reason for dismissing our need for mystical oneness.¹⁰

“¹⁰There is no conflict between refining everyday thinking (science) and the quest to mystically link/relink with something greater than ourselves (religion). Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist humanism.”

was changed to:

“Secular humanists focus on the worldly and ignore the spiritual. They often cite science as their reason for dismissing our spiritual need for mystical oneness. They ought to recognize that there is no conflict between refining everyday thinking (science) and the quest to link or relink with something greater than ourselves (religion).¹⁰

“¹⁰Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist humanism.”

Appendix B, Secular Humanism, first paragraph, second sentence

Started a new paragraph. Changed “Denying” to “Ignoring.”

Appendix B, Secular Humanism, first paragraph, footnote 10

“There is no conflict between refining everyday thinking (science) and the quest to mystically link/relink with something greater than ourselves (religion).”

was changed to:

“Secular humanists often cite science as their reason for dismissing our spiritual need for mystical oneness. They confuse the metaphysical assumptions of scientific theories that predict with reality. They ought to recognize that there is no conflict between refining everyday thinking (science) and the quest to mystically link/relink with something greater than ourselves (religion).”

Changes in Version 2005.09.06

Preface, first paragraph, last two sentences

“I wanted more than these three rules. I wanted a theory to live by.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

were moved to the second paragraph.

Preface, second paragraph

Changed “strategy plan based on a theory of moral philosophy” to “strategy for living based on a theory” in the first sentence.

Changed “plan” to “strategy” in the second sentence.

Preface, third paragraph

Changed “strategy plan based on a theory of moral philosophy” to “strategy for living based on a theory” in the first sentence.

Changed “strategy plan” to “strategy for living” in the first sentence.

Changed “plan” to “strategy” in the second sentence.

Preface, fourth paragraph

Changed “strategy plans” to “strategies for living” in the first sentence.

Chapter 2, ninth footnote, second paragraph

Changed “information age” to “current era” in the last sentence.

Changes in Version 2005.09.10

Preface, second paragraph

Changed “a theory to live by” to “a strategy for living based on a theory” in the second sentence.

Changed “problem-solving tools” to “intellectual tools” in the third sentence.

Changed “a theory of moral philosophy” to “a theory” in the last sentence.

Changed “the tools I used to solve problems” to “intellectual tools” in the last sentence.

Acknowledgments, second paragraph

Changed “philosopher” to “philosopher and theologian” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**the last** third” to “**a** third” in the third sentence.

Changed “**Fred**” to “**In doing so, he**” in the last sentence.

Acknowledgments, fifth paragraph

Changed “**my first year** faculty advisor **in business school. Hal**” to “**who**” in the first two sentences.

Acknowledgments, sixth paragraph

Deleted “**remarkable record**” in the fourth sentence.

Acknowledgments, seventh paragraph, last sentence

“Howard **introduced me to Einstein’s theory of knowledge, which** weaned me from my belief in self-evident truth.”

was changed to:

“Howard weaned me from my belief in self-evident truth **by introducing me to Einstein’s theory of knowledge.**”

Acknowledgments, ninth paragraph, last two sentences

“He did not grasp that our need **to imagine progress** rises with the pace of progress. **In knowledge-based economies, what matters most is moral vision, not moral values.**”

was changed to:

“He did not grasp that our need **for moral vision** rises with the pace of progress.”

Chapter 1, Mainstream Economics’ Blind Spot, second paragraph

“Knowledge resources differ from other resources in a very important way: *although they can be costly to create, to reproduce, and to place into production, once in production, they are free.* Using a pattern does not exhaust it.”

was changed to:

“Knowledge resources differ from other resources in a very important way: **although they can be costly to create, to reproduce, and to place into production, once in production, they are free.** *Using a pattern does not exhaust it.*”

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “ought to use” back to “use” in the last sentence.

Chapter 3, Profit, first paragraph

Changed “useful knowledge” back to “practical wisdom” in the first sentence.

Chapter 3, fifth footnote

“⁵ This simple *ex post* definition includes Frank Knight’s return on risk-taking as the return on knowledge of when to take risks.”

was changed to:

“⁵ This definition of profit tells us to invest in practical wisdom, including knowledge of how to manage uncertainty wisely. We should never use this *normative* definition for the *positive* task of assessing practical wisdom. Profits are not always the result of wise decision-making. Buying a ten dollar lottery ticket that has a ten percent chance of winning twenty dollars is foolish regardless of the outcome. Conversely, losses are not always the result of poor decision-making. Buying a ten dollar lottery ticket that has a ten percent chance of winning a million dollars is wise regardless of the outcome. *To attribute success solely to good decision-making or failure solely to poor decision-making is foolish.*”

Chapter 4, Adaptiveness, fourth paragraph

Changed “In the long run, we” to “We” in the second sentence.

Changed “throw away” to “discard” in the second sentence.

Chapter 4, Adaptiveness, fourth paragraph, last sentence

“As we learn to decide ever more wisely, the economy becomes ever more adaptive.”

was changed to:

“We become ever more adaptive.”

Chapter 4, A Crude Look at the Whole, first paragraph

“Imagine free people seeking to live wisely. They will seek to live ever more wisely, to substitute knowledge for non-knowledge resources, whenever they have resources to do so. Living ever more wisely creates turbulence. As turbulence rises, people will spend resources responding to it, which will leave them fewer resources for living ever more wisely. Turbulence will tend toward a critical value.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Imagine free people seeking to live wisely. **Substituting** knowledge for non-knowledge resources creates turbulence. As turbulence rises, people will spend resources responding to it, which will leave them fewer resources for **substituting knowledge for non-knowledge resources**. Turbulence will tend toward a critical value.”

Chapter 4, A Crude Look at the Whole, last paragraph

“**In coming years, researchers** are likely to learn much from studying computer models of networks. Wise people will use this knowledge to live **ever** more wisely. Wise policy-makers will use this knowledge to improve policies for living **ever more** wisely. Both will test this knowledge against experience.”

was changed to:

“**Specialists** are likely to learn much from studying computer models of networks. Wise people will use this knowledge to live more wisely. Wise policy-makers will use this knowledge to improve policies for living wisely. Both will test this knowledge against experience.”

Chapter 4, Conclusion, first paragraph

Changed “**ever more** wisely” to “wisely” in the second sentence.

Chapter 4, Conclusion, second paragraph

Changed “**ever more** wisely” to “wisely” in the first sentence.

Chapter 5, Conclusion, first paragraph

Changed “**well**” to “**wisely**” in the first and second sentences.

Afterword, first paragraph

Changed “**curt**” to “**long**” in the last sentence.

Afterword, last paragraph

Changed “**The long**” to “**My short**” in the first sentence.

Changes in Version 2005.09.12

Acknowledgments, tenth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “economist” to “**political** economist” in the second sentence.

Chapter 2, Refining Everyday Thinking, sixth paragraph

Changed “**based on too narrow a definition of** who “we” are” to “**that** define who “we” are **too narrowly**” in the last sentence.

Chapter 3, Practical Wisdom, third and fourth paragraphs

These two paragraphs were merged.

Chapter 3, Practical Wisdom, new fourth paragraph, first sentence

“**To pursue happiness is to live wisely.**”

was deleted.

Chapter 3, Trust, second paragraph

Changed “**tend to be**” to “**are**” in the fifth sentence.

Chapter 3, Production, first paragraph

Deleted “**more wisely**” in the first sentence.

Chapter 3, Turbulence, last paragraph

Changed “**three** cases” to “cases” in the last sentence.

Chapter 3, Adaptiveness, first paragraph

Changed “**wise decision-making**” to “**deciding wisely**” in the fifth sentence.

Deleted “**of wise decision-making**” in the fourth sentence.

Chapter 3, Adaptiveness, last paragraph

Changed “**copy**” to “**adopt**” in the second sentence.

Chapter 3, A Crude Look at the Whole, third paragraph

Reversed positions of “**Vilfredo Pareto’s famous power law distribution of income**” to “**these theories**” in the second sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2005.09.15

Acknowledgments, third paragraph, first four sentences

“The second is James Likens. **When I was an undergraduate economics major, the most pressing problem in economics was stagflation. After hearing few objections to Nixon’s wage and price controls from the professors teaching macroeconomics, I vowed to take no elective macroeconomics courses. This meant taking most of my elective courses from Jim.**”

were changed to:

“The second is James Likens, **the most reflective member of the Pomona economics faculty.**”

Chapter 1, Marginalist Economics' Blind Spot, first paragraph

Changed “**what we are doing**” back to “**the task at hand**” in the first sentence.

Chapter 1, Marginalist Economics' Blind Spot, fourth paragraph

Changed “**mean**” to “**be**” in the third and fourth sentences.

Chapter 2, fifth footnote, end

Added the sentence: “Consider the simple statement, “Tulips are a wise investment.””

Chapter 3, Wealth, first paragraph

Moved footnote reference from the last to the fourth sentence.

Chapter 3, *Two Means of Living Wisely*, second paragraph

Switched “**Alexanders prefer Aristotle’s**” and “**Einsteins prefer Spinoza’s**” in the last sentence.

Chapter 5, Just Taxation, sixth paragraph

Changed “**best** can policy makers combine” to “can policy makers **best** combine” in the last sentence.

Appendix B, Human Needs, last paragraph, last sentence

Moved “(**“a God’s eye view of the Universe”**)” back to the end of the last sentence of the next paragraph.

Changes in Version 2005.09.19

Chapter 2, Economics as Refining Everyday Thinking, fourth paragraph

Deleted “**statistics**” from the last sentence.

Chapter 2, Economics as Refining Everyday Thinking, fourth paragraph

Changed “**study our**” to “**explain**” in the first sentence.

Changed “**studying**” to “**explaining**” in the second sentence.

Changed “**our normative models** (the models of reality that we use to guide our actions)” to “**the intellectual tools** (words, statements, models, theories, and strategies) that we use to guide our actions” in the second sentence.

Changed “**our normative models**” to “**these tools**” in the last sentence.

Added the sentences: “**Consider the statement, “Tulips are a good investment.” If enough people use this statement to guide their actions, the price of tulips will rise enough for tulips to become a poor investment.**”

Chapter 2, Economics as Refining Everyday Thinking, fifth paragraph

Changed “**our normative models**” to “**the tools that we use to guide our actions**” in the first sentence.

Changed “**normative models**” to “**these tools**” in the second sentence.

Changed “**models**” to “**these tools**” in the last sentence.

Chapter 2, footnote 5

Deleted the sentence “**Consider the simple statement, “Tulips are a good investment.””**

Chapter 2, Economics as Refining Everyday Thinking, sixth paragraph

“Fifty years ago, Milton Friedman **proposed a pragmatic solution to the normative model** problem. **His solution was to** limit economic science to theories that predict.⁶ **This solution requires that economists, as scientists, give up the power that comes from helping decision-makers formulate alternatives.**”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Fifty years ago, Milton Friedman **avoided this** problem **by limiting** economic science to theories that predict.”

and merged with the last paragraph.

Changes in Version 2005.09.22

Chapter 1, Managerial Excellence, second paragraph

Changed ““Wise”” to “Wise” in the fourth sentence.

Chapter 4, Turbulence, last paragraph, last four sentences

“Mistrust and ignorance of **the** means of trade may constrain us from lowering turbulence. **A classic example of such mistrust and ignorance is that** of distributors who **do not allow** their customers **to exchange information** with their suppliers for fear of losing their **customers to their suppliers. Another example** is that of **employees** who fail to tell their employers about foolish procedures for fear of losing **their jobs. (See Appendix A.) Less obvious are** people who **do not** discover their genetic predispositions for fear of losing their insurance coverage. **In each of these cases, mistrust and ignorance prevent the flow of information that would cut turbulence.**”

were changed to:

“Mistrust and/or ignorance of **better** means of trade may constrain us from lowering turbulence. **Examples of this include (1)** distributors who **fail to share information about** their customers with their suppliers for fear of losing **business; (2) workers** who fail to tell their bosses about foolish procedures for fear of losing **work; and (3)** people who **fail to** discover their genetic predispositions for fear of losing their insurance coverage.”

Chapter 5, *Consider the Justice of Interventions*, second paragraph

Deleted “**justice of**” in the second sentence.

Changed ““wise”” to “wise” in the fourth sentence.

Deleted “**the justice of**” in the fourth sentence.

Changed ““Wise”” to “Wise” in the last sentence.

Appendix B, *Secular Humanism*, first paragraph, first two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Secular humanists **focus on the worldly and ignore the** spiritual. They often cite science as their reason for **dismissing our spiritual need for mystical oneness.**”

were changed to:

“Secular humanists **deny our** spiritual **need for mystical oneness.** They often cite science as their reason for **doing so.**”

Appendix B, *Secular Humanism*, second paragraph

Changed “**Ignoring**” to “**Denying**” in the first sentence.

Changes in Version 2005.09.24

Acknowledgments, fourth paragraph, last sentence

“**How could a theory be both useful (in predicting what will happen in education markets) and foolish (as a guide for selecting a career)?**”

was changed to:

“**Did I spend four years of my life studying nonsense? I delivered my term paper, an early version of this work, seventeen years late.**”

Chapter 2, Science as Refining Everyday Thinking, third paragraph

Changed “predicts and explains **everything about**” to “**we use to** predict and explain” in the third sentence.

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

Changed “Theories produce” to “**We use theories to** produce” in the first sentence.

Chapter 2, Science as Refining Everyday Thinking, sixth paragraph

Changed “theories that explain” to “theories that **we use to** explain” in the fourth sentence.

Changed “theories that predict” to “theories that **we use to** predict” in the sixth sentence.

Chapter 2, Science as Refining Everyday Thinking, seventh paragraph

Changed “predict” to “**help people to** predict” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “theory that explains” to “tool for explaining” in the fourth sentence.

Changed “theory that predicts” to “tool for predicting” in the fourth sentence.

Changed “theory that explains” to “tool for explaining” in the last sentence.

Chapter 2, Science as Refining Everyday Thinking, eighth paragraph

Changed “theory that predicts” to “tool for predicting” in the second sentence.

Changed “theory that explains” to “tool for explaining” in the fourth sentence.

Changed “theory that explain” to “tool for explaining” in the last sentence.

Chapter 2, Science as Refining Everyday Thinking, ninth paragraph

Changed “theories that predict” to “tools for predicting” in the second sentence.

Changed “theories that explain” to “tools for explaining” in the second sentence.

Changed “However, we” to “We” in the third sentence.

Chapter 2, Economics as Refining Everyday Thinking, first two paragraphs

“Whether we recognize it or not, we humans are programmed to learn how to live good lives. We are programmed to be both researchers and research subjects in an ongoing program to discover and test knowledge useful in living good lives.

“The inexhaustibility of knowledge makes it impossible to separate what happens today from what happens a thousand years from now. Further, the low cost of copying many types of useful knowledge makes it impossible to separate what happens in our society from what happens in other societies. *All human activity is part of the scientific research program of, by, and for all intelligent life.*”

were changed to:

“It is in our nature to learn to live good lives. It is in our nature to be both researchers and research subjects in the scientific research program of, by, and for intelligent life.”

Chapter 2, Economics as Refining Everyday Thinking, last paragraph

Removed italics from the last sentence.

Changed “we” to “economic agents” in the fourth sentence.

Moved first two sentences:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Fifty years ago, Milton Friedman **avoided this problem by** limiting economic science to theories that predict.⁶ A more complete pragmatic **solution** is to define economic science as the study of the ever-evolving process of discovering, testing, and applying knowledge useful in living good lives.”

to the end of the section and changed them to:

“Fifty years ago, Milton Friedman **proposed** limiting economic science to theories that **we use to** predict.⁶ A more complete pragmatic **approach** is to define economic science as the study of the scientific research program of, by, and for intelligent life. **Economic science ought to be the premier intelligent life science.**”

Chapter 4, Living Wisely, second paragraph

Changed “marginalist **theory predicts**” to “marginalists **predict**” in the last sentence.

Changes in Version 2005.09.26

Adobe version

Converted footnotes to endnotes.

Chapter 2, Refining Everyday Thinking, fourth paragraph, fourth and fifth sentences

“Under these conditions, we would want intelligent beings to satisfy their needs ever more **efficiently as this lessens killing and suffering**. We would also want intelligent beings to devote themselves to helping other life survive and thrive with preference given to other intelligent life.”

were changed to:

“Under these conditions, we would want intelligent beings to satisfy their needs ever more **wisely**. We would also want intelligent beings to devote themselves to helping others live good lives **(with preference given to other intelligent life)**.”

Chapter 2, Refining Everyday Thinking, fifth paragraph

“Justice based on Schweitzer’s reverence for life is the ideal balance of social justice, international justice, intergenerational justice, and interspecies justice. Social justice considers the needs of members of a national society. International justice considers the needs of national societies. Intergenerational justice considers the needs of generations. Interspecies justice considers the needs of species. Justice based on

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

reverence for life considers all these needs. All other forms of justice fall short of justice based on reverence for life.”

was inserted before the sixth paragraph of the *Schweitzer’s Universal Spiritual Need* section of Appendix B.

Changes in Version 2005.09.27

Chapter 4, A Crude Look at the Whole, second paragraph

“This simple model focuses on the relationship between progress and turbulence. Unlike econometric models, which try to predict how policies change the “weather,” it tries to predict how they change the “climate.” It tells us to focus on the cause of turbulence, poor decision-making, rather than on its symptoms, transient inflation and unemployment. When policies meant to treat these symptoms lower the quality of decision-making, they retard progress.”

was changed to:

“Unlike econometric models, which economists use to try to predict how policies change the “weather,” this simple model helps us to predict how policies change the “climate.” It focuses on the cause of turbulence, poor decision-making, rather than on the symptoms of turbulence, transient inflation and unemployment. When policies meant to treat these symptoms lower the quality of decision-making, they retard progress.”

Chapter 4, A Crude Look at the Whole, third paragraph

The second and third sentences:

“Early efforts to explain this network, which include the theories of *self-organized criticality*² and *modular scale-free networks*,³ are intriguing. These theories, along with Vilfredo Pareto’s famous power law distribution of income, point to a power law distribution of creative-destructive events (“catastrophes”).”

“² Bak, Per and Kan Chen “Self-Organized Criticality”, *Scientific American*, Jan. 1991: 46-53.”

“³ Barabási, Albert-László *Linked, How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*, (New York: Plume, 2003), 227-241.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Early efforts to explain this network,² along with Vilfredo Pareto’s famous power law distribution of income, point to a power law distribution of creative-destructive events (“catastrophes”).”

² Barabási, Albert-László *Linked, How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*, (New York: Plume, 2003).”

Changed “tropical storm” to “gale” in the last sentence.

Chapter 4, A Crude Look at the Whole, last paragraph

“Specialists are likely to learn much from studying computer models of networks. Wise people will use this knowledge to live more wisely. Wise policy makers will use this knowledge to improve policies for living wisely. Both will test this knowledge against experience.”

was changed to:

“Specialists are likely to learn much from studying computer models of networks. Wise decision-makers will use this knowledge to find problems to solve. They will also test this knowledge against experience.”

Chapter 5

Changed “policy maker” to “policy-maker” in all (12 occurrences).

Chapter 5, Just Taxation, fifth paragraph

Changed “are well enough off” to “have what they need” in the second sentence.

Chapter 5, Just Taxation, fifth paragraph

Changed “ensures” to “fosters” in the second sentence.

Changed “in people able” to “once we have what we need” in the third sentence.

Changes in Version 2005.09.28

Chapter 2, Science as Refining Everyday Thinking, ninth paragraph

Changed “We” back to “However, we” in the third sentence.

Chapter 6, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Deleted the last sentence: “If we accept its definitions of science (the process of refining everyday thinking) and religion (the quest to link or relink to something greater than ourselves), it reconciles science and religion.”

Chapter 6, second paragraph

Changed “The science of practical wisdom” to “It” in the first sentence.

Merged paragraph with the first paragraph.

Changes in Version 2005.09.29

Acknowledgments, ninth paragraph

Changed “‘paradigm,’ ‘decision-oriented pragmatism,’” back to “‘paradigm’” in the fifth sentence.

Chapter 2, Science as Refining Everyday Thinking, third paragraph, second two sentences

“Idealists and pragmatists differ in their approach to this task. Idealists believe that a good theory is a logical and elegant theory that we use to predict and explain a part of the Universe.”

was changed to:

“Scientists and philosophers of science differ in their approach to this task. Some believe that a good theory is a logical and elegant theory that we use to predict and explain a part of the Universe.”

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

Changed “In contrast, pragmatists” to “Others” in the first sentence.

Changed “This belief ought to lead pragmatists” to “Those who take this broad view of science ought” in the last sentence.

Deleted “the knowledge that we derive from” in the last sentence.

Chapter 2, Economics as Refining Everyday Thinking, fourth paragraph

Changed “idealism” to “reductionism” in the first sentence.

Changed “decision-oriented pragmatism” to “praxeology” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Economics as Refining Everyday Thinking, last paragraph

Deleted “pragmatic” in the second sentence.

Changes in Version 2005.09.30

Acknowledgments, fourth paragraph

Changed “nine” to “twelve” in the first sentence.

Acknowledgments, fourth paragraph

Changed “senior year” to “last semester at Pomona” in the first sentence.

Acknowledgments, new sixth paragraph

“The fourth is Harold Leavitt, who told me that the least understood and most often ignored part of decision-making is finding the best problem to solve. As Albert Einstein observed, perfection of means and confusion of ends seem to characterize our age.”

was changed to:

“The fourth through seventh are Stanford professors who helped me to understand the practical limits of analytical tools. Charles Holloway gave me a thorough understanding of decision science. Charles Horngren taught me how accounting models color analysis. William Beaver showed me the wisdom of applying economic analysis to accounting models. Harold Leavitt told me that the least understood and most often ignored part of decision-making is finding the best problem to solve. As Albert Einstein observed, perfection of means and confusion of ends seem to characterize our age.”

Acknowledgments, ninth and tenth paragraphs

Switched order and changed numbering.

Chapter 2, Science as Refining Everyday Thinking, third paragraph, last three sentences

“Scientists and philosophers of science differ in their approach to this task. Some believe that a good theory is a logical and elegant theory that we use to predict and explain a part of the Universe. This belief leads them to refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“**Most specialists in testing beliefs** believe that a good theory is a logical and elegant theory that we use to predict and explain a part of the Universe. **We** refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):”

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

“**Others believe that science** is the process of finding and testing knowledge useful in everyday life. *Those who take this broad view of science ought to ask how we use theories.*”

was changed to:

“**The decision-oriented alternative to this narrow definition of science is to define science** as the never-ending process of finding and testing knowledge useful in pursuing our ultimate ends.”

Chapter 2, Economics as Refining Everyday Thinking, second paragraph

Changed “**methods and procedures**” to “**strategies**” in the last sentence.

Changes in Version 2005.10.05

Preface, last paragraph

Changed “economic **science**” to “**economics**” in the second sentence.

Changed “economic **science** ought to **be**” to “**economists** ought to **study**” in the last sentence.

Chapter 1, Mainstream Economics’ Blind Spot, last paragraph

“Toyota’s experience with RTS **also** shows us how a high cost process with great potential for learning can be better than a low cost process with little potential for learning. **We see this lesson in the broadcast standard decisions that the Japanese and American governments made in the nineties.** The Japanese chose an analog standard for high definition television. A few years later, the Americans chose a digital standard for video. Although digital video was far more expensive than analog television, the Americans recognized that the cost of digital video was likely to fall much faster than the cost of analog television. By considering what they were likely to learn, the Americans found a better problem to solve.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“On a deeper level, Toyota’s experience with RTS shows us how a high cost process with great potential for learning can be better than a low cost process with little potential for learning. The most efficient choice is not always the wise choice.

“This important lesson deserves a second example. In the early nineties, the Japanese chose an analog standard for high definition television. A few years later, the Americans chose a digital standard for video. Although digital video was then far more expensive than analog television, the Americans recognized that the cost of digital video was likely to fall much faster than the cost of analog television. By considering what they were likely to learn, the Americans found a better problem to solve.”

Chapter 2, Refining Everyday Thinking, fourth paragraph, third sentence

“For this imagined original position of ignorance to produce completely just intellectual tools, we must consider what intellectual tools we would want to guide intelligent life if we were completely ignorant of the circumstances of our birth, which includes ignorance of what species we will be and into what era we will be born.”

was changed back to:

“For this imagined original position of ignorance to produce a completely just ultimate normative end, we must consider what ultimate normative end we would want to guide intelligent life if we were completely ignorant of the circumstances of our birth, which includes ignorance of what species we will be and into what era we will be born.”

Chapter 2, Refining Everyday Thinking, fourth paragraph, last sentence

“In Albert Schweitzer’s words:

“True ethics are world-wide. All that is ethical goes back to a single principle of morality, namely the maintenance of life at its highest level, and the furtherance of life. The maintenance of one’s own life at the highest level by becoming more and more perfect in spirit, and the maintenance at the highest level of other life by sympathetic, helpful self-devotion to it - this is ethics.”

was changed to:

“In short, we would want intelligent life to revere life.”

Chapter 4, A Crude Look at the Whole, first paragraph

Changed “critical value” to ““natural” level” in the last sentence.

Chapter 5, Just Taxation, fourth paragraph, last sentence

Changed “This leads us back to our starting point.” to “Again,” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix B, Schweitzer's Universal Spiritual Need, title

Added the following paragraph to the Schweitzer quote:

“True ethics are world-wide. All that is ethical goes back to a single principle of morality, namely the maintenance of life at its highest level, and the furtherance of life. The maintenance of one's own life at the highest level by becoming more and more perfect in spirit, and the maintenance at the highest level of other life by sympathetic, helpful self-devotion to it - this is ethics.”

Appendix B, *Secular Humanism*, last paragraph

“Denying our need for mystical oneness fosters flawed means of satisfying it. These include Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. **Secular humanists ought to heed Einstein's warning, “Science without religion is lame.”**”

was merged with the first paragraph and changed to:

“**They also ought to recognize that** denying our need for mystical oneness fosters flawed means of satisfying it. These include Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism.

“Secular humanists ought to heed Einstein's warning, “Science without religion is lame.””

Appendix B, *Religious Fundamentalism*, last paragraph

“**Religious fundamentalists ought to heed Einstein's warning, “Religion without science is blind.”**”

was changed to:

“**Consider two interpretations of John 14:5-6:**

Thomas said to him, “Lord, we do not know where you are going; how can we know the way?” Jesus said to him, “I am the way, and the truth, and the life; no one comes to the Father, but by me.”¹²

“**To those who first think of Jesus as the source of the New Testament, John 14:5-6 tells us that only those who follow the teachings of the New Testament can reach the Creator. To those who first think of Jesus as the embodiment of Creation (“the way, and the truth, and the life”), John 14:5-6 tells us that only those who follow the way, pursue the truth, and reverse life can reach the Creator. Which bears better fruit?**”

“Religious fundamentalists ought to heed Einstein's warning, “Religion without science is blind.””

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

“¹² Ibid.”

Changes in Version 2005.10.08

Chapter 1, Mainstream Economics’ Blind Spot, eighth paragraph, fourth and fifth sentences

“To calculate how often we should set up, we need to evaluate what we expect to learn. The inexhaustibility of knowledge makes this evaluation problematic.”

were changed to

“Solving this model calls for evaluating what we expect to learn. The inexhaustibility of knowledge makes this very difficult to do.”

Chapter 1, Mainstream Economics’ Blind Spot, ninth paragraph

Changed “the great value of the RTS model” to “that the most efficient choice is not always the wise choice” in the first sentence.

Chapter 1, Mainstream Economics’ Blind Spot, tenth paragraph

“On a deeper level, Toyota’s experience with RTS shows us how a high cost process with great potential for learning can be better than a low cost process with little potential for learning. *The most efficient choice is not always the wise choice.*”

was deleted.

Chapter 1, Mainstream Economics’ Blind Spot, last paragraph, end

Added the sentence: “Again, the most efficient choice is not always the wise choice.”

Chapter 2, Science as Refining Everyday Thinking, sixth paragraph

“We tend to find problems that we know how to solve. For example, production people know how to schedule production lines. Faced with uneven demand for sponge cake, which had become a popular substitute for biscuits in strawberry shortcake, Chicago baker James Dewar might have sought a better means of predicting the demand for sponge cake. Rather than a scheduling problem, Dewar saw an off-season capacity problem. He solved this problem by inventing a year-round sponge cake product, the Hostess Twinkie. In current business vernacular, his better explanation helped him to “think outside the box.””

was deleted.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, *Three Common Misbeliefs*, first paragraph

Changed “Toyota **Production System**” to “Toyota **system**” in the fourth sentence.

Changed “**Americans**” to “**manufacturing engineers**” in the fourth sentence.

Deleted the fifth and sixth sentences: “**By adopting these techniques, they believed that they could catch up. They soon discovered that by the time they adopted current Japanese techniques, the Japanese had developed new ones.**”

Chapter 5, last paragraph

Changed “**prescribes three means for decentralizing**” to “**three prescriptions help us to decentralize**” in the second sentence.

Appendix A, Introduction

“**Toyota team members have a strategy for learning. From their learn-by-doing view, more production of saleable product is not always more productive. Less can be more.**”

was changed to:

“**This folding and smoothing process produces not only saleable product but also knowledge of how to produce more wisely. More production of saleable product is not always more productive. Less **production** can be more **productive.**”**

and moved to the end of the Ever Leaner Production section.

Appendix B, Introduction, first paragraph

Changed “**teleonomic theories that aim too low**” to “**unethical theories**” in the first sentence.

Appendix B, *Schweitzer’s Mistakes*, first paragraph

Changed “**philosophical mistakes**” to “**mistakes**” in the first sentence.

Appendix B, *Schweitzer’s Mistakes*, fourth paragraph

Changed “**The third benefit of** magical mysticism is its potential to” to “**Third, magical mysticism can**” in the first sentence.

Appendix C, second footnote (HTML, first footnote Adobe version)

Changed “measuring quality” to “measuring quality **in wealthy economies**” in the last sentence.

Changes in Version 2005.10.10

Chapter 5, Conclusion, first paragraph, last sentence

“The more we exercise our better angels, the less government we need.”

was deleted.

Appendix C, first paragraph, last sentence

“Our national income accounting system fails to capture improvements in practical wisdom.”

was deleted.

Appendix C, second paragraph

“Our national income accounting system also fails to capture improvements in trust, leisure skills, trading methods, and much production technology. The problems with our accounting system are broader and deeper than most economists believe them to be.²”

² Economists recognize problems in measuring services and improvements in quality. Most economists do not recognize that all consumer goods and services are means to living wisely. The problem of measuring services is universal. Worse, the problem of measuring quality in wealthy economies is far more difficult than most economists believe it to be.”

was changed to:

“Mainstream economists recognize problems in measuring services and improvements in quality. However, they do not recognize that all consumer goods and services are means to living wisely. The problem of measuring services is universal. Worse, the problem of measuring quality is far more difficult than mainstream economists believe it to be. *The marginalist concept of wealth is as pernicious a guide in knowledge economies as the mercantilist concept of wealth is in industrial economies.*”

Appendix C, last paragraph

Changed “the factories” to “factory managers” in the third sentence.

Changed “the factories” to “managers” in the fourth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “our accounting problems” to “our **national income** accounting” in the fifth sentence.

Changed “crisis” to “**major** crisis” in the last sentence.

Changes in Version 2005.10.12

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

Changed “**ultimate** ends” to “ends” in the first sentence.

Chapter 2, ninth (HTML) footnote / fourteenth (Adobe) endnote

“Teleonomic theories are theories that look to our internal programming to explain motivation. **Modern biology supports using teleonomic theories as the foundation for explaining cultural evolution. It tells us that our beliefs and behaviors are evolving at a pace many orders of magnitude faster than the genetic level programming that underlies our higher level internal programming. For all practical purposes, we can assume that our fully realized internal programming is fixed.**

“Although we can improve the process by which our genetic programming develops into our higher-level programming, we cannot improve our higher level internal programming beyond the bounds set by our genetic programming. Therefore, we can safely assume that our fully realized internal programming is fixed. This may not always be the case. **We are most likely to define the next economic era by our ability to change our genetic programming.** A major challenge of **the current** era must be to accumulate the wisdom we will need to meet the **moral** challenges **of the coming era.**”

was changed to:

“Teleonomic theories are theories that look to our internal programming to explain motivation. Our beliefs and behaviors are evolving at a pace many orders of magnitude faster than the genetic level programming that underlies our higher level internal programming. Although we can improve the process by which our genetic programming develops into our higher-level programming, we cannot improve our higher level internal programming beyond the bounds set by our genetic programming. Therefore, we can safely assume that our fully realized internal programming is fixed. This may not always be the case. A major challenge of **our** era must be to accumulate the **practical** wisdom we will need to meet the challenges **that come with the ability to change our genetic programming.**”

Chapter 3, second (HTML) footnote / seventeenth (Adobe) endnote

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Deleted the third and fourth sentences: “As analysts, we choose the analytical period. Following the lead of Alfred Marshall, when we wish to predict how others will act, we measure the analytical period relative to change. We speak of the short run, the long run, etc.”

Deleted “— our time horizon —” in the last sentence.

Appendix A, Organization, Procedures, and Tools, second paragraph

Changed “requires” to “calls for” in the last sentence.

Appendix A, Organization, Procedures, and Tools, eighth paragraph

Changed “The Japanese” to “Team members” in the second sentence.

Changed “the production worker” to “a team member” in the third sentence.

Appendix A, Organization, Procedures, and Tools, eleventh paragraph

Changed “The Japanese” to “Team members” in the first sentence.

Appendix A, Production Links, first paragraph

Changed “Toyota Production System requires” to “Toyota system calls for” in the first sentence.

Appendix A, Production Links, second paragraph

Changed “These cycle” to “These containers cycle” in the second sentence.

Appendix A, Cooperation, first paragraph

Changed “requires” to “calls for” in all (five occurrences).

Appendix C, second paragraph, last sentence

“The marginalist concept of wealth is as pernicious a guide in knowledge economies as the mercantilist concept of wealth is in industrial economies.”

was deleted.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Acknowledgments, fourth paragraph, last two sentences

“Did I spend four years of my life studying nonsense? I delivered my term paper, an early version of this work, seventeen years late.”

was changed to:

“I delivered my term paper, *Wealth in the Information Age, A Humanistic Approach to Economics*, seventeen years late.”

Acknowledgments, sixth paragraph, second through fourth sentences

“In the summer of 1984, I was head of information systems and human resources at Star Forms, our family owned business forms manufacturing company. Star Forms was then thirteen years into what was to be a fourteen-year run of 33% annual sales growth and 34% annual return on equity. We achieved this by acting and learning faster than our competitors did.”

were changed to:

“In the summer of 1984, I was head of information systems and human resources at Star Forms, a business forms manufacturing company that had returned over thirty percent per year on equity for more than a dozen years. We achieved this remarkable record by acting and learning faster than our competitors did”

Chapter 1, Mainstream Economics’ Blind Spot, last paragraph, last sentence

“Again, the most efficient choice is not always the wise choice.”

was changed to:

“*The wise look beyond the current “efficiency frontier.”*”

Chapter 1, Pursuing Ultimate Ends, last paragraph

Changed “knowledge-based economies” to “knowledge economies” in the second sentence.

Chapter 2, Economics as Refining Everyday Thinking, seventh paragraph

“Consider how we would have used this decision-oriented process to refine early modern theories about the solar system. Copernicus’s simpler, more elegant, and less thoroughly developed theory of planets traveling around the sun in circular orbits could not help people to predict better than the best Ptolemaic theory, which had the sun and other planets traveling around the earth in epicyclical orbits. We would have accepted Copernicus’s theory as a tool for explaining, but we would have rejected it as a tool for

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

predicting. Copernicus's theory later proved its worth as a tool for explaining by helping Kepler formulate his theory of planets traveling around the sun in elliptical orbits."

was changed to:

"Consider how we would have used this decision-oriented process to refine early modern theories about the solar system. Copernicus's theory of planets traveling around the sun in **relatively simple epicyclical** orbits could not help people to predict **the trajectories of the planets** better than the best Ptolemaic theory, which had the sun and other planets traveling around the earth in **relatively complex** epicyclical orbits. **In addition to its relative simplicity, Copernicus's theory was able to explain the apparent retrograde motion of the planets and variations in the planets' brightness.** We would have accepted Copernicus's theory as a tool for explaining, but we would have rejected it as a tool for predicting **the trajectory of the planets**. Copernicus's theory later proved its worth as a tool for explaining by helping Kepler formulate his theory of planets traveling around the sun in elliptical orbits."

Chapter 2, Economics as Refining Everyday Thinking, eighth paragraph, third sentence

"Elliptical orbits are **as simple** and elegant **as circular** orbits."

was changed to:

"Elliptical orbits are **simpler** and **more** elegant **than epicyclical** orbits."

Chapter 2, Economics as Refining Everyday Thinking, second paragraph

Changed "calculus" to "calculus, **statistical analysis**" in the last sentence.

Chapter 2, Refining Everyday Thinking, second paragraph

Changed "**Only** fools" to "**F**ools" in the second to last sentence.

Chapter 3, Introduction, first paragraph

"The **first chapter showed us how the** marginalist conceptual framework tends to blind us to better subordinate ends. **It then** proposed a managerial alternative to the marginalist concept of excellence. This chapter proposes managerial alternatives to **five other** marginalist concepts: wealth, consumption, trade, production, and profit."

was changed to:

"The marginalist conceptual framework tends to blind us to better subordinate ends. **The first chapter** proposed a managerial alternative to the marginalist concept of

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

excellence. This chapter proposes managerial alternatives to **the** marginalist concepts of wealth, consumption, trade, production, and profit.”

Chapter 3, Wealth, first paragraph

Changed “**alike**” to “**both**” in the first sentence.

Changed “**However, they**” to “**They**” in the second sentence.

Deleted the last sentence: “**Unlike marginalists, managers consider practical wisdom.**”

Chapter 3, Consumption, first paragraph

Added the last sentence: “**Unlike marginalists, managers consider practical wisdom.**”

Chapter 3, Trust, second paragraph

Changed “knowledge-**based** economies” to “knowledge economies” in the first sentence.

Chapter 3, Profit, fifth footnote (HTML) / twentieth endnote (Adobe)

Changed “*positive*” to “*temporal*” in the second sentence.

Changed “ten dollar lottery ticket” to “ten-dollar lottery ticket” in the all (2 occurrences).

Chapter 5, Free Trade, third paragraph, last two sentences

Changed “wisdom” to “**practical** wisdom” in the second to last sentence.

Changed “**practical** wisdom” back to “wisdom” in the last sentence.

Chapter 5, Justice, first three paragraphs

“**Taxes change our actions. Just taxes hinder foolish actions or foster wise ones. Unjust taxes hinder wise actions or foster foolish ones. Taxes on alcohol and tobacco, which discourage us from consuming these things, are just. Taxes on job training, which discourage us from acquiring useful knowledge, are unjust.**”

“**In theory, taxes on income are unjust in that they discourage us from using our knowledge to help others live wisely and from risking our resources to help others live wisely. In reality, we are not perfectly wise. Some of us earn our incomes helping others live foolishly. All of us spend at least some of our incomes foolishly. Are income taxes just?**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The case against corporate income taxes is clear. These taxes discourage corporate decision-makers from taking risks and acquiring knowledge, yet their burden falls on corporate customers and owners. It would be better to tax customers and owners in ways that foster wise actions.”

were deleted.

Chapter 5, Justice, new first three paragraphs

“The case against personal income taxes is not clear. If we were perfectly wise, we would share our wealth wisely. There would be no need for governments to force us to do so. Regrettably, we are not perfectly wise. Again, how do policy-makers tax in ways that foster wise actions?”

“Policy-makers face two problems in taxing us in ways that foster wise actions. The first is how to ensure that all of us have what they need to acquire practical wisdom. The second is how to foster the wisest means of fostering wise actions.

“Government agencies best ensure that we have what we need to acquire practical wisdom. Competition, in combination with moral vision, best fosters wise actions once we have what we need to acquire practical wisdom. How can policy-makers best combine these two means of fostering wise actions?”

were changed to:

“If we were perfectly wise, there would be no need for governments to force us to decide wisely. There would be no need for governments to force us to share our wealth wisely. Regrettably, we are not perfectly wise. Some of us earn our incomes helping others live foolishly. All of us spend at least some of our incomes foolishly. None of us is perfectly altruistic.

“Government policy-makers do not have the knowledge to force us to decide wisely. The best they can do is to encourage us to learn to decide wisely. They face two problems in doing so. The first is how to ensure that all of us have what we need to learn to decide wisely. The second is how best to encourage us to learn to decide wisely.

“Governments best ensure that we have what we need to learn to decide wisely. Competition, in combination with moral vision, best encourages us to learn to decide wisely once we have what we need to learn to decide wisely. How can policy-makers best combine these two means of encouraging us to learn to decide wisely when making tax policy?”

Chapter 5, Justice, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “progressive income tax” to “progressive **personal** income tax” in the first sentence.

Deleted the third sentence: “**The progressive income tax system would fund the government safety net program.**”

Changed “**All other withdrawals would be income. After the last owner of the account dies, the government would tax all funds not willed to charities at a rate at least as progressive as that of the income tax system.**” to “**The government would tax all other withdrawals as income.**”

Changes in Version 2005.10.18

Preface, sixth paragraph

Changed “**including**” to “**especially**” in the second to last sentence.

Chapter 1, Mainstream Economics’ Blind Spot, second paragraph

Changed “**very important way**” to “**a profound way**” in the first sentence.

Chapter 1, Mainstream Economics’ Blind Spot, eighth paragraph

Changed “**very difficult**” to “**difficult**” in the fourth sentence.

Chapter 1, Mainstream Economics’ Blind Spot, ninth paragraph

Changed “**inventory clerks**” to “**stock clerks**” in the fifth sentence.

Chapter 1, Mainstream Economics’ Blind Spot, last paragraph

Changed “**important lesson**” to “**crucial lesson**” in the first sentence.

Chapter 1, Pursuing Ultimate Ends, first paragraph

Changed “**understand the value of learning**” to “**are wise**” in the last two sentences.

Chapter 2, Science as Refining Everyday Thinking, third footnote (HTML) / eighth endnote (Adobe)

Changed “**relationship**” to “**relation**” in the first sentence.

Chapter 2, Science as Refining Everyday Thinking, last paragraph, end

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Added the paragraph:

“The lesson here is as much economic as it is philosophical. The quality standards of producers ought to reflect the needs of consumers. The university of smiths, the university of tailors, and other craft guilds learned this lesson long ago. The universities of scholars ignore it at their peril.”

Chapter 2, Economics as Refining Everyday Thinking, third paragraph

Changed “culture” to “human action” in the first sentence.

Changed “culture” to “human action” in the first sentence.

Changed “relationship” to “relation” in the second sentence.

Chapter 2, Refining Everyday Thinking, third paragraph

Changed “relationship” to “relation” in the second sentence.

Chapter 3, *Pleasure and Pain*, first paragraph, fourth sentence

“For example, exposure to too much sunshine is not immediately painful.”

was changed to:

“Eating food that is bad for us is often pleasurable. The first few minutes of exercise are often painful.”

Chapter 3, *Virtuous Circles*, second paragraph, last sentence

“Energy, clarity, and wholeness help us (1) lose ourselves in activity; (2) act longer and more often; (3) lose ourselves in learning and training; and (4) manage our lives better, which gives us more resources for pleasurable activities.”

was changed to:

“Energy, clarity, and wholeness help us to act and to find pleasure in acting.”

Chapter 3, *Practical Wisdom*, second paragraph, last two sentences

“Pleasure and joy can mask the pain of unsatisfied foolish activities and the pain of unsatisfied needs that we are able to satisfy wisely. They often lead us to construct fools’ paradises.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Pleasure and joy can mask the pain of unsatisfied foolish activities. **Pleasure and joy can also mask** the pain of unsatisfied needs that we are able to satisfy wisely. They **can** lead us to construct fools’ paradises.”

Chapter 3, *Practical Wisdom*, third paragraph, last two sentences

“We face a variety of potential vicious circles involving practical wisdom and deprivation. Collectively these form the cycle of poverty.”

were broken off into a new paragraph.

Chapter 3, *Alternative to Living Wisely*, first paragraph, last sentence

“Their pursuit of pleasure makes them vulnerable to mindlessly **responding to a** need with an activity that fails to satisfy **it**.”

were changed to:

“Their pursuit of pleasure makes them vulnerable to mindlessly **masking the pain of an unmet** need with **the pleasure of** an activity that fails to satisfy the **unmet need**.”

Chapter 3, Trade, entire section

Changed “**trading relationship**” to “**trade relation**” in all (7 occurrences).

Chapter 3, Trade, second paragraph

Changed “**Human** organizations” to “**Commercial** organizations” in the first sentence.

Changed “**important**” to “**useful**” in the first sentence.

Changed “**relationships**” to “**trade relations**” in the first sentence.

Changed “**industrial age** economies” to “**industrial** economies” in the second sentence.

Changed “**information age** economies” to “**knowledge** economies” in the first sentence.

Changed “**transportation**” to “**transport**” in the sixth and eighth sentences.

Chapter 3, Trust, second paragraph

Changed “**important**” to “**useful**” in the first sentence.

Chapter 3, Trust, third paragraph

Changed “**relationship**” to “**trade relation**” in the fifth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “relationships” to “relations” in the fifth sentence (2 occurrences).

Chapter 3, *Three Common Misbeliefs*, first paragraph

Changed “work-in-process (WIP) inventory” to “work-in-process inventory (WIP)” in the fourth sentence.

Changed “WIP inventory” to “WIP” in the fifth sentence.

Chapter 3, *Three Common Misbeliefs*, fourth paragraph

Changed “billions” to “hundreds of millions” in the second sentence.

Chapter 4, *Adaptiveness*, first paragraph

Changed “important factors” to “strategic assets” in the fourth sentence.

Chapter 4, *Adaptiveness*, fourth paragraph

“Advances that promote decentralized decision-making also can change decision-making strategies in ways that lower turbulence. For example, the invention of a decision-management tool that improves managers’ ability to judge the quality of subordinates’ decision-making will tend to improve decision-making by encouraging subordinates to focus more on making better decisions and less on covering their backsides.”

was deleted.

Chapter 4, *A Crude Look at the Whole*, third paragraph

Changed “violate” to “exceed” in the last sentence.

Changed “violates” to “exceeds” in the last sentence.

Chapter 4, *Conclusion*, first paragraph

Changed “wealthy” to “rich” in the first sentence.

Changed “wise” to “wise” in the third sentence.

Chapter 5, *Decentralization*, first paragraph

Changed “important” to “useful” in the first sentence.

Chapter 5, *Provide Moral Vision*, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Wise leaders use a **common** vision to coordinate decision-making. What a strategic vision is to business, a moral vision is to government. Moral vision **is especially important in wealthy economies**. As we become wealthier, we live higher in our hierarchy of needs, where it is harder to know what we need. Further, **as all of us become wealthier**, the pace of change tends to quicken, which makes living wisely more difficult.”

was changed to:

“Wise leaders use vision to coordinate decision-making. What a strategic vision is to business, a moral vision is to government. Moral vision **becomes more, not less important as we become wealthier**. The higher we live in our hierarchy of needs, the harder it is to know what we need. Further, the pace of change tends to quicken, which makes living wisely more difficult.”

Chapter 5, Free Trade, first paragraph

“**Given the wisdom of living wisely, we might expect there to be a trend toward seeking to live wisely**. The history of the last three hundred years supports a **very different** trend. We see this trend clearly in England, where the **dominant** culture shifted from **the ideal of** fulfilling one’s role in God’s plan to **a crassly hedonistic version of** Jeremy Bentham’s **ideal of** “the greatest good for the greatest number.” **Other industrializing countries followed England**. We have learned to associate this trend toward seeking pleasure with industrialization, urbanization, and globalization.”

was changed to:

“The history of the last three hundred years supports a **cultural** trend **away from following traditions toward seeking pleasure**. We see this trend clearly in England, where the cultural **ideal changed** from fulfilling one’s role in God’s plan to **hedonist** Jeremy Bentham’s “greatest good for the greatest number.” We have learned to associate this trend toward seeking pleasure with industrialization, urbanization, and globalization.”

Chapter 5, Free Trade, second paragraph

Changed “**cooperation and** practical wisdom.” to “practical wisdom **as well as cooperation**” in the fifth sentence.

Chapter 5, Just Taxation, entire section

Changed “**decide** wisely” to “**live** wisely” in all (8 occurrences).

Chapter 5, Just Taxation, second paragraph

Changed “**encourage**” to “**spur**” in the second and fifth sentences.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**decide**” to “**live**” in the second and fifth sentences.

Chapter 5, Just Taxation, third paragraph

Changed “Competition, **in combination with** moral vision, best **encourages** us” to “Competition **and** moral vision **best** spur us” in the second sentence.

Changed “policy-maker” to “**tax** policymaker” in the last sentence.

Changed “**encouraging us to learn to decide wisely when making tax policy**” to “**helping us to live wisely**” in the last sentence.

Chapter 5, Just Taxation, last paragraph

Changed “**P**olicy-makers” to “**Tax** policymakers” in the first sentence.

Chapter 5, all

Changed “**p**olicy-makers” to “**p**olicymakers” in all.

Afterword, third paragraph

Changed “air**p**lanes” to “air**l**iners” in the fourth sentence.

Appendix A, *Traditional Production Systems*, sixth paragraph

Changed “**p**ermit” to “**l**et” in the fifth sentence.

Appendix A, *Smoothing Flows*, third paragraph

Changed “WIP **i**nventory” to “WIP” in the third sentence.

Appendix A, *Production Links*, third paragraph

Changed “**i**nventory” to “**s**tock” in the first sentence.

Changed “**i**nventory area” to “area” in the fifth sentence.

Appendix A, *Production Links*, last paragraph

“A production team can **tighten an individual kanban link** by removing a kanban pair from **the** link. This makes it more difficult to keep the link in balance. **A team inducing knowledge of how to run a process with less WIP inventory will remove kanban from the process** until one of the production links fails. If the team finds a readily solvable problem, it solves the problem, balances the process, and continues production. If not,

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

it balances the process and continues. If the link continues to fail after repeated balancing, the team replaces the removed kanban pair and continues production.”

was moved to the beginning of the Knowledge Induction section and changed to

“A production team can **induce the creation of knowledge of how to produce using less WIP** by removing kanban pairs from **production** links until one of the production links fails. If the team finds a readily solvable problem, it solves the problem, balances the process, and continues production. If not, it balances the process and continues. If the link continues to fail after repeated balancing, the team replaces the removed kanban pair and continues production.”

Appendix A, *Knowledge Induction*, new fifth paragraph

Changed “WIP **inventory**” to “WIP” in the first sentence.

Appendix A, *Visibility*, first paragraph

Changed “**inventory** levels” to “stock level markers” in the first sentence.

Changed “**inventory** areas” to “**stock** areas” in the first sentence.

Appendix A, *Kaizen*, first paragraph

Changed “**trading** relationships” to “**trade** relations” in the second sentence.

Appendix A, *Cooperation*, third paragraph

Changed “**trading** relationships” to “**trade** relations” in the first sentence.

Changed “relationships” to “relations” in the second sentence (2 occurrences).

Appendix B, *Schweitzer’s Universal Spiritual Need*, fourth paragraph

Changed “relationships” to “relations” in the second sentence (3 occurrences).

Appendix B, *Schweitzer’s Mistakes*, fifth paragraph

Changed “**mental** world” to “world” in the fifth sentence.

Appendix B, *Religious Fundamentalism*, last paragraph

Added the sentence “Under what conditions does it bear the better fruit?”

Appendix C, third paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**is less dependent**” to “**depends less**” in the six sentence.

Changed “**major crisis**” to “**catastrophe**” in the last sentence.

Changes in Version 2005.10.22

Preface, first paragraph

Changed “**capstone**” to “**high point**” in the second sentence.

Changed “**anti-expediency**” to “**long run**” in the last sentence.

Preface, second paragraph

Changed “**the people at Long Term Capital Management**” to “**many traders**” in the fourth sentence.

Preface, fourth paragraph

Added the sentence “**It would be a research program for living wisely.**”

Preface, fifth paragraph

“**For lack of a better term, I call strategies for living based on means of refining theories *strategies for learning*. Strategies for learning focus our attention on what we ought to learn.**”

was appended to the sixth paragraph and changed to:

“Strategies for learning **to live wisely** focus our attention on what we ought to learn.”

Preface, sixth paragraph

Changed “**assembly manager**” to “**manager**” in the first sentence.

Changed “**Taiichi Ohno**” to “**Ohno-san**” in the last sentence.

Acknowledgments, new fifth paragraph

Changed “**living wisely**” to “**good people and good products**” in the last sentence.

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The **decision-oriented** alternative **to this narrow definition of science** is to define science as the never-ending process of finding and testing knowledge useful in pursuing our ends.”

was changed to

“The alternative is to define science as the never-ending process of finding and testing knowledge useful in pursuing our ends.”

Chapter 2, Science as Refining Everyday Thinking, last paragraph

“The **lesson here** is as much economic as it is **philosophical**. The quality standards of producers ought to reflect the needs of consumers. The university of smiths, the university of tailors, and other craft guilds learned this lesson long ago. The **universities** of scholars ignore it at their peril.”

was merged with the fourth paragraph and changed to

“**We ought to define science as the pursuit of useful knowledge rather the pursuit of the truth, which many describe as a God’s eye view of the Universe.** The quality standards of producers ought to reflect the needs of consumers **rather than the spiritual needs of producers.** The university of smiths, the university of tailors, and other medieval craft guilds learned this lesson long ago. The **spiritual descendents of the** university of scholars ignore it at their peril.”

Chapter 4, Turbulence, second paragraph

Changed “**decision-making worsens**” to “**decisions worsen**” in the last sentence.

Added the sentence:

“Worse, if money policy authorities greatly expand the money supply, they are likely to create a great rise in the inflation rate and a fall in the unemployment rate (boom) followed by a great fall in the inflation rate and a fall in the unemployment rate (bust).”

Chapter 4, Adaptiveness, entire section

“**Adaptive people are those who relieve the stress of change wisely. Improving the factors of wise decision-making tends to improve our ability to adapt to the stress of change. Previous chapters discussed the roles that practical wisdom and trust play in wise decision-making. Two other strategic assets are liberty and capital. We need the freedom to select the best choice. We also need the capital to carry out the best choice.**

“**Decision-making in organizations requires a strategy for who performs what tasks under what incentives. These decision-making strategies strongly affect on turbulence in the flow of resources. For example, in difficult times, managers of firms that pay**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

workers on a salary-plus-bonus basis decide how much to cut bonuses rather than how many jobs to cut. This tends to lower turbulence in labor markets.

“Advances that speed responses can change these decision-making strategies in ways that lower turbulence. The Italian clothing industry has showed the rest of the world how to use technology to respond much more quickly to changes in demand. Firms that formerly produced an entire season’s supply many months in advance can now produce a few weeks’ supply a few days in advance. If one line proves popular, a firm can rapidly produce more of that line. If a line proves unpopular, the firm only has to mark down a few weeks’ worth of stock rather than an entire season’s worth.

“In freely evolving economies, we experiment with **new decision-making methods**. We adopt the best **methods** and discard the worst. We become ever more adaptive.”

was merged with preceding section and changed to:

“People who adapt well to turbulence do so by deciding wisely. Organizations that adapt well also do so by deciding wisely. Deciding wisely in organizations calls for a wise plan for who performs what tasks under what incentives. For example, Toyota adapts well to changes in demand by producing “just-in-time.” From a managerial perspective, the Toyota system is nothing more than a complex plan for who performs what tasks under what incentives.

“In freely evolving economies, we experiment with **alternatives, including alternative managerial strategies**. We adopt the best and discard the worst. We become ever more adaptive.”

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “cause of turbulence, poor decision-making” to “**causes** of turbulence, **progress and** poor decision-making” in the second sentence.

Chapter 6, first paragraph

Changed “**strategy for learning to live** wisely” to “**research program for living** wisely” in the first sentence.

Changed “**replaces**” to “**rejects**” in the second sentence.

Appendix A, The Toyota System

Greatly simplified and shortened the appendix.

Appendix B, Secular Humanism, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Secular humanists deny our spiritual need for mystical oneness. They often cite science as their reason for doing so. They ought to recognize that there is no conflict between refining everyday thinking (science) and the quest to link or relink with something greater than ourselves (religion).¹⁰ They also ought to recognize that denying our need for mystical oneness fosters flawed means of satisfying it. These include Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism.”

was changed to:

“Secular humanists deny our spiritual need for mystical oneness. They ought to recognize that denying our need for mystical oneness fosters such flawed means of satisfying it as Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Even more, they ought to recognize that the quest to mystically link or relink with something greater than ourselves, which includes the quests for the transcendent values of truth, beauty, and goodness, supports refining everyday thinking. Wisely conceived, religion supports science.¹⁰”

Appendix B, Religious Fundamentalism, second paragraph

Added the sentence: “How do we know?”

Changes in Version 2005.10.26

Chapter 1, Managerial Excellence, fourth footnote / third endnote

Changed “Note that the” to “The” in the first sentence.

Chapter 2, Economics as Refining Everyday Thinking, fifth footnote / tenth endnote

Changed “theoretical errors” to “errors” in the last sentence.

Chapter 2, Economics as Refining Everyday Thinking, ninth footnote / fourteenth endnote

Changed “that come” to “that will come” in the last sentence.

Chapter 3, Introduction, end

Added the paragraphs:

“These concepts are tools for living wisely in a freely progressing society. Like the managerial concept of excellence in means, they are normative rather than temporal. They are tools for helping us to follow the ideal path that emerges from our natures.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Following our ideal paths, which is to say following our true self-interest, leads not only to good lives for ourselves, but also to good societies. Adam Smith called the mechanism that links individual and collective welfare “the invisible hand.” Followers of Adam Smith call it “self-organization.” Complexity scientists call it “emergence.” Whatever we call it, this mechanism underlies the usefulness of these managerial concepts in progressing toward our ultimate ends.”

Chapter 4, Turbulence, fourth paragraph

Changed “**plan**” to “**strategy**” in the third and last sentences.

Chapter 4, A Crude Look at the Whole, fourth paragraph

Changed “**Wise decision-makers**” to “**The wise**” in the last sentence.

Chapter 5, Decentralization

Moved *Provide Moral Vision* ahead of *Consider the Justice of Interventions*.

Chapter 5, Just Taxation, second paragraph

Changed “**Government policymakers**” to “**Policymakers**” in the first sentence.

Changed “**spurring**” back to “**encouraging**” in the second sentence.

Chapter 5, Just Taxation, third paragraph

Changed “**Tax policymakers**” to “**Policymakers**” in the last sentence.

Changed “**helping us to live wisely**” to “**encouraging us to learn to live wisely**” in the last sentence.

Chapter 5, Just Taxation, fourth paragraph

Changed “**Government policymakers**” to “**Policymakers**” in the first sentence.

Appendix B, Secular Humanism, first paragraph

Changed “quests for **the transcendent values of truth, beauty, and goodness**” to “**quest for truth**” in the third sentence.

Changes in Version 2005.10.28

Acknowledgments, tenth paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“He did not grasp that our need for moral vision rises with the pace of progress.”

was deleted.

Chapter 3, Introduction, second paragraph

Changed “freely progressing” to “open” in the first sentence.

“They are tools for helping us to follow the ideal path that emerges from our natures.”

was changed to:

“They are tools for helping us follow our true self-interest.”

Chapter 3, Introduction, last paragraph

“Following our ideal paths, which is to say following our true self-interest, leads not only to good lives for ourselves, but also to good societies. Adam Smith called the mechanism that links individual and collective welfare “the invisible hand.” Followers of Adam Smith call it “self-organization.” Complexity scientists call it “emergence.” Whatever we call it, this mechanism underlies the usefulness of these managerial concepts in progressing toward our ultimate ends.”

was deleted.

Chapter 3, *Three Common Misbeliefs*, first paragraph

Changed “work-in-process inventory (WIP)” to “work-in-process (WIP)” in the fourth sentence.

Chapter 5, Moral Vision, first paragraph, last two sentences

“The higher we live in our hierarchy of needs, the harder it is to know what we need. Further, the pace of change tends to quicken, which makes living wisely more difficult.”

were changed to:

“The better we live, the harder it is to know what we need. The better we all live, the faster things change. The faster things change, the more difficult it is to know our true self-interest.”

Appendix B, Human Needs, last paragraph

Changed “goodness” to “justice” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix B, Schweitzer's Universal Spiritual Need, first paragraph

Changed “goodness” to “justice” in the last sentence.

Appendix B, *Schweitzer's Mistakes*, first paragraph

“Schweitzer made two mistakes. The first was to assume the existence of an infinite Being in the infinite Being is a matter of faith, not of reason. The philosophically correct assumption is that humans have a need for mystical oneness that we satisfy either by embracing the world and life or by embracing the complete absence of the world and life (oblivion).”

was changed to:

“Schweitzer made two mistakes. The first was to assume that our need for mystical oneness is a need for mystical oneness with the infinite Being. Belief in the infinite Being is a matter of faith, not of reason. We see the need for mystical oneness need in religion. However, we also see it in the quest for truth, beauty, and justice and in nationalism, socialism, fascism, and communism. We do not need to assume the existence of an infinite Being to explain our need for mystical oneness.”

Appendix B, *Schweitzer's Mistakes*, second paragraph, second through fourth sentences

“Magical mysticism provides us with three benefits. First, its unworldly focus can help us cope with worldly stress and disappointments. Second, it can help us improve performance.”

were changed to:

“Magical mysticism can help us improve performance.”

Appendix B, *Schweitzer's Mistakes*, fourth paragraph

Changed “Third, magical mysticism can” to “Magical mysticism can also” in the first sentence.

Changed “belief systems, world-view” to “mental worlds (conceptual frameworks, belief systems, and world-views)” in the last sentence.

Appendix B, *Schweitzer's Mistakes*, last paragraph

“We elevate our consciousness when we laugh at jokes that play on inconsistencies in our conceptual frameworks. We laugh when a child asks, “Why do freedom fighters fight against freedom?” We also laugh when a stooge throws away a priceless vase because he confused being priceless with being worthless. The greater clarity and

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

energy of **elevated consciousness** can trigger changes in **beliefs**, which can further **elevate consciousness**, which can trigger further changes in **belief**, and so on. A small event can trigger an avalanche of change that produces the illusion of being magically transported to a new world. This magical process involves **suspending** the stream of words that connects our consciousness to our mental worlds.”

was changed to:

“We laugh when a child asks, “Why do freedom fighters fight against freedom?” We also laugh when a stooge throws away a priceless vase because he confused being priceless with being worthless. **Jokes that play on inconsistencies in our mental worlds raise our energy and clarity. Raised** energy and clarity can trigger changes in **our mental worlds**, which can further raise energy and clarity, which can trigger further changes in **our mental worlds**, and so on. A small event can trigger an avalanche of change that produces the illusion of being magically transported to a new world. This magical process involves **breaking** the stream of words that connects our consciousness to our mental worlds.”

Appendix B, Balanced Excellence, first paragraph

Changed “**Given this belief**” to “**They believe that**” in the last sentence.

Appendix B, Balanced Excellence, third paragraph

Changed “**As Maslow observed, healthy**” to “**Healthy**” in the last sentence.

Appendix B, Heroism, first paragraph

Changed “**extreme Dionysian means to mystical oneness remains unsanctioned**” to “**self-destructive emotion remains unchecked**” in the first sentence.

Appendix B, Heroism, second paragraph

“**The decision to die heroically is far too important to be guided by ritual. Only** fools and knaves ritualize heroic death. We owe it to ourselves to understand the ignorance at the heart of all forms of ritual death. **We can easily see this ignorance in ancient Mayan human sacrifices, which were based on the false belief that human sacrifice insured good crops. We can also see it in ancient Jainist suicides by starvation, which were based** in the false belief that the **premature death of a Jainist saint** would benefit the rest of life more than a **saintly** life devoted to **it**.”

was changed to:

“**Those who** ritualize heroic death **would have us sacrifice ourselves foolishly**. We owe it to ourselves to understand the ignorance at the heart of all forms of ritual death. Jainist **saints starved themselves to death** in the false belief that **their** deaths would

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

benefit the rest of life more than a life devoted to **revering life**. **Mayan priests called for human sacrifice in the false belief that it would lead to a good harvest.**”

Appendix B, *Heroism*, third paragraph, first three sentences

“**In modern times, illiberal leaders, leaders who have centralized decision-making beyond what is wise, promoted most ritual deaths. To compete against liberal societies, both in reality and in the hearts and minds of their subjects, illiberal leaders promote sacrifice.**”

were changed to:

“**Authoritarian leaders often call on their subjects to sacrifice themselves for their societies.**”

Appendix B, *Heroism*, new second sentence paragraph, last sentence

“**Illiberal leaders push sacrifice over practical wisdom.**”

was changed to:

“***Fools and knaves ritualize heroic death.***”

Merged the second and third paragraphs.

Appendix B, *Heroism*, last paragraph

“**In contrast, the wise temper sacrifice with practical wisdom.**”

were changed to:

“**The wise temper the call for sacrifice with practical wisdom.**”

Changed “**In contrast, the wise**” to “**The wise**” in the first sentence.

Moved the paragraph up two paragraphs.

Appendix B, *Secular Humanism*, first paragraph

“Secular humanists deny our **spiritual** need for mystical oneness. **They** ought to recognize that **denying our need for mystical oneness fosters such flawed means of satisfying it as Marxist-Leninism, Nazism, Fascism, Maoism, and Baathism. Even more, they ought to recognize that** the quest to mystically link or relink with something greater than ourselves, which includes the quest for truth, supports refining everyday thinking. Wisely conceived, religion supports science.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Secular humanists **often** deny our need for mystical oneness. **Those who do** ought to recognize that the quest to mystically link or relink with something greater than ourselves, which includes the quest for truth, supports refining everyday thinking. Wisely conceived, religion supports science.”

Changes in Version 2005.10.31

Preface

Added the title quotation:

“The wise man says, “I am looking for the truth,” and the fool, “I have found the truth.” — *Russian proverb*”

Moved Preface to behind Acknowledgments.

Acknowledgments, tenth paragraph

Changed “**high school**” to “**Grinnell High School**” in the third sentence.

Changed “**comprehend**” to “**grasp**” in the fourth sentence.

“**I also recognized that there was a bigger problem. Like his Grinnell High School and Grinnell College classmate, George Leland Bach, my father believed in the primacy of decision rules. He was looking for moral values expressed as decision rules, not for a moral vision expressed as a strategy for learning.**”

was deleted.

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

“**The alternative is to define science as the never-ending process of finding and testing knowledge useful in pursuing our ends. We ought to define science as the pursuit of useful knowledge rather than the pursuit of the truth, which many describe as a God’s eye view of the Universe. The quality standards of producers ought to reflect the needs of consumers rather than the spiritual needs of producers. The university of smiths, the university of tailors, and other medieval craft guilds learned **this lesson long ago. The spiritual descendents of the university of scholars** ignore it at **their** peril.**”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Long ago members of the university of smiths, the university of tailors, and other medieval craft guilds learned that their quality standards ought to reflect the needs of their customers. We ignore this lesson at our peril. We ought to test theories by how well they help us to live wisely.”

Chapter 2, Economics as Refining Everyday Thinking, second paragraph

Changed “ever more sophisticated (1)” to “(1)” in the third sentence.

Changed “particle accelerators” to “x-rays, radar” in the third sentence.

Chapter 2, Science as Refining Everyday Thinking, seventh and eighth paragraphs

“Consider how we would have used this decision-oriented process to refine early modern theories about the solar system. Copernicus’s theory of planets traveling around the sun in relatively simple epicyclical orbits could not help people to predict the trajectories of the planets better than the best Ptolemaic theory, which had the sun and other planets traveling around the earth in relatively complex epicyclical orbits. In addition to its relative simplicity, Copernicus’s theory was able to explain the apparent retrograde motion of the planets and variations in the planets’ brightness. We would have accepted Copernicus’s theory as a tool for explaining, but we would have rejected it as a tool for predicting the trajectory of the planets. Copernicus’s theory later proved its worth as a tool for explaining by helping Kepler formulate his theory of planets traveling around the sun in elliptical orbits.

“Kepler’s theory was able to predict better than the best Ptolemaic theory. We would have accepted it as a tool for predicting. Elliptical orbits are simpler and more elegant than epicyclical orbits. We would have accepted Kepler’s theory as a tool for explaining. Kepler’s theory later proved its worth as a tool for explaining by helping Newton formulate his theories of gravity and mechanics.”

were changed to:

“Consider how we would have used this decision-oriented process to refine early modern theories about the solar system. Copernicus had the planets traveling around the sun in epicyclical orbits. The best Ptolemaic theory had the sun and other planets traveling around the earth in more complex epicyclical orbits. People using the best Ptolemaic theory could predict the overall trajectories of the planets better than people using the Copernican theory could. We would have rejected the Copernican theory as a tool for predicting the motion of the planets. However, people using the Copernican theory could explain the apparent retrograde motion of the planets and variations in the planets’ brightness. We would have accepted it as a tool for explaining the motion of the planets. It later proved its worth as a tool for explaining by helping Kepler formulate his theory of planets traveling around the sun in elliptical orbits.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“People using Kepler’s theory could predict the motions of the planets better than those using the best Ptolemaic theory could. We would have accepted it as a tool for predicting the motions of the planets. People using Kepler’s theory could explain the apparent retrograde motion of the planets and variations in the planets’ brightness. Further, elliptical orbits are simpler and more elegant than epicyclical orbits. We would have accepted it as a tool for explaining the motions of the planets. It later proved its worth as a tool for explaining the motions of the planets by helping Newton formulate his theories of gravity and mechanics.”

Chapter 2, Refining Everyday Thinking, first paragraph

Changed “of wise behavior” to “for living wisely” in the third and last sentences.

Chapter 2, Refining Everyday Thinking, second paragraph

“We ought to cull teleonomic theories that fail to help us identify what we need to live wisely. Until we understand the complex relations between our bodies, minds and spirits, we ought to cull all teleonomic theories that focus on any one of these levels of abstraction. Focusing on any one of these levels will tend to blind us to needs that emerge on other levels. Hence, we ought to cull (1) theories based solely on sociobiology, which focus on our bodies; (2) theories based solely on postmodernism, which focus on our minds; and (3) theories based solely on our need to relink with the infinite Being, which focus on our spirits. Fools focus on their bodies, on their minds, or on their spirits. The wise focus on their bodies, minds, and spirits.”

was changed to:

“We ought to cull theories that fail to help us identify what we need to live wisely. We ought to cull those that consider only our bodies, or our minds, or our spirits. We ought to cull those based solely on sociobiology, which consider only our bodies; those based solely on postmodernism, which only our minds; and those based solely on our need to relink with the infinite Being, which consider only our spirits. Fools consider only their bodies, or their minds, or their spirits. The wise consider their bodies, minds, and spirits.”

Chapter 2, Refining Everyday Thinking, third paragraph

Changed “teleonomic theories” to “theories” in the first sentence.

Changed “Doing so wisely requires that we” to “In doing so, we ought to” in the second sentence.

Chapter 2, Refining Everyday Thinking, fourth paragraph

Changed “intelligent beings” to “them” in the second to last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**other intelligent life**” to “**those who can help them to live wisely**” in the second to last sentence.

Chapter 2, Refining Everyday Thinking, fifth paragraph

Changed “**teleonomic theories**” to “**those**” in the second sentence.

Chapter 2, Refining Everyday Thinking, last paragraph

Changed “**and the best means to them** rather than on the **presumed** right” to “rather than on the right” in the second sentence.

Chapter 6, title quotation

“The wise man says, “I am looking for the truth,” and the fool, “I have found the truth.” — *Russian proverb*”

was changed to:

“The rapid progress true science now makes, occasions my regretting sometimes that I was born so soon. It is impossible to imagine the height to which may be carried, in a thousand years, the power of man over matter. We may perhaps learn to deprive large masses of their gravity and give them absolute levity, for the sake of easy transport. Agriculture may diminish its labor and double its produce; all diseases may be by sure means prevented or cured, not excepting even that of age, and our lives lengthened at pleasure even beyond the antediluvian standard. O that moral science were in a fair way of improvement, that men would cease to be wolves to one another, and that human beings would at length learn what they now improperly call humanity.” — *Benjamin Franklin*”

Afterword, first paragraph

Changed “**six** years” to “**seven** years” in the first sentence.

Changes in Version 2005.11.01

Acknowledgments, first paragraph

Changed “**:**” to “**,**” in the first sentence.

Changed “To this, I add:**:**” to “To this I add,**,**” in the first sentence.

Chapter 1, Mainstream Economics' Blind Spot,

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Deleted “**Mainstream**” from the title.

Chapter 1, Mainstream Economics' Blind Spot, title and first five paragraphs

“**Mainstream Economics' Blind Spot**”

Words are tools for thinking and communicating, which, when used well, focus our attention on what is important to the task at hand. They belong to the class of resources that are useful patterns of matter, energy, space, and time. We can think of this class as *knowledge resources*.

“Knowledge resources differ from other resources in a profound way: although they can be costly to create, to reproduce, and to place into production, once in production, they are free. *Using a pattern does not exhaust it.*”

“The inexhaustibility of knowledge gives knowledge in use an advantage over knowledge not yet in use. When we combine knowledge into a network, this local “lock-in” effect can become significant.² Once we have learned to conceptualize the world in one way, it is difficult for us to do so in another.³ For example, once we learned to see wealth as consumer goods and the resources to produce consumer goods, it is difficult to see wealth as anything else. Yet this is what we must do if we are to overcome our industrial age bias.

“We frame useful world-views with concepts that define ends and excellence in means. In mainstream economics, these key concepts are the one hundred and thirty year old marginalist concepts of wealth and efficiency. Mainstream economists define “wealth” to be the goods and services that we buy to satisfy our wants and the resources for producing these consumer goods and services. They define “efficiency” to be excellence in using scarce resources to reach a given end: the most efficient means to a given end is the one that uses the least valuable scarce resources.

“Concepts focus our attention on certain objects, which tends to blind us to others. Mainstream economics’ concept of excellence in means — “efficiency” — focuses our attention on how we allocate scarce resources to reach given ends. This focus tends to blind us to the possibility of finding better ends, particularly those that involve learning.”

were changed to:

“**Basic Concepts**”

Concepts are tools for thinking and communicating, which help us to achieve our ends. They are *knowledge resources*.

“Knowledge resources are useful patterns of matter, energy, space, and time. They differ from other resources in a profound way: although they can be costly to create, to copy, and to place into use, once in use, they are free. *Using a pattern does not exhaust it.*”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The inexhaustibility of knowledge gives knowledge in use an advantage over knowledge not yet in use. When we combine knowledge into a network, this local “lock-in” effect can become **important**.² Once we have learned to **think of** the world **using one network of concepts (conceptual framework)**, it is **hard** for us to do so in another.³ Yet this is what we must do if we are to overcome our industrial age bias.

“We **base** useful **conceptual frameworks on the** concepts of *ends* and *excellence in means*. In mainstream economics, these **basic** concepts are “wealth” and “efficiency.” Economists define “wealth” to be the goods and services that we buy to satisfy our wants and the resources for producing these consumer goods and services. They define “efficiency” to be excellence in using scarce resources to reach a given end. **These two economic concepts have become part of our common sense.**

“Mainstream Economics' Blind Spot

“The economic concept of excellence in means — “efficiency” — helps us achieve our ends using the least valuable scarce resources. It also tends to blind us to better ends. **We can see this in the economic order quantity (EOQ) model.**”

Chapter 1, Economics' Blind Spot, new second paragraph, first sentence

“**We can see how this marginalist definition of excellence in means tends to blind us by studying the economic order quantity (EOQ) model.**”

was deleted.

Chapter 1, Economics' Blind Spot, new third paragraph

Changed “**production team members**” to “**workers**” in the first sentence.

Changed “**subordinates**” to “**workers**” in the third sentence.

Chapter 1, Economics' Blind Spot, new fifth paragraph

Changed “**support**” to “**create**” in the fifth sentence.

Changed “**production workers**” to “**workers**” in the fifth sentence.

Changed “**incorrectly, thirty or more days of parts may need to be reworked or discarded**” to “**wrongly, they may need to scrap** thirty or more days of parts” in the fifth sentence.

Changed “**quality improvement**” to “**learning**” in the last sentence.

Added the sentence: “**With such great advantages, it is not surprising that RTS has swept through the car industry.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Economics' Blind Spot, last paragraph

“This **crucial** lesson deserves a second example. In the early nineties, the Japanese chose an analog standard for high definition television. A few years later, the Americans chose a digital standard **for video**. Although digital video was **then far more expensive** than analog **television**, the Americans **recognized** that the cost of digital video was likely to fall much faster **than the cost of analog television**. By considering what they were likely to learn, the Americans found a better problem to solve. *The wise look beyond the current “efficiency frontier.”*”

was changed to:

“This lesson deserves a second example. In the early nineties, the Japanese chose an analog standard for high definition television. A few years later, the Americans chose a digital standard. Although digital was **much more costly** than analog, the Americans **saw** that the cost of digital was falling much faster. By considering what they were likely to learn, the Americans found a better problem to solve. *The wise look beyond the current “efficiency frontier.”*”

Chapter 1, Managerial Excellence, first paragraph

Changed “**Mainstream** economists” to “**E**conomists” in the first sentence.

Changed “also **efficient**” to “**are** also **wise**” in the second sentence.

Changed “**effective**” to “**wise**” in the second sentence.

Chapter 1, Managerial Excellence, last paragraph

“**Rather than thinking about excellence in means as efficiency, we can think about it as the combination of efficiency and effectiveness, where (1) efficiency is a matter of choosing the means that uses the least valuable resources in reaching a given subordinate end and (2) effectiveness is a matter of choosing subordinate ends well.** This pair of **managerial** concepts helps us divide the problem of how best to pursue our ultimate ends into smaller, more tractable problems without losing sight of our ultimate ends.”

was changed to:

“**Managers divide the concept of *excellence in means* into two parts. The first is *effectiveness*, which they define as excellence in choosing subordinate ends. The second is *efficiency*, which they define as excellence in choosing the best means to subordinate ends.** This pair of concepts helps **them** divide the problem of how best to pursue **their** ultimate ends into easier to solve problems without losing sight of **their** ultimate ends.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Pursuing Ultimate Ends, last paragraph

Changed “Three” to “Four” in the first sentence.

Changed the last sentence from:

“Practical wisdom, trust, and liberty are strategic assets in our pursuit of our ultimate ends.”

to:

“The fourth is capital, which we need to carry out wise choices. Practical wisdom, trust, liberty, and capital are strategic assets in our pursuit of our ultimate ends.”

Chapter 3, Introduction, first paragraph

Changed “marginalist” to “economic” in all (3 occurrences).

Chapter 3, Wealth, first paragraph

Changed “marginalists” to “economists” all (2 occurrences).

Chapter 3, Consumption, first paragraph

Changed “marginalists” to “economists” in the first sentence.

Changed “marginalist perspective” to “economic view” in the second sentence.

Chapter 3, *Human Capital, Work, and Leisure*, first paragraph

Changed “marginalist perspective” to “economic view” in the first sentence.

Chapter 4, Living Wisely, second paragraph

Changed “marginalists” to “economists” in the fourth sentence.

Chapter 4, Conclusion, first paragraph

Changed “catastrophe” to “major catastrophes” in the fourth sentence.

Appendix C, first paragraph

Changed “Mainstream economic” to “Economic” in the last sentence.

Appendix C, second paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**Mainstream** economic” to “**Economic**” in the first sentence.

Changed “**mainstream** economists” to “economists” in the last sentence.

Changes in Version 2005.11.07

Acknowledgments, fifth paragraph

Moved Holloway from the first to third position.

Acknowledgments, tenth paragraph

Changed “**My father**” to “**he**” in the second sentence.

Chapter 1, Basic Concepts

Changed title to “Concepts.”

Changed the paragraphs from:

“Concepts are tools for thinking and communicating, which help us to achieve our ends. They are *knowledge resources*.”

“**Knowledge resources** are useful patterns of matter, energy, space, and time. **They** differ from other **resources** in a profound way. Although **they** can be costly to create, to copy, and to place into use, once in use, they are free. *Using a pattern does not exhaust it.*”

“**The inexhaustibility** of knowledge gives knowledge in use an advantage over knowledge not yet in use. When we combine knowledge into a network, this local “lock-in” effect can become **important**.² Once we have learned to think of the world **using one conceptual framework**, it **is** hard for us to do so in another.³ Yet this is what we must do if we are to **overcome our industrial age bias**.”

“**We base useful conceptual frameworks on the concepts of *ends* and *excellence in means*. In mainstream economics, these basic concepts are “wealth” and “efficiency.” Economists define “wealth” to be the goods and services that we buy to satisfy our wants and the resources for producing these consumer goods and services. They define “efficiency” to be excellence in using scarce resources to reach a given end. These two economic concepts have become part of our common sense.”**”

to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Concepts are tools for thinking and communicating, which, **when used wisely**, help us to achieve our ends. They are *knowledge resources*.”

“Knowledge resources are useful patterns of matter, energy, space, and time. **These resources** differ from others in a profound way. Although **knowledge resources** can be costly to create, to copy, and to place into use, once in use, they are free. *Using a pattern does not exhaust it.*”

“The inexhaustibility of knowledge gives knowledge in use an advantage over knowledge not yet in use. When we combine knowledge into a network, this local “lock-in” effect can become **large**.² Once we have learned to think of the world **in one way**, it **can be** hard for us to do so in another.³ Yet this is what we must do if we are to **live wisely**.”

Chapter 1, Economics' Blind Spot, first paragraph

Added the sentence:

“**We base useful worldviews on the concepts that define *ends and excellence in means*.**”

Italicized the new third sentence:

“*It also tends to blind us to better ends.*”

Changed “this” to “this **drawback**” in the last sentence.

Chapter 1, Economics' Blind Spot, second paragraph

Changed ““**economic**”” to ““**efficient**”” in the fourth sentence.

Chapter 1, Economics' Blind Spot, third paragraph

Changed “**managers**” to “**those**” in the first sentence.

Changed “**workers**” to “**we**” in the first sentence.

Chapter 1, Managerial Excellence, second paragraph

Changed “**Managers**” to “**Recognizing this, managers**” in the first sentence.

Changed “**the best means**” to “means” in the third sentence.

Chapter 1, Pursuing Ultimate Ends, first paragraph

Changed “**often make**” to “make” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “learning **through experience**” to “learning” in the last sentence.

Chapter 1, Pursuing Ultimate Ends, second paragraph

Changed “**often** embed” to “embed” in the first sentence.

Changed “**nuclear power stations based on submarine designs**” to “**household lead paint**” in the second sentence.

Changed “**the three-fifths clause in the United States Constitution**” to “**the Versailles Treaty**” in the second sentence.

Chapter 1, Pursuing Ultimate Ends, last paragraph

Changed “**our decisions** by improving the factors **that we use in deciding**” back to “**decision-making** by improving the factors **of decision-making**” in the first sentence.

Changed “**wise**” to “**our**” in the seventh sentence.

Chapter 2, Science as Refining Everyday Thinking, second paragraph

Changed “knowledge **about the world**” to “**worldly** knowledge” in the third sentence.

Changed “**worldly** knowledge” to “knowledge” in the fourth sentence.

Chapter 2, Science as Refining Everyday Thinking, fourth paragraph

“Long ago members of the university of smiths, the university of tailors, and other medieval craft guilds learned that their quality standards ought to reflect the needs of their customers. **We ignore this lesson at our peril. We ought to test theories by how well they help us to live wisely.**”

was changed to:

“Long ago members of the university of smiths, the university of tailors, and other medieval craft guilds learned that their quality standards ought to reflect the needs of their customers **rather than their own needs. Producers of theories** ignore this lesson at their peril.”

Chapter 2, Economics as Refining Everyday Thinking, second paragraph

Changed “These **inventions** include” to “These include” in the third sentence.

Chapter 2, Economics as Refining Everyday Thinking, third paragraph

Changed “great” to “**greatest**” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Deleted “(words, statements, models, theories, and strategies)” from the third sentence.

Chapter 2, Refining Everyday Thinking, first paragraph

Changed “human nature” to “our nature” in the second sentence.

Chapter 2, Refining Everyday Thinking, last paragraph

Changed “ultimate ends” back to “ultimate ends and the best means to them” in the last sentence.

Chapter 3, Introduction, first paragraph

Changed “conceptual framework” to “worldview” in the first sentence.

Changed “excellence” to “excellence in means” in the second sentence.

Chapter 3, Introduction, last paragraph

Changed “follow” to “pursue” in the last sentence.

Chapter 4, Turbulence, fourth paragraph

Changed “perspective” to “viewpoint” in the last sentence.

Chapter 4, A Crude Look at the Whole, third paragraph

Changed “the occasional major event to exceeds the “natural” level of turbulence, much as the occasional gale exceeds the “natural” level of wind on Bonaire” to “sporadic major events to exceed the “natural” level of turbulence. We ought to expect sporadic gales of creative destruction” in the last sentence.

Afterword, seventh paragraph

“Those on the right ought to know that the case for liberty depends on the assumption that we seek to live wisely. We cannot separate our right to choose from our responsibility to choose wisely.”

was changed to:

“Those on the right ought to know that we cannot separate our right to choose from our responsibility to choose wisely.”

Appendix A, title

““Less is more.” — Robert Browning”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

was changed to:

““Upward, not Northward” was the clue to the whole proof. — *Edwin Abbott*”

Appendix A, Ohno's Vision, fourth paragraph

Changed “the dual kanban production links” to “these links” in the second sentence.

Deleted the third sentence: “Stretching these links increases WIP.”

Changed “creates” to “uncovers” in the new third sentence.

Appendix A, A Learning Worldview, last paragraph, second paragraph

Changed “perspective” to “viewpoint” in the third sentence.

Appendix A, A Learning Worldview, last paragraph

“Traditional production systems aim at producing efficiently. The Toyota system aims at producing ever more wisely. We can see this difference in the Toyota practice of allowing any team member to stop an entire line in order to solve a pressing problem. To efficiency experts, this practice is irrational. To Toyota team members, it is common sense. Less production (of saleable product) can be more productive. Our reach should always exceed our grasp.”

was changed to:

“In Edwin Abbott’s novel, *Flatland*, characters performed apparent miracles by moving through dimensional boundaries. Similarly, Toyota has performed apparent miracles by rapidly pushing back its “efficiency frontiers.” It thrived by learning wisely.”

Appendix D

Added appendix from material previously deleted from Appendix A.

Changes in Version 2005.11.10

Chapter 2, Science as Refining Everyday Thinking, sixth paragraph

Added the sentence:

“This set includes quantum mechanics and marginalist economics.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Living Wisely, first paragraph

Eliminated colons in the last two sentences by splitting each in two.

Chapter 4, Turbulence, first paragraph

Changed “related” to “other” in the second sentence.

Chapter 4, Turbulence, second paragraph, last sentence

“Worse, if money policy authorities greatly expand the money supply, they are likely to create a great rise in the inflation rate and a fall in the unemployment rate (boom) followed by a great fall in the inflation rate and a fall in the unemployment rate (bust).”

was changed to:

“Worse, if central bankers greatly expand or contract the money supply, they will create turbulence on a much larger scale.”

Chapter 4, Turbulence, third paragraph

Changed “Economic turbulence” to “Tubulence” in the first sentence.

Chapter 4, Turbulence, fourth paragraph

“People who adapt well to turbulence do so by deciding wisely. Organizations that adapt well also do so by deciding wisely. Deciding wisely in organizations calls for a wise strategy for who performs what tasks under what incentives. For example, Toyota adapts well to changes in demand by producing “just-in-time.” From a managerial viewpoint, the Toyota system is nothing more than a complex strategy for who performs what tasks under what incentives.

was deleted.

Chapter 4, Turbulence, last paragraph

Deleted “, including alternative managerial strategies” in the first sentence.

Chapter 4, A Crude Look at the Whole, first paragraph, second and third sentences

“Substituting knowledge for non-knowledge resources creates turbulence. As turbulence rises, people will spend resources responding to it, which will leave them fewer resources for substituting knowledge for non-knowledge resources.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Living more wisely creates turbulence. As turbulence rises, people will spend resources responding to it, which will leave them fewer resources for living more wisely.”

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “simple” to “crude” in the first sentence.

Chapter 4, A Crude Look at the Whole, third paragraph

“We can think of an economy as a network of knowledge. Early efforts to explain this network,² along with Vilfredo Pareto’s famous power law distribution of income, point to a power law distribution of creative-destructive events (“catastrophes”). If this is the case, we ought to expect sporadic major events to exceed the “natural” level of turbulence. We ought to expect sporadic gales of creative destruction.”

was deleted. The footnote was moved to the end of the first sentence of the following paragraph.

Chapter 4, A Crude Look at the Whole, third paragraph

Changed “to exceed” to “that exceed” in the third sentence.

Changed “sporadic gales of creative destruction” to “gales of creative destruction that follow a power law” in the last sentence.

Chapter 4, Conclusion, title

Changed title to “Franklin’s Curse.”

Chapter 4, Franklin’s Curse, third paragraph, fifth sentence

“Arguably, they also sow the seeds of major catastrophes.”

was changed to:

“In as much as the rest of the world continues to progress, they sow the seeds of catastrophe.”

Afterword, last paragraph

Changed “state-of-the-world conservatives” to “status quo conservatives” in the last sentence.

Appendix A, last paragraph, first sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Ohno’s **vision** called for **the knowledge** of how to (1) cut setup costs to insignificance, (2) match continuous production quality, (3) coordinate production processes precisely, and (4) maintain high rates of machine tool availability.”

was changed to:

“Ohno **wanted to combine the best of continuous and batch production. This called for knowing** how to (1) cut setup costs to insignificance, (2) match continuous production quality, (3) coordinate **batch** production processes precisely, and (4) maintain high rates of machine tool availability.”

Changes in Version 2005.11.11

Chapter 1, Concepts, second paragraph

Changed “**Knowledge** resources” to “**They**” in the third sentence.

Chapter 1, Managerial Excellence, first paragraph

Deleted the sentence:

“**Choosing the right problem to solve is as important as choosing the right solution to a given problem.**”

Chapter 1, Managerial Excellence, last paragraph, first sentence

“**Recognizing this**, managers divide the concept of *excellence in means* into two parts.”

was changed to:

“**Wise managers know that choosing the right problem to solve is as important as choosing the right solution to a given problem. They** divide the concept of *excellence in means* into two parts.”

Chapter 1, Managerial Excellence, last paragraph, last two sentences

“The second is *efficiency*, which they define as excellence in choosing means to subordinate ends. **This pair of** concepts helps us divide the problem of how best to pursue our ultimate ends into easier to solve problems without losing sight of our ultimate ends.⁴”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The second is *efficiency*, which they define as excellence in choosing means to subordinate ends.⁴ **In current parlance, these two managerial concepts help us to “think outside the box.” They help us to divide the problem of how best to pursue our ultimate ends into easier to solve problems without losing sight of our ultimate ends.**”

Chapter 2, Science as Refining Everyday Thinking, title

Changed title to “**Science.**”

Chapter 2, Science, third paragraph

Changed “**our beliefs**” back to “**theories**” in the first sentence.

Changed “**beliefs**” back to “**theories**” in the second sentence.

Changed “**We**” back to “**They**” in the third sentence.

Chapter 2, Science, fourth paragraph

Changed “**Producers of theories**” to “**Members of the university of scientists**” in the first sentence.

Added the sentence: “**They are members of a guild, not a religious order.**”

Chapter 2, Science, fifth paragraph, third footnote / seventh endnote

Added the sentence: “**The distinction between prediction and explanation, like the distinction between efficiency and effectiveness, depends on the problem scale.**”

Chapter 2, Science, seventh paragraph

Changed “**decision-oriented**” to “**testing**” in the first sentence.

“**People using** the best Ptolemaic theory **could** predict the overall trajectories of the planets **better** than **people using** the Copernican theory **could**. **We** would have rejected the Copernican theory as a tool for predicting the motion of the planets. **However, people using** the Copernican theory **could use it to** explain the apparent retrograde motion of the planets and variations in the planets’ brightness.”

were changed to:

“**Many experts believe that** the best Ptolemaic theory **was a better tool for** predicting the overall trajectories of the planets than the Copernican theory **was**. **If true, we** would have rejected the Copernican theory as a tool for predicting the motion of the planets. **All experts agree that** the Copernican theory **was a better tool for** explaining the apparent retrograde motion of the planets and variations in the planets’ brightness.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “as a tool for explaining” to “in this role” in the seventh sentence.

Chapter 2, Science, eighth paragraph

“People using Kepler’s theory could predict the motions of the planets better than those using the best Ptolemaic theory could. We would have accepted it as a tool for predicting the motions of the planets. People using Kepler’s theory could explain the apparent retrograde motion of the planets and variations in the planets’ brightness. Further, **elliptical orbits are** simpler and more elegant **than epicyclical orbits.**”

were changed to:

“Kepler’s theory was a better tool for predicting the motions of the planets than the best Ptolemaic theory. We would have accepted it as a tool for predicting the motions of the planets. Kepler’s theory was as at least as good as a tool for explaining the retrograde motion of the planets and variations in the planets’ brightness as the Copernican theory was. Further, **it was** simpler and more elegant.”

Changed “as a tool for explaining the motions of the planets” to “in this role” in the last sentence.

Chapter 2, Science, last paragraph, last sentence

“*Science is a never-ending process.*”

was moved to a new paragraph and changed to:

“*Science is the never-ending process of refining everyday thinking.*”

Chapter 2, Economics as Refining Everyday Thinking, title

Changed title to “**Economic Science.**”

Chapter 2, Economic Science, third paragraph, second sentence

“The greatest difficulty in studying human action is **that there is a** complex (reflexive⁴ / recursive) relation between the intellectual tools that we use to guide our actions and reality:”

was changed to:

“The greatest difficulty in studying human action is **the** complex (reflexive⁴ / recursive) relation between the intellectual tools that we use to guide our actions and reality.”

Chapter 3, Introduction, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The economic worldview tends to blind us to better subordinate ends. The first chapter proposed a managerial alternative to the economic concept of excellence in means. This chapter proposes managerial alternatives to the economic concepts of wealth, consumption, trade, production, and profit. These concepts are tools for living wisely in an open society. Like the managerial concept of excellence in means, they are normative rather than temporal. They are tools for helping us pursue our true self-interest.”

was changed to:

“This chapter puts forward managerial alternatives to the economic concepts of wealth, consumption, trade, production, and profit. Like the managerial concept of excellence in means, these concepts are normative rather than temporal. They are tools for helping us to find problems to solve.”

Chapter 3, Profit, footnote 5 / endnote 19

Changed “including” to “which includes the” in the first sentence.

Chapter 4, Turbulence, last paragraph

“In freely evolving economies, we experiment with alternatives. We adopt the best and discard the worst. We become ever more adaptive.”

was changed to:

“In freely evolving economies, we test methods of smoothing flows. We adopt the best and discard the worst. We become ever better at smoothing flows. (See Appendix D.)”

Chapter 5, title

Changed title from “Government Policy” to “Governing Wisely.”

Chapter 5, Introduction, title

Changed title to “Key Factors.”

Chapter 5, Key Factors, first paragraph

“Governing wisely is a matter of improving the lives of the governed by improving the quality of decision-making. What makes up a good strategy for governing wisely? This chapter considers three factors: decentralization, free trade, and just taxation.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Governing wisely is a matter of improving the lives of the governed. This in turn is a matter of improving the quality of decision-making. One key factor is the freedom to choose. Another is the quality of doing what we ought to do. In political terms, these key factors are liberty and justice.”

Chapter 5, Decentralization, title

Changed title to “Liberty.”

Chapter 5, Liberty, first paragraph

“We cannot communicate much useful knowledge. Sixty years ago, F. A. Hayek used this simple fact to explain why decentralized decision-making tends to make better use of knowledge than centralized decision-making does.² The following three prescriptions help us decentralize wisely.”

was changed to:

“We are not able to communicate much useful knowledge. Sixty years ago, F. A. Hayek used this simple fact to explain why people closest to problems ought to be free to choose. Only they can use the knowledge that they are not able to communicate.² The following actions help leaders and policymakers govern free people wisely.”

Chapter 5, Provide Moral Vision, first paragraph

“Wise leaders use vision to coordinate decision-making. What a strategic vision is to business, a moral vision is to government. Moral vision is especially useful in wealthy economies. The better we live, the harder it is to know what we need. The better we all live, the faster things change. The faster things change, the more difficult it is to know our true self-interest.”

was changed to:

“Wise leaders use moral vision to encourage people to decide wisely. Moral vision is especially useful in wealthy economies. The better we live, the harder it is to know what we need. Further, the better we all live, the faster things change. The faster things change, the harder it is to live wisely.”

Chapter 5, Consider the Justice of Interventions, first paragraph

“Government policymakers decide who makes what decisions under what incentives. Those who fail to consider learning approach this issue much differently than those who do. “Rational” policymakers focus on the behavior of individuals. They pass laws that prescribe just behavior or proscribe unjust behavior whenever the direct benefits of enforcing laws exceed the direct costs of enforcing them. In contrast, wise policymakers focus on the interventions of governments. They choose between

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

prescribing a helpful behavior and letting us learn that the behavior helps us. They also choose between proscribing a harmful behavior and letting us learn that the behavior harms us. Wise policymakers consider not only the costs and benefits of enforcing laws but also the costs and benefits of learning.”

was changed to:

“Policymakers decide who makes what decisions under what incentives. The wise consider the costs and benefits of learning. They choose between controlling our behaviors and letting us learn whether our behaviors help or harm us. Wise policymakers judge their interventions rather than our behaviors.”

Chapter 5, *Consider the Justice of Interventions*, second paragraph

Changed “effectiveness” to “authority” in the third and fourth sentences.

Chapter 5, Free Trade, title

Changed title to “*Lower Trade Barriers.*”

Chapter 5, *Lower Trade Barriers*, second paragraph

Deleted “to this difficult problem ” in the third sentence.

Deleted “as well as cooperation ” in the fifth sentence.

Chapter 5, Just Taxation, title

Changed title to “Justice.”

Chapter 5, Conclusion, title

Changed title to “Choosing Leaders.”

Chapter 5, Choosing Leaders, first paragraph

Changed “continuously” to “continually” in the first sentence.

Afterword, last paragraph

Changed “critical” to “key” in the last sentence.

Changed “wise decision-making” to “deciding wisely” in the last sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2005.11.14

Preface, fifth paragraph

Changed “*especially*” back to “*including*” in the second to last sentence.

Acknowledgments, fifth paragraph

Changed “history” to “**American history and German language**” in the second to last sentence.

Added the sentence: “**I also recognized that my father was looking for moral values embedded in decision rules, not for a moral vision embedded in a strategy for learning.**”

Chapter 1, Pursuing Our Ultimate Ends, second paragraph

Added “**languages,** ” and “**the mercantilist concept of wealth,** ” to the second sentence.

Changed “**forward not only by creating knowledge but also by correcting past mistakes**” to “**through a tangle of past mistakes**” in the last sentence.

Chapter 1, Pursuing Our Ultimate Ends, last paragraph, first sentence

“We can **improve decision-making** by improving the factors of **decision-making.**”

was changed to:

“We can **undo many old mistakes and avoid making many new ones** by improving the factors of **deciding wisely.**”

Chapter 2, Refining Everyday Thinking, third paragraph

Italicized “*normative*” and “*temporal*” in the second sentence.

Chapter 3, Introduction, first paragraph

Added “**in the pursuit of living wisely**” to the last sentence.

Chapter 4, Turbulence, first three paragraphs

“Economic turbulence is the uneven flow of economic resources. **Turbulence in the** flow of one resource tends to create **turbulence in the** flow of other resources. **Turbulence in the** flow of money and goods tends to cause **turbulence in the** flow of labor. **Turbulence in the** flow of labor tends to cause **turbulence in the** flow of money

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

and goods. *Transient inflation and unemployment are symptoms of economic turbulence.*

“Poor decisions worsen turbulence in the flow of resources. For example, if manufacturers in an industry adopt an innovative process, progress occurs with little turbulence. However, if they fail to adopt the new process and other firms enter the industry to exploit this mistake, the result is likely to be a rise in the inflation rate and a fall in the unemployment rate followed by a fall in the inflation rate and a rise in the unemployment rate. Worse, if central bankers greatly expand or contract the money supply, they will create turbulence on a much larger scale.

“Turbulence wastes time and other resources. Capturing the benefit of lowering turbulence may call for trading with those hurt by it. Mistrust and/or ignorance of better means of trade may constrain us from lowering turbulence. Examples of this include (1) distributors who fail to share information about their customers with their suppliers for fear of losing business; (2) workers who fail to tell their bosses about foolish procedures for fear of losing work; and (3) people who fail to discover their genetic predispositions for fear of losing their insurance coverage.”

were changed to:

“Economic turbulence is the uneven flow of economic resources. Uneven flow of one resource tends to create uneven flow of other resources. Uneven flow of money and goods tends to cause uneven flow of labor. Uneven flow of labor tends to cause uneven flow of money and goods. *Transient inflation and unemployment are symptoms of economic turbulence.*

“Poor decisions create turbulence. If we take a new job across the country, find that it does not satisfy our needs, and then return to our old job, we create ripples of change that flow through the economy. Poor decisions also worsen turbulence. If we respond to a rise in the price of a product by replacing it with another product, find the new product does not satisfy our needs, and return to the first product, we add to the ripples of change.

“Turbulence wastes time and other resources. Capturing the benefit of smoothing flows may call for trading with those hurt by uneven flows. Mistrust and/or ignorance of better means of trade may constrain us from smoothing flows. Examples of this include (1) distributors who fail to share information about their customers with their suppliers for fear of losing business; (2) workers who fail to tell their bosses about foolish procedures for fear of losing work; and (3) people who fail to discover their genetic predispositions for fear of losing their insurance coverage.”

Chapter 4, A Crude Look at the Whole, last paragraph

Changed “much” to “much about progress and turbulence” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**knowledge** networks” to “networks” in the first sentence.

Chapter 5, *Control the Money Supply Passively*, first paragraph

Changed “ **Monetary policymakers**” to “**Central bankers**” in the first sentence.

Changed “**obscures**” to “**hides**” in the first sentence.

Changed “**obscure** the best problem to solve:” to “**hide** the best problems to solve,” in the third sentence.

Chapter 5, *Control the Money Supply Passively*, second paragraph

Changed “**Policymakers**” to “**Central bankers**” in the second sentence.

Changed “ **policymakers**” to “**they**” in the fourth sentence.

Changed “**alternatives** created by these two choices” to “**choices** created by these two **major** choices” in the last sentence.

Appendix A, *Ohno’s Vision*, title

Added “**Normative**” to the title.

Appendix A, *Ohno’s Normative Vision*, first paragraph

Changed “**traditional** means” to “**their** means **of making cars and trucks**” in the second sentence.

Appendix A, *Ohno’s Normative Vision*, second paragraph

“Ohno **wanted to combine the best of continuous and batch production**. This called for knowing how to (1) cut setup costs to **insignificance**, (2) match **continuous** production quality, (3) coordinate batch production **processes** precisely, and (4) maintain high rates of machine tool availability.”

was changed to:

“Ohno’s **vision** called for (1) **cutting** setup costs to **almost nothing**, (2) **matching mass** production quality, (3) **coordinating** batch production precisely, and (4) **maintaining** high rates of machine tool availability.”

Appendix A, *Ohno’s Normative Vision*, last paragraph

Changed “**vision**” to “**goal**” in the first sentence.

Changes in Version 2005.11.15

Afterword, first paragraph

“Over the last seven years, I have learned that **different groups focus on different aspects of this work**. I have also learned that if the discussion lasts long enough, it **usually drifts** to politics, especially to whether I am “liberal” or “conservative” in the way that people in the United States use these terms. My long answer is that these terms are not the most useful tools for thinking about politics.”

was changed to:

“Over the last seven years, I have learned that **this work stimulates a wide variety of topics. No two conversations follow the same course. This is how it ought to be**. I have also learned that if the conversation lasts long enough, it **often turns** to politics, especially to whether I am “liberal” or “conservative” in the way that people in the United States use these terms. My long answer is that these terms are not the most useful tools for thinking about politics **today**.”

Afterword, second paragraph

“**Two academics, George Lakoff and Thomas Sowell, provide partial explanations of the current political divide. In his book, *Moral Politics: What Conservatives Know That Liberals Don't*, Lakoff portrays the divide in terms of child rearing. Left-wingers want governments to be more like nurturing mothers than like strict fathers. They value the “feminine” qualities of compassion, care, sensitivity, and social responsibility higher than the “masculine” qualities of independence, self-reliance, discipline, and individual responsibility. Current research favors the nurturing approach to child rearing.**

“**In *A Conflict of Visions, Ideological Origins of Political Struggles*, Sowell portrays the divide in terms of problem solving. Left-wingers see the world filled with simple problems that we are not solving. Right-wingers see the world filled with complex and amorphous problems, which we best solve through decentralized decision-making. A few years ago a number of commuter airliners crashed in due to a buildup of ice on their wings. Left-wingers asked why commuter airlines were not subject to the same regulations as major airlines. Right-wingers asked whether regulating commuter airlines like major airlines would save lives. They recognized that regulating commuter airlines like major airlines would raise the price of flying on commuter aircraft. This rise in price would cause some people to switch from flying to driving. Driving is much more dangerous than flying. Would regulating commuter airlines like major airlines cause more deaths on the highway than it would save in the air?**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Those on the left and those on the right perceive the world differently. Left-wingers see simple events. They focus on immediate ends. Right-wingers see simple processes. They focus on means to distant ends. To those on the left, the right wing focus on “masculine” means looks heartless. To those on the right, the left wing focus on “feminine” ends looks like using noble ideals to justify shortsighted ends.”

were changed to:

“As George Lakoff sees the current political divide, left-wingers want governments to be more like nurturing mothers than like strict fathers. They value the “feminine” qualities of compassion, care, sensitivity, and social responsibility higher than the “masculine” qualities of independence, self-reliance, discipline, and individual responsibility. Right-wingers prefer the strict father model.

“As Thomas Sowell sees it, left-wingers see the world filled with simple problems that we are not solving. They want to elect the people who see the world as they do and then give them the power to solve these problems. Right-wingers see the world filled with complex and amorphous problems, which we best solve through decentralized decision-making.

“As I see it, left-wingers and right-wingers see the world differently. Left-wingers see simple events. They focus on immediate ends. Right-wingers see simple processes. They focus on means to distant ends. To those on the left, the right wing focus on “masculine” means looks heartless. To those on the right, the left wing focus on “feminine” ends looks like using noble ideals to justify shortsighted ends.”

Afterword, last paragraph

Deleted all phrases in parentheses: (“authoritarians”); (“special interests”); (“status quo conservatives”); and (“libertines”).

Changed “at the expense of progress from improving excellence” to “that retard progress” in the fourth sentence.

Changes in Version 2005.11.18

Chapter 1, Managerial Effectiveness, last paragraph

Changed “Managers” to “Wise managers” in the first sentence.

Chapter 1, Managerial Effectiveness, last paragraph, last two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“In current parlance, **these managerial** concepts help us to “think outside the box.” They help us to divide the problem of how best to pursue our ultimate ends into easier to solve problems without losing sight of our ultimate ends.”

were changed to:

“In current parlance, **this pair of** concepts helps us to “think outside the box.” They help us to divide the problem of how best to pursue our ultimate end into easier to solve problems without losing sight of our ultimate end.”

“We can apply this pair of concepts to the open-ended problem of living wisely. This calls for distinguishing between *normative* and *temporal* ends. Normative ends are goals that concern processes. Temporal ends are goals that concern events. Playing basketball well is a normative end. Winning a basketball game is a temporal end. The difference between a normative end and a temporal end is the difference between heading in a direction and arriving at a destination.⁵

“*Effectiveness in living wisely* is excellence in choosing *temporal* ends. *Efficiency in living wisely* is excellence in choosing means to *temporal* ends. This pair of managerial concepts helps us to divide the problem of how best to live wisely into temporal problems without losing sight of the normative end of living wisely.”

“⁵ Adler, Mortimer, *Ten Philosophical Mistakes*, (New York, Macmillan, 1985), 137.”

Chapter 1, Pursuing Ultimate Ends, title

Changed title to “**Deciding Wisely**.”

Chapter 1, Deciding Wisely, first paragraph, first sentence

“We **pursue our ultimate ends by means of** decision-making, the process that begins with finding a problem to solve and ends with learning from the experience.⁵”

“⁵ Formal decision-making consists of (1) finding a problem to solve, (2) formulating alternatives, (3) choosing an alternative, (4) carrying out the chosen alternative, and (5) learning from the experience. Not all decision-making situations deserve formal decision-making. Less costly forms of decision-making include decision rules (heuristics / rules of thumb) and discipline (habits). The decision to use these less costly forms often deserves formal decision-making.”

was changed to:

“We **live wisely by deciding wisely**. Decision-making **is** the process that begins with finding a problem to solve and ends with learning from the experience.⁶”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“⁶ Formal decision-making consists of (1) finding a problem to solve, (2) formulating alternatives, (3) choosing an alternative, (4) carrying out the chosen alternative, and (5) learning from the experience. Not all decision-making situations deserve formal decision-making. Less costly forms of decision-making include decision rules (heuristics / rules of thumb) and discipline (habits). The decision to use these less costly forms often deserves formal decision-making.”

Chapter 1, Deciding Wisely, last paragraph

Changed “pursuing our ultimate ends” to “living wisely” in the fourth sentence.

Changed “pursue our ultimate ends” to “live wisely” in the sixth sentence.

Changed “pursue their ultimate ends” to “living wisely” in the sixth sentence.

Changed “our pursuit of our ultimate ends” to “living wisely” in the last sentence.

Chapter 2, Refining Everyday Thinking, third through fifth paragraphs

“We also ought to cull theories that fall short of our ideals. In doing so, we ought to distinguish between *normative* and *temporal* ends. Normative ends are goals that concern processes. Temporal ends are goals that concern events. Playing basketball well is a normative end. Winning a basketball game is a temporal end. Satisfying those things that we need to live a good life is a normative end. Satisfying a need is a temporal end. The difference between normative and temporal ends is the difference between heading in a direction and arriving at a destination.¹⁰”

“Moral philosopher John Rawls provides a means of judging these ends. Rawls asks us to imagine what we would choose if we were ignorant of the circumstances of our birth.¹¹ For this imagined original position of ignorance to produce a completely just **ultimate** normative end, we must consider what **ultimate** normative end we would want to guide intelligent life if we were completely ignorant of the circumstances of our birth, which includes ignorance of what species we will be and into what era we will be born. Under these conditions, we would want intelligent beings to **satisfy their needs** ever more wisely. We would also want them to devote themselves to helping others live good lives (**with preference given to those who can help them to live wisely**). In short, we would want intelligent life to revere life.

“If we can agree **on the ultimate normative end of reverence for life (Appendix B)**, then we can develop rules for culling unethical theories. For example, we can cull those that define who “we” are too narrowly.”

“¹¹ Rawls, John, *A Theory of Justice*, (Cambridge, MA: The Belknap Press of Harvard University, 1971), chapter III.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We also ought to cull theories that fall short of our ideals. Moral philosopher John Rawls provides a means of judging. Rawls asks us to imagine what we would choose if we were ignorant of the circumstances of our birth.¹⁰ For this imagined original position of ignorance to produce a completely just normative end, we must consider what normative end we would want to guide intelligent life if we were completely ignorant of the circumstances of our birth, which includes ignorance of what species we will be and into what era we will be born. Under these conditions, we would want intelligent beings to **live** ever more wisely. We would also want them to devote themselves to helping others live good lives. In short, we would want intelligent life to revere life. (See Appendix B.)

“If we can agree **that to live wisely is to revere life**, then we can develop rules for culling unethical theories. For example, we can cull **those that fail to call on us to live ever more wisely**. We can also cull those that define who “we” are too narrowly.”

¹⁰ Rawls, John, *A Theory of Justice*, (Cambridge, MA: The Belknap Press of Harvard University, 1971), chapter III.”

Chapter 2, Refining Everyday Thinking, last paragraph

Changed “**our ultimate ends and the best means to them**” to “**how best to live wisely**” in the last sentence.

Chapter 3, Introduction, first paragraph, last sentence

“**They are tools for helping** us to find problems to solve **in the pursuit of living wisely.**”

was changed to:

“**We use these concepts to construct normative models. Unlike temporal models, which help us to predict, these models help us to find problems to solve. They help us to become more effective.**”

Chapter 3, Wealth, first paragraph

Changed “**progress toward our ultimate ends**” to “**live wisely**” in the last sentence.

Changed “**reverence for life**” to “**revering life**” in the second footnote / sixteenth endnote.

Chapter 3, Consumption, first paragraph

Changed “managers” to “**wise managers**” in the first sentence.

Chapter 4, Turbulence, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “Appendix D” to “Appendices A and D” in the last sentence.

Chapter 4, A Crude Look at the Whole, first paragraph

Changed “wisely” to “ever more wisely” in the first sentence.

Chapter 5, Key Factors, first paragraph

Changed “improving the lives of the governed” to “helping all of us to live wisely” in the first sentence.

Changed “improving the quality of decision-making” to “helping all of us to decide wisely” in the first sentence.

Chapter 5, Choosing Leaders, title

Changed title to “Choosing Our Leaders.”

Chapter 5, Choosing Our Leaders, first paragraph

Changed “continually improving the quality of decision-making” to “helping all of us to decide ever more wisely” in the first sentence.

Afterword, sixth paragraph

Changed “reverence for life” to “revering life” in the first sentence.

Afterword, seventh paragraph

Changed “wisely” to “ever more wisely” in the last sentence.

Changed “reverence for life” to “revering life” in the last sentence.

Afterword, eighth paragraph

Changed “reverence for life” to “revering life” in the last sentence.

Afterword, ninth paragraph

Changed “reverence for life” to “revering life” in the second sentence.

Appendix B, Schweitzer's Universal Spiritual Need, fourth paragraph

Changed “progress toward our ultimate ends” to “living wisely” in the last sentence.

Appendix B, Balanced Excellence, second paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “reverence for life” to “revering life” in the first sentence.

Changes in Version 2005.11.21

Chapter 1, Managerial Excellence, second paragraph

Changed “They help” to “The pair helps” in the last sentence.

Chapter 1, Deciding Wisely, title

Changed title to “Living Wisely.”

Chapter 1, Deciding Wisely, last paragraph

Changed “undo” to “escape” in the first sentence.

Changed “avoid making” to “avoid” in the first sentence.

Chapter 1, Deciding Wisely, footnote 6 / endnote 5

Deleted the sentence: “Less costly forms of decision-making include decision rules (heuristics / rules of thumb) and discipline (habits).”

Chapter 2, Science, second paragraph

Changed “experience” to “sense experience” in the second sentence.

Chapter 2, Science, fourth paragraph

Added “, not on their spiritual need to know the truth. They ought to take to heart the story of John Harrison and his timekeepers” in the last sentence.

Chapter 2, Refining Everyday Thinking, second paragraph

Added missing “consider” to the third sentence.

Chapter 3, Introduction, first paragraph

“This chapter puts forward managerial alternatives to the economic concepts of wealth, consumption, trade, production, and profit. Like the managerial concept of excellence in means, these concepts are normative rather than temporal. We use these concepts to construct normative models. Unlike temporal models, which help us to predict, these models help us to find problems to solve. They help us to become more effective.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“This chapter puts forward managerial alternatives to the economic concepts of wealth, consumption, trade, production, and profit. **We use economic concepts to construct temporal models that help us to become more efficient.** We use managerial concepts to construct *normative* models **that** help us to become more *effective*.”

Chapter 3, Wealth, first paragraph

Changed “managers” to “**wise** managers” in the first sentence.

Deleted the footnote:

“**In physics, as the relative speed of objects increases beyond a practical threshold, we ought to abandon invariant space and time for invariant light speed. In economics, as change in consumer tastes over the analytical period increases beyond a practical threshold, we ought to abandon practically invariant consumer wants for practically invariant human nature. When we wish to explain how we ought to act, we use our judgment to choose the analytical period. If we base our judgment on the normative end of revering life, our analytical period is infinite. Given an infinite analytical period, we ought to abandon practically invariant consumer wants for practically invariant human nature.**”

Chapter 3, *Practical Wisdom*, last paragraph

“There are three basic means of **choosing wisely**: deliberation, decision rules, and discipline. Each has advantages and disadvantages. Deliberation is thorough but costly. Applying decision rules is less thorough but also less costly. Discipline is the least thorough, least costly, and least susceptible to deprivation. Acting wisely is often a matter of knowing which of these three means to use.”

was changed to:

“There are three basic means of **deciding**. **These are** deliberation, decision rules (heuristics / rules of thumb), and discipline (consciously formed habits). Deliberating is thorough but costly. Using decision rules is less thorough but also less costly. Using discipline is the least thorough, least costly, and least susceptible to deprivation. Acting wisely is often a matter of knowing which of these three means to use.”

Chapter 4, title

Changed title from “**The Gales of Creative Destruction**” back to “**Progress and Turbulence**.”

Chapter 4, Living Wisely, title

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed title to “Living **Ever More** Wisely.”

Chapter 4, Turbulence, title

Changed title to “**Uneven Flow**.”

Chapter 4, Turbulence, first paragraph

“**Economic turbulence is the uneven flow of economic resources.** Uneven flow of one resource tends to create uneven flow of other resources. Uneven flow of money and goods tends to cause uneven flow of labor. Uneven flow of labor tends to cause uneven flow of money and goods. *Transient inflation and unemployment are symptoms of economic turbulence.*”

was moved down two paragraphs and changed to:

“Uneven flow of one resource tends to create uneven flow of other resources. Uneven flow of money and goods tends to cause uneven flow of labor. Uneven flow of labor tends to cause uneven flow of money and goods.”

Chapter 4, Turbulence, new first paragraph

Changed “**turbulence**” to “**uneven flow**” in the first and third sentences.

The last sentence:

“If we respond to a rise in the price of **a product** by replacing it with **another product**, find **the new product** do not **satisfy our needs**, and return to **the first product**, we add to the ripples of change.”

was changed to:

“If we respond to a rise in the price of **steel** by replacing it with **plastic**, find that **plastic** does not **work as well**, and return to steel, we add to the ripples of change.”

Chapter 4, Turbulence, new second paragraph, first sentence

“**Turbulence wastes time and other resources.**”

was changed to:

“**Uneven flow is a form of waste.**”

Chapter 4, A Crude Look at the Whole, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “turbulence” to “turbulence **in the flow of economic resources**” in the first sentence.

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “**turbulence**” to “**uneven flow**” in the second sentence (2 occurrences).

Chapter 4, Franklin's Curse, first paragraph

Changed “**economic** turbulence” to “turbulence” in the third sentence.

Chapter 5, Key Factors, first paragraph, first two sentences

“Governing wisely is a matter of helping all of us to live **wisely**. **This in turn is a matter of helping all of us to decide** wisely.”

were changed to:

“Governing wisely is a matter of helping all of us to live **ever more** wisely.”

Chapter 5, *Provide Moral Vision*, first paragraph

Changed “know what we need” to “know what we need **to live wisely**” in the third sentence.

Chapter 5, Justice, third paragraph

Changed “Competition **and moral vision** best spur” to “Competition best spurs” in the second sentence.

Afterword, fourth paragraph

Changed “**immediate**” to “**achieving temporal**” in the third sentence.

Changed “**means to distant**” to “**rules for achieving normative**” in the fifth sentence.

Changed “**means**” to “**rules**” in the sixth sentence.

Appendix B, Human Needs, footnote 1 / endnote 25.

Changed “**15-31**” to “**chapter 2**.”

Appendix B, Human Needs, last paragraph

“Maslow’s second group contains those things that we need to avoid spiritual illness. Given **the difficulty of identifying** the causes of spiritual illness, he chose to study the

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

beliefs, cognitive processes, and experiences of the people whom he considered to be living fully human lives. All were the products of modern Western civilization.

Maslow found that these wise modern Westerners “self-actualize,” by which he meant that they seek to make the most of their talents in pursuit of goals that concern such transcendent values as truth, beauty, and justice.”

was changed to:

“Maslow’s second group contains those things that we need to avoid spiritual illness. Given how hard it is to find the causes of spiritual illness, he chose to abandon his scientific approach to the study of human needs. Instead, he chose to study the beliefs, cognitive processes, and experiences of modern Westerners whom he considered to be living fully human lives. He found that his subjects sought to make the most of their talents in pursuit of goals that concern such transcendent values as truth, beauty, and justice. Maslow wisely limited his findings to modern Western culture.”

“² Ibid, chapter 11.”

Appendix B, *Schweitzer's Universal Spiritual Need*, first paragraph

Added “Unlike Maslow,” to the first sentence.

“Maslow’s self-actualizers seek to satisfy this need when they seek truth (“a God’s eye view of the Universe”), beauty, and justice.”

was changed to:

“It is this need that Maslow’s fully human Westerners seek to satisfy when they seek truth, beauty, and justice.”

Appendix B, *Secular Humanism*, first paragraph

Added (“a God’s eye view of the Universe”) to the first sentence.

Appendix B, *Secular Humanism*, first paragraph, footnote 11 / endnote 35

Added (“a God’s eye view of the Universe”) to the first sentence.

Appendix B, *Religious Fundamentalism*, fourth paragraph

“Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist humanism.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The existence of a religious need for mystical oneness is compatible with both the materialist and dualist worldviews. *Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist humanism.*”

Appendix B, *Goodness and Rightness*, (new section)

Added the paragraph:

“We use intellectual tools to help us to choose what to do. These tools come in two types. The first helps us to choose “good” temporal ends. The second helps us to choose “right” rules for living wisely. When we use these tools to choose what to do in life and death situations, we ought to compare the results of more than one tool. The less the tools that we use have in common, the less the risk that identical results contain a common error. Hence, we ought to use both tools that aim at “good” temporal ends and tools that aim at “right” rules for living wisely. We also ought to use only those tools that aim at the highest form of justice that we can imagine. *We ought to use only those tools that aim at the normative end of revering life.*”

Appendix B, Conclusion, first paragraph

Changed “can” to “ought to” in the first sentence.

Changed “common purpose of progress toward a good life for all” to “ultimate normative end of revering life” in the first sentence.

Appendix D

Changed “turbulence” to “uneven flow” in all (4 occurrences).

Changes in Version 2005.11.24

Chapter 1, Economics' Blind Spot, third paragraph

Changed “Toyota manufacturing practice” to “Toyota practice” in the fourth sentence.

Chapter 1, Economics' Blind Spot, fifth paragraph

Changed “Long setups” to “Long setup times” in the fifth sentence.

Replaced colons with periods (2 occurrences).

Chapter 1, Managerial Excellence, fifth paragraph, last two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“In current parlance, this pair of concepts helps us to “think outside the box.” The pair helps us to divide the problem of how best to pursue our ultimate end into easier to solve problems without losing sight of our ultimate end.”

was changed to:

“The pair of concepts helps us to divide the problem of how best to pursue our ultimate end into easier to solve problems without losing sight of our ultimate end. In current parlance, they help us to “think outside the box.””

Chapter 1, Managerial Excellence, last paragraph

“*Effectiveness in living* wisely is excellence in choosing *temporal* ends. *Efficiency in living* wisely is excellence in choosing means to *temporal* ends. This pair of managerial concepts helps us to divide the problem of how best to live wisely into temporal problems without losing sight of the normative end of living wisely.”

was changed to:

“*Effectiveness in living wisely* is excellence in choosing temporal ends. *Efficiency in living wisely* is excellence in choosing means to *temporal* ends. This pair of concepts helps us to divide the problem of how best to live wisely into *temporal* problems without losing sight of the normative end of living wisely.”

Chapter 1, Living Wisely, footnote 6 / endnote 5

Changed “*these* less costly” to “less costly” in the last sentence.

Chapter 2, Science, first and second paragraphs

Changed “analyze everyday thinking” to “analyze *the nature of* everyday thinking” in the first sentence.

Chapter 2, Science, fourth paragraph

Changed “*medieval* craft guilds” to “craft guilds” in the first sentence.

Changed “*his timekeepers.*” to “*the Board of Longitude.*” in the last sentence.

“² *Sobel, Dava, Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time, (New York: Walker, 1995).*”

Chapter 2, Refining Everyday Thinking, footnote 8 / endnote 13

“We can separate our *definitions* of our needs from our explanations of how best to satisfy our needs by defining our needs and ultimate ends tautologically: *our needs are*

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

those things we need to pursue our ultimate ends and our ultimate ends are what we pursue when we satisfy our needs.”

was changed to:

“We can separate our **explanations** of our needs from our explanations of how best to satisfy our needs by defining our needs and ultimate **normative** end tautologically. *Our needs are those things that we need to satisfy in order to live wisely and living wisely is what we achieve when we satisfy our needs.”*

Afterword, Living Wisely, second paragraph

Changed “**As** George Lakoff **sees** the current political divide” to “**In his book, *Moral Politics: What Conservatives Know That Liberals Don’t*, George Lakoff describes the current political divide in terms of child rearing. Left-wingers”** in the first sentence.

Afterword, Living Wisely, third paragraph

Changed “**As** Thomas Sowell **sees it**, left-wingers” to “**In his book, *A Conflict of Visions: Ideological Origins of Political Struggles*, Thomas Sowell describes the divide in terms of problem solving. Left-wingers”** in the first sentence.

Afterword, Living Wisely, fourth paragraph

Changed “**As I see it**” to “**Combining these two views of the divide**” in the first sentence.

Changed “**see the world**” to “**simplify our complex world**” in the first sentence.

Changed “**achieving temporal ends**” to “**temporal ends**” in the third sentence.

Afterword, Living Wisely, sixth paragraph

Changed “**calls for unending**” to “**creates**” in the first sentence.

Afterword, last paragraph, first sentence

Merged the seventh and eighth paragraphs.

Afterword, last paragraph

“**My short answer to whether I am a “conservative” or a “liberal” is that I am a radical centrist. I seek to preserve the United States’ tradition of freedom and progress toward revering life. I favor classical liberal means and inclusive definitions of who “we” are. I ardently oppose those who seek to use the power of the state to impose their plans on others and those who seek to gain government favors that retard progress. I also oppose**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

those who seek to maintain the current state of the world for its own sake and those who consider liberty an end rather than a key factor in deciding wisely.”

was changed to:

“The wise seek to conserve the United States’ tradition of freedom and progress toward revering life. They ardently oppose those who seek to use the power of the state to impose their plans on others and those who seek to gain government favors that retard progress. They also oppose those who seek to maintain the current state of the world for its own sake and those who consider liberty an end rather than a key factor in deciding wisely.

“I ardently oppose authoritarians and special interests. I also oppose status quo conservatives and libertines. In short, I am a radical centrist.”

Appendix B, *Secular Humanism*, first paragraph

Changed “Secular humanists often deny” to “Most secular humanists ignore” in the first sentence.

Changed “Those who do” to “They” in the second sentence.

Changes in Version 2005.11.26

Chapter 6, first paragraph, first sentence

“The science of practical wisdom is a research program for living wisely.”

was changed to:

“The science of practical wisdom is a strategy for living wisely. It provides us with a means of thinking about the open-ended problem of living wisely.”

Chapter 6, first paragraph, last sentence

“Wisely conceived, the free enterprise system is coherent and moral.”

was italicized.

Afterword, first paragraph

“Over the last seven years, I have learned that this work stimulates a wide variety of topics. No two conversations follow the same course. This is how it ought to be. I have also learned that if the conversation lasts long enough, it often turns to politics,

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

especially to whether I am “liberal” or “conservative” in the way that people in the United States use these terms. My long answer is that these terms are not the most useful tools for thinking about politics today. ”

was changed to:

“Over the last seven years, I have learned that no two conversations about this work follow the same course. This is how it ought to be. I have also learned that if the conversation lasts long enough, it often turns to politics. Am I a “liberal” or “conservative” in the way that people in the United States use these terms? My long answer is that these terms are not the most useful tools for thinking about politics today.”

Afterword, fourth paragraph

“Combining these two views of the divide, left-wingers and right-wingers simplify our complex world differently. Left-wingers see simple events. They focus on temporal ends. Right-wingers see simple processes. They focus on rules for achieving normative ends. To those on the left, the right wing focus on “masculine” rules looks heartless. To those on the right, the left wing focus on “feminine” ends looks like using noble ideals to justify shortsighted ends.”

was changed to:

“Combining these two views of the divide, left-wingers and right-wingers tend to simplify our complex world differently. Left-wingers tend to see simple events and focus on temporal ends. Right-wingers tend to see simple processes and focus on rules for achieving normative ends. To those on the left, the right wing focus on “masculine” rules looks heartless. To those on the right, the left wing focus on “feminine” ends looks like using noble ideals to justify shortsighted ends.”

Changes in Version 2005.11.30

Preface, first paragraph

Changed “twenty-six” to “twenty-seven” in the first sentence.

Chapter 1, Managerial Excellence, end

Added the following paragraphs:

“The terms ‘normative’ and ‘temporal’ have deeper meanings. ‘Normative’ describes what is normal. It is normal for living things to follow their natures. ‘Normative’ also prescribes norms. Living things owe it to themselves (ought) to follow their natures.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

‘Temporal’ means worldly. When economists claim to be worldly philosophers, they splitting models based on our natures as revealed by our actions from models based on our natures. They accept splitting economics from moral philosophy.

“As we shall see, models based on our natures are better tools for helping us to find problems to solve. Given a normative concept of science, we will invent ever better means of testing these tools. We will invent ever better means of testing moral philosophy.”

Chapter 1, Living Wisely, title

Changed the title to “**The Strategy**.”

Chapter 1, Living Wisely, last paragraph

Changed “old” to “past” in the first sentence.

Chapter 2, Science, fourth paragraph, footnote 2 / endnote 7

“Sobel, Dava, *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time*, (New York: Walker, 1995).”

was changed to:

“The Board of Longitude unjustly denied John Harrison a prize for solving the longitude problem. Some sociologists believe that this was because Harrison, a commoner with no scientific training, was an outsider. More likely it was because his work did not advance the search for the truth. Sociologists ought to recognize that Benjamin Franklin, who was one of the most celebrated scientists at this time, was also a commoner with no scientific training. For more on John Harrison and the longitude prize, see the British National Maritime Museum’s website, <http://www.nmm.ac.uk/server/show/conWebDoc.355> (28 November 2005).”

Chapter 2, Economic Science, last paragraph, end

Added the sentence: “**We ought to distinguish between *temporal tools* and *normative tools*.**”

Chapter 3, Introduction, first paragraph

Changed “that” to “, which” in the second sentence.

Changed “that” to “, which” in the last sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2005.12.03

Chapter 1, Managerial Excellence, last paragraph

Changed “a **normative** concept of science” to “a concept of science **based on what we need to live wisely**” in the second sentence.

Chapter 2, Science, fourth paragraph

Changed “**know** the truth” to “**seek** the truth” in the fourth sentence.

Afterword, first paragraph

Changed “**Am I a**” to “**Are the wise**” in the third sentence.

Changed “**long** answer” to “answer” in the last sentence.

Afterword, second to last paragraph

“The wise **seek to conserve the United States’ tradition of freedom and progress toward revering life. They ardently oppose those who seek to use the power of the state to impose their plans on others and those who seek to gain government favors that retard progress. They also oppose those who seek to maintain the current state of the world for its own sake and those who consider freedom an end rather than a key factor in deciding wisely.**”

was changed to:

“The wise **understand that freedom is a key factor in revering life. They oppose those who seek to use the power of the state to impose their plans on others and those who consider freedom an end rather than a key factor in deciding wisely. The wise also understand that revering life creates turbulence. They oppose those who seek to gain government favors that retard progress and those who seek to maintain the current state of the world for its own sake. The wise are neither “liberal” nor “conservative” in the way that people in the United States use these terms.**”

Afterword, last paragraph

“**I ardently oppose authoritarians and special interests. I also oppose status quo conservatives and libertines. In short, I am a radical centrist.**”

was deleted.

Appendix B, Schweitzer’s Mistakes, title

Changed title back to “*Practical Benefits of Magical Mysticism.*”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix B, Schweitzer's Mistake, first paragraph

“Schweitzer made two mistakes. The first was to assume that our need for mystical oneness is a need for mystical oneness with the infinite Being. Belief in the infinite Being is a matter of faith, not of reason. We see the need for mystical oneness in religion. However, we also see it in the quest for truth, beauty, and justice and in nationalism, socialism, fascism, and communism. We do not need to assume the existence of an infinite Being to explain our need for mystical oneness.”

was deleted.

Appendix B, Practical Benefits of Magical Mysticism, new first paragraph, first sentence

“Schweitzer's major mistake was to deny the practical benefits of magical mysticism.”

was changed to:

“Schweitzer ignored the practical benefits of magical mysticism.”

Changes in Version 2005.12.05

Chapter 2, Economic Science, second paragraph

Changed “**decision-oriented** instrumentalism” to “instrumentalism” in the last sentence.

Changes in Version 2005.12.08

Chapter 1, Economics' Blind Spot, last paragraph

Changed “lesson” to “lesson **about excellence in means**” in the last sentence.

Chapter 1, Managerial Excellence, second paragraph, footnote 4 / endnote 3

“The distinction between managerial efficiency and effectiveness depends on the scale of the subordinate problem. What is a matter of efficiency at one problem scale is a matter of effectiveness at another. Imagine a hierarchical organization that defines the scale of subordinate problems in terms of each member's freedom to decide. All organization members would seek to be efficient. All members with superiors would leave matters of effectiveness to their superiors. The distinction between efficiency

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

and effectiveness would depend on one's level in the hierarchy. *Failure to define a problem scale can cause great confusion.*"

was promoted to the body of the text as the third paragraph.

Chapter 1, Managerial Excellence, sixth paragraph

Changed "deeper" to "broader" in the first sentence.

Chapter 1, The Strategy, first paragraph

"We live wisely by deciding wisely. Decision-making is the process that begins with finding a problem to solve and ends with learning from the experience.⁵ We make mistakes. If we are wise, we learn from our mistakes. If we are wise, waste is a regrettable by-product of learning."

"⁵ Formal decision-making consists of (1) finding a problem to solve, (2) formulating alternatives, (3) choosing an alternative, (4) carrying out the chosen alternative, and (5) learning from the experience. Not all decision-making situations deserve formal decision-making. The decision to use less costly forms often deserves formal decision-making."

was changed to:

"We live wisely by deciding wisely. The formal process of deciding consists of (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) carrying out the chosen alternative; and (6) learning from the experience. Less formal forms conserve resources by dropping many of these steps. These less costly forms include using decision rules (rules of thumb / heuristics) and discipline (consciously formed habits).

"We make mistakes. If we are wise, we learn from our mistakes. If we are wise, waste is a regrettable by-product of learning."

Chapter 3, Practical Wisdom, last paragraph

Changed "decision rules (heuristics / rules of thumb)" to "decision rules" in the second sentence.

Changed "discipline (consciously formed habits)" to "discipline" in the second sentence.

Changed "Deliberating" to "Deliberation (deciding formally)" in the third sentence.

Changed "Using decision rules is" to "Decision rules are" in the fourth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “Using discipline” to “Discipline” in the fifth sentence.

Changes in Version 2005.12.10

Acknowledgments, second to last paragraph

Changed “embedded in” to “in the form of” in the last sentence (2 occurrences).

Chapter 1, Managerial Excellence, last paragraph, end of first sentence

Added the sentence: “They are better tools for helping us become more effective.”

Chapter 2, Science, fifth paragraph, footnote 4 / endnote 7, last sentence

“This excludes substantial changes in the problem scale or the decision-making group.”

was changed to:

“This excludes substantial changes to the decision-making group.”

Chapter 2, Science, last paragraph, first sentence

“Fifty years ago, Milton Friedman proposed limiting economic science to theories that we use to predict.”

was changed to:

“Fifty years ago, Milton Friedman defined (positive) economic science as “a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.””

Changed “3-43” to “39” in footnote 7 / endnote 10.

Chapter 5, Provide Moral Vision, last paragraph

“Wise leaders use moral vision to encourage people to decide wisely. Moral vision is especially useful in wealthy economies. The better we live, the harder it is to know what we need to live wisely. Further, the better we all live, the faster things change. The faster things change, the harder it is to live wisely.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“A moral vision is more than a set of moral values; it is a strategy for living wisely. If this vision of what we ought to do is too specific, it will blind us to better means of living wisely. If it is too general, it will not help us find better means of living wisely.

“A moral vision is especially useful in wealthy economies, where the problems we face are more problems of ignorance than of material scarcity. The better we live, the harder it is to know what we need to live wisely. Further, the better we all live, the faster things change. The faster things change, the harder it is to know how to live wisely.”

Changes in Version 2005.12.12

Acknowledgments, tenth paragraph

Added “by seeing “the big picture,”” to the fifth sentence.

Chapter 1, Economics' Blind Spot, last paragraph, second through fourth sentences

“In the early nineties, the Japanese chose an analog standard for high definition television. A few years later, the Americans chose a digital standard. Although digital was much more costly than analog, the Americans saw that the cost of digital was falling much faster.”

was changed to:

“In 1991, the Japanese began broadcasting analog high definition television. The same year, the Americans chose digital over analog for their new standard. Although digital was much more costly, the Americans saw that the cost of digital was falling much faster.”

Chapter 5, Consider the Justice of Interventions, last paragraph

Changed ““emergency” agricultural marketing orders” to “farm programs” in the last sentence.

Changes in Version 2005.12.20

Chapter 1, Economics' Blind Spot, end

Added the paragraph:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“For more on the subject of a learning worldview, see Appendix A, The Toyota System.”

Chapter 1, Managerial Excellence, fourth paragraph

Changed “this pair of concepts” to “this pair of **managerial** concepts” in the first sentence.

Chapter 1, Managerial Excellence, sixth paragraph

Italicized “*Effectiveness in living wisely*” in the first sentence.

Italicized “*Efficiency in living wisely*” in the second sentence.

Chapter 2, Refining Everyday Thinking, third paragraph, last sentence

“(See Appendix B.)”

was deleted.

Chapter 2, Refining Everyday Thinking, fourth paragraph, end

Added the paragraph:

“For more on the subject of revering life, see Appendix B.”

Chapter 3, Wealth, end

Added the paragraph:

“For more on the subject of the wealth, see Appendix C.”

Chapter 4, Uneven Flow, last paragraph, last sentence

“(See Appendices A and D.)”

was moved to a new paragraph and changed to:

“**For more on the subject of smoothing uneven flows, see Appendix D.**”

Chapter 5, Provide Moral Vision, last paragraph

Changed “we” to “**people**” in the first sentence.

Chapter 5, Control the Money Supply Passively, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “learn” to “to learn” in the first sentence.

Chapter 5, *Control the Money Supply Passively*, last paragraph, last two sentences

“The second is whether to **manage passively or actively: should they** declare how they will decide far in advance **or** be free to surprise **economic agents**? Of the four choices created by these two major choices, the least distorting, hence the most helpful to learning, is to control the money supply **passively.**”

was changed to:

“The second is whether **to** declare how they will decide far in advance. **Ought they to** be free to surprise **people**? Of the four choices created by these two major choices, the least distorting, hence the most helpful to learning, is to control the money supply **by means of policies declared far in advance.**”

Changes in Version 2005.12.22

Acknowledgments, tenth paragraph, fifth and sixth sentences

“He **attributed this to my style, particularly** to my use of such **unfamiliar** terms as ‘paradigm’ and ‘recursionist economics.’ A year and a half after his death I recognized that **my style was too intellectual. I also recognized that my father was looking for moral values in the form of decision rules, not for a moral vision in the form of a strategy for learning.**”

were changed to:

“He **claimed this was due** to my use of such **strange** terms as ‘paradigm’ and ‘recursionist economics.’ A year and a half after his death I recognized that **my style was too pretentious.**”

Chapter 1, title

Changed “**A Strategy for Learning**” to “**Living Wisely.**”

Chapter 1, Economics' Blind Spot, first paragraph, third sentence

“**It also tends to blind us to better ends.**”

was returned to normal font.

Chapter 1, Economics' Blind Spot, fourth paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The possibility of learning turns what otherwise would be a simple closed-ended problem into a complex open-ended one.”

was returned to normal font.

Chapter 1, The Strategy, title

Changed title to “Deciding Wisely.”

Chapter 2, title

Changed “New Foundations” to “Science.”

Chapter 2, Science, title

Changed “Science” to “Normative Science.”

Chapter 6, first paragraph

“The science of practical wisdom is a strategy for living wisely. It provides us with a means of thinking about the open-ended problem of living wisely. It embraces theories that help us predict what happens in economies and rejects theories that aim at providing us with consumer goods and services. It tells us that we owe it to ourselves to help others live wisely. It also tells us that when we help others foolishly, we create catastrophes. Whether Adam Smith’s “invisible hand” is clumsy and brutal or adroit and humane is in our minds as well as in our hearts and hands. *Wisely conceived, the free enterprise system is coherent and moral.*”

was changed to:

“The science of practical wisdom is the process of refining our thinking about the open-ended problem of living wisely. It embraces theories that help us predict what happens in economies and rejects theories that aim at providing us with consumer goods and services. It tells us that we owe it to ourselves to help others live wisely.

“The science of practical wisdom also tells us that when we help others foolishly, we create catastrophes. Whether Adam Smith’s “invisible hand” is clumsy and brutal or adroit and humane is in our minds as well as in our hearts and hands. *Wisely conceived, the free enterprise system is coherent and moral.*”

Changes in Version 2005.12.24

Acknowledgments, seventh paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “the late philosopher-entrepreneur Howard Sherman” to “Howard Sherman” in the first sentence.

Chapter 1, Deciding Wisely, last paragraph, fourth sentence

“Practical wisdom includes a conceptual framework for thinking clearly about the best means of living wisely.”

was changed to:

“Practical wisdom includes both tools to help us choose temporal ends and tools to help us choose means to temporal ends.”

Chapter 2, Normative Science, last paragraph

“Science is the never-ending process of refining everyday thinking.”

was changed to:

“Science is nothing more than a refinement of everyday thinking. Temporal science is the result of the process of refining everyday thinking at a point in time. Normative science is the ever-evolving process of refining everyday thinking.”

Chapter 5, Choosing Our Leaders, title

Changed title to “Choosing Leaders.”

Chapter 6

“The science of practical wisdom is the process of refining our thinking about the open-ended problem of living wisely. It embraces theories that help us predict what happens in economies and rejects theories that aim at providing us with consumer goods and services. It tells us that we owe it to ourselves to help others live wisely.

“The science of practical wisdom also tells us that when we help others foolishly, we create catastrophes. Whether Adam Smith’s “invisible hand” is clumsy and brutal or adroit and humane is in our minds as well as in our hearts and hands. Wisely conceived, the free enterprise system is coherent and moral.”

was changed to:

“Living wisely calls for defining science as the process of refining everyday thinking. The resulting research program embraces theories that help us to predict what happens in economies and rejects theories that aim at providing us with consumer goods and services. It tells us that we ought to help others live wisely. It also warns us that if we help others foolishly, we create catastrophes. Whether Adam Smith’s “invisible hand”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

is clumsy and brutal or adroit and humane is in our minds as well as in our hearts and hands. Wisely conceived, the free enterprise system is coherent and moral.”

Afterword, last paragraph

Changed “an end” to “**to be** an end” in the second sentence.

Appendix B, Heroism, third paragraph, sixth and seventh sentences

“**Apocalyptic visions** promise heaven on earth for **surviving** true believers **after they triumph over their enemies. Visions of an idealized past compete against liberal visions of a better future.**<C:\Users\Scott\OneDrive\Recursionist\Wealth\Archive\Boundless Reason first edition\Web archive files\wealth appendix b footnote 10.html>”

were changed to:

“**They** promise heaven on earth for **those** true believers **who survive the final battle against evil.**<C:\Users\Scott\OneDrive\Recursionist\Wealth\Archive\Boundless Reason first edition\Web archive files\wealth appendix b footnote 10.html>”

Appendix D, *Folding In Operations*, second paragraph

Changed “*identical*” to “**identical**” in the last sentence.

Appendix D, *Folding In Operations*, third paragraph

Changed “*similar*” to “**similar**” in the first sentence.

Appendix D, *Folding In Operations*, last paragraph, last sentence

“**A job shop is simply countless continuous process production lines folded in on themselves.**”

was returned to normal font.

Changes in Version 2005.12.31

Acknowledgments, third paragraph

Changed “reflective” to “**openly** reflective” in the first sentence.

Acknowledgments, fourth paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“I **delivered my** term paper, *Wealth in the Information Age, A Humanistic Approach to Economics*, seventeen years late.”

was changed to:

“**My conscious mind could not get around the problem of how a theory can be both useful (in predicting what happens in education markets) and foolish (as a guide for making career decisions). My unconscious mind would not let go of what I now know to be an infinitely large problem. My frustration led to a vicious cycle of anger, anxiety, disgust, and depression. Despite the threat of failing to graduate, and the possibility of losing my acceptances to the Stanford and Harvard graduate schools of business, I simply could not produce the required term paper. Gordon knew that I had done the research and kindly gave me the lowest possible passing score. I finally gave Gordon his** term paper, *Wealth in the Information Age, A Humanistic Approach to Economics*, seventeen years later.”

Preface, last paragraph

“**The science of practical wisdom is a strategy for learning to live wisely. It is not economics. It is what economists ought to study.**”

was deleted.

Chapter 1, Managerial Excellence, sixth paragraph

Changed “**They**” to “**In modern terms, they**” in the last sentence.

Chapter 1, Managerial Excellence, last paragraph

“**As we shall see, models based on our natures are better tools for helping us to find problems to solve. They are better tools for helping us become more effective. Given a concept of science based on what we need to live wisely, we will invent ever better means of testing these tools. We will invent ever better means of testing moral philosophy.**”

were changed to:

“**Theories based on our actions help us to predict how we will act. We use these predictions to solve given problems. We use these predictions to become more efficient. In contrast, theories based on our natures help us to explain how to act wisely. We use these explanations to find better problems to solve. We use these explanations to become more effective. Given a concept of science based on what we need to live wisely, we will invent ever better means of testing both types of theories.**”

Chapter 1, Deciding Wisely, first paragraph, last two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The formal process of deciding consists of (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) carrying out the chosen alternative; and (6) learning from the experience. Less formal forms conserve resources by dropping many of these steps. These less costly forms include using decision rules (rules of thumb / heuristics) and discipline (consciously formed habits).”

were deleted. The first paragraph was merged with the second.

Chapter 3, *Practical Wisdom*, last paragraph, second and third sentences

“These are deliberation, decision rules, and discipline. Deliberation (**deciding formally**) is thorough but costly.”

were changed to:

“These are deliberation (**deciding formally**), decision rules (**rules of thumb / heuristics**), and discipline (**consciously formed habits**). Deliberation is thorough but costly. **It consists of (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) carrying out the chosen alternative; and (6) learning from the experience.**”

Afterword, first paragraph

Changed “Are the wise” to “Am I” in the first sentence.

Afterword, second through fifth paragraphs

“In his book, *Moral Politics: What Conservatives Know That Liberals Don't*, George Lakoff describes the current political divide in terms of child rearing. Left-wingers want governments to be more like nurturing mothers than like strict fathers. They value the “feminine” qualities of compassion, care, sensitivity, and social responsibility higher than the “masculine” qualities of independence, self-reliance, discipline, and individual responsibility. Right-wingers prefer the strict father model.

“In his book, *A Conflict of Visions: Ideological Origins of Political Struggles*, Thomas Sowell describes the divide in terms of problem solving. Left-wingers see the world filled with simple problems that we are not solving. They want to elect the people who see the world as they do and then give them the power to solve these problems. Right-wingers see the world filled with complex and amorphous problems, which we best solve through decentralized decision-making.

“Combining these two views of the divide, left-wingers and right-wingers tend to simplify our complex world differently. Left-wingers tend to see simple events and focus on temporal ends. Right-wingers tend to see simple processes and focus on rules for achieving normative ends. To those on the left, the right wing focus on

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“masculine” rules looks heartless. To those on the right, the left wing focus on “feminine” ends looks like using noble ideals to justify shortsighted ends.

“We can bridge the chasm by recognizing that the free pursuit of a good life creates knowledge that benefits us, others around the world, future generations, and, with greater wisdom, other species. Regrettably, putting knowledge into use creates turbulence. The worse the quality of decision-making is, the worse this turbulence will be.”

were changed to:

“I oppose people who hinder deciding wisely. I oppose people who (1) seek to use the power of the state to impose their plans on others; (2) seek to gain government favors that retard progress; (3) seek to maintain the current state of the world for its own sake; and (4) consider freedom to be an end in itself rather than a key factor in deciding wisely. I am neither “liberal” nor “conservative” in the way that people in the United States use these terms.”

Afterword, new third paragraph

Changed “Those” to “I believe that those” in the first sentence.

Afterword, new fourth paragraph

Changed “Those” to “I believe that those” in the first sentence.

Afterword, last paragraph

“The wise decide wisely. Freedom is a key factor in deciding wisely. The wise oppose those who seek to use the power of the state to impose their plans on others and those who consider freedom to be an end rather than a key factor in deciding wisely. Deciding wisely creates turbulence. The wise oppose those who seek to gain government favors that worsen decision-making and those who seek to maintain the current state of the world for its own sake. The wise are neither “liberal” nor “conservative” in the way that people in the United States use these terms.”

was deleted.

Appendix B, Practical Benefits of Magical Mysticism, first paragraph, last two sentences

“The classic example of this is the Zen archer, who excels by detaching his conscious mind from the act and results of releasing his arrow. We also find this practical benefit in the *Bhagavad-Gita* and the *Tao Te Ching*.⁸”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

*“⁷ Always perform with detachment
any action you must do;
performing action with detachment,
one achieves the highest good.*

“*The Bhagavad-Gita*. Trans. Barbara Stoler Miller. (New York: Bantam Books, 1986), third teaching, paragraph 19.”

*“⁸ In the pursuit of knowledge,
everyday something is added.
In the practice of the Tao,
everyday something is dropped.
Less and less do you need to force things,
until finally you arrive at non-action.
When nothing is done,
nothing is left undone.*

“Lao Tzu., *Tao Te Ching*. Trans. Stephen Mitchell. (New York: Harper & Row, 1988), book 2, chapter 48.”

was changed to:

*“We find this practical benefit in the *Bhagavad-Gita*:*

*“Always perform with detachment
any action you must do;
performing action with detachment,
one achieves the highest good.”⁷*

“The classic example of this is the Zen archer, who excels by detaching his conscious mind from the act and results of releasing his arrow.”

“*The Bhagavad-Gita*. Trans. Barbara Stoler Miller. (New York: Bantam Books, 1986), third teaching, paragraph 19.”

Changes in Version 2006.01.04

Chapter 1, Economics Blind Spot, fifth paragraph, second through eighth sentences

“Short setup times **have allowed Toyota to produce small batches of parts. In contrast, competitors with long setups may produce thirty or more days of parts. Long setup times call for large investments in warehouse space, material-handling equipment, material handlers, stock clerks, and other forms of indirect labor. Long setup times also create waste. When workers set up wrongly, they may need to scrap thirty or more days of parts. Further, long setups slow learning.** It is much easier to remember

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

the cause of a mistake made three hours ago than that of a mistake made three weeks ago.”

were changed to:

“Short setup times call for much smaller investments in warehouse space, material-handling equipment, material handlers, stock clerks, and other forms of indirect labor. Short setup times also reduce scrap. When production team members set up wrongly, they scrap far fewer parts. Short setups even enhance learning. It is much easier for team members to remember what they did wrong three hours ago than what they did wrong three weeks ago.”

Chapter 5, *Lower Barriers to Trade*

“The history of the last three hundred years supports a cultural trend away from following traditions toward seeking pleasure. We see this trend clearly in England, where the cultural ideal changed from fulfilling one’s role in God’s plan to hedonist Jeremy Bentham’s “greatest good for the greatest number.” We have learned to associate this trend toward seeking pleasure with industrialization, urbanization, and globalization.

“We can tell many stories about why cultures become more hedonistic as they become more industrial. We can also tell many stories about why cultures are likely to become more lucid as they become more knowledge intensive. The practical question is not whether there is a trend toward living wisely but how best to promote this trend. Part of the solution must be to lower barriers to trade. Free trade promotes competition. Given a wise moral vision, competition promotes practical wisdom. Nothing is more useful to a human than another human guided by wisdom.

“A good example of a barrier to trade is the tax-free status of employee insurance benefits in the United States. This supposed benefit effectively takes away employees’ right to buy insurance from whomever they please. If people were free to buy insurance from any source, many would choose to buy it from sources that would help them live more wisely. Sources that successfully help their clients live more wisely would pass the savings on to their clients, thereby attracting more people to their programs.”

were changed to:

“Free trade promotes competition. Given a wise moral vision, competition promotes practical wisdom.⁵ Nothing is more useful to a human than another human guided by wisdom.

“From a Marxist view, free trade promotes the predominant mode of production, which in turn determines the culture. The logic of the industrial age holds that economies are like great machines in which people were interchangeable parts

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

performing mindless tasks. Free markets call on people to seek pleasure, not to become fully human.

“The history of the last three hundred years supports the cultural trend away from following traditions toward seeking pleasure. We see this trend clearly in England, where the cultural ideal changed from fulfilling one’s role in God’s plan to hedonist Jeremy Bentham’s “greatest good for the greatest number.”

“The knowledge revolution has changed the logic of production. The logic of the knowledge age holds that economies are like great learning organisms in which people are the most important parts, the parts that learn. Free markets call on people to fulfill their natures, to become fully human. Given the logic of the knowledge age, lowering trade barriers promotes progress toward the Marxist normative end of all humans living fully human lives.”

“A good example of a barrier to trade is the tax-free status of employee insurance benefits in the United States. This supposed benefit effectively takes away employees’ right to buy insurance from whomever they please. If people were free to buy insurance from any source, many would choose to buy it from sources that would help them live more wisely. Sources that successfully help their clients live more wisely would pass the savings on to their clients, thereby attracting more people to their programs.”

Changes in Version 2006.01.06

Chapter 1, title

Changed “Living Wisely” to “Practical Wisdom.”

Chapter 1, Concepts, title

Changed “Concepts” to “Living Wisely.”

Chapter 1, Living Wisely, first paragraph

Inserted the paragraphs:

“We live well by satisfying our needs for those things that we need to live well. We live wisely by continually improving the process of satisfying our needs for those things that we need to live well.

“Living wisely calls for thinking clearly about the process of satisfying our needs for those things that we need to live well. Thinking clearly about this process calls for the proper concepts for thinking about this process.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Managerial Excellence, third paragraph, last sentence

“The distinction between managerial efficiency and effectiveness depends on the scale of the subordinate problem. What is a matter of efficiency at one problem scale is a matter of effectiveness at another. Imagine a hierarchical organization that defines the scale of subordinate problems in terms of each member’s freedom to decide. All organization members would seek to be efficient. All members with superiors would leave matters of effectiveness to their superiors. The distinction between efficiency and effectiveness would depend on one’s level in the hierarchy. *Failure to define a problem scale can cause great confusion.*”

returned to a footnote.

Chapter 1, Managerial Excellence, last paragraph, second through sixth sentences

“We use these predictions to solve *given* problems. *We use these predictions to become more efficient.* In contrast, theories based on our natures help us to explain how to act wisely. We use these explanations to find better problems to solve. *We use these explanations to become more effective.*”

were changed to:

“We *ought to* use these predictions to solve *temporal* problems. In contrast, theories based on our natures help us to explain how to act wisely. We *ought to* use these *normative* explanations to find better *temporal* problems to solve.”

Chapter 3, title

Changed “*Managerial* Concepts” to “*Normative* Concepts.”

Chapter 3, Introduction, first paragraph

“This chapter puts forward *managerial* alternatives to the economic concepts of wealth, consumption, trade, production, and profit. *We use economic concepts to construct temporal models, which help us to become more efficient. We use managerial concepts to construct normative models, which help us to become more effective.*”

was changed to:

“*Wise managers use normative models to become more effective.* This chapter puts forward *normative* alternatives to the economic concepts of wealth, consumption, trade, production, and profit.”

Chapter 6, first paragraph, first sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Inserted the sentences:

“We live well by satisfying our needs for those things that we need to live well. We live wisely by continually improving the process of satisfying our needs for those things that we need to live well.”

Changes in Version 2006.01.07

Appendix A, Ohno's Normative Vision, third paragraph

Changed “**manufacturing**” to “**production**” in the first sentence.

Changed “batch **production** systems” to “batch systems” in the second sentence.

Appendix A, Ohno's Normative Vision, fourth paragraph

Changed “**production operations**” to “**processes**” in the first sentence.

Changed “the **guiding principal of** continual improvement” to “continual improvement” in the first sentence.

Changed “**production** team members” to “team members” in the third sentence.

Appendix A, A Learning Worldview, fourth paragraph

Changed “**manufacturing**” to “**producing**” in the first sentence.

Appendix D, A More Detailed Normative View

“**Toyota production teams create and digest operational complexity. They create complexity by** folding parts of the production system in on itself. **Ignorance of how to manage** operational complexity creates uneven flow. Teams learn to manage complexity by finding and solving small problems that cause uneven flow. The goal is not smooth flow for its own sake. The goal is to produce ever more wisely.”

was changed to:

“**Taiichi Ohno’s vision involved** folding parts of the production system in on itself. **The resulting** operational complexity creates uneven flow. Teams learn to manage **this** complexity by finding and solving small problems that cause uneven flow. The goal is not smooth flow for its own sake. The goal is to produce ever more wisely.”

Appendix D, Operational Complexity

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “operations” to “processes” in the first sentence (2 occurrences).

Appendix D, *Operational Complexity*, title

Changed title from “*Operational Complexity*” to “*Types of Systems*.”

Appendix D, *Types of Systems*, second through fifth paragraphs

“The simplest production systems are simple in form and in operation. They are simple in form in that they consist of one operation. They are simple in operation in that team members only face one choice, the rate at which the production system produces.

“Other systems are complex in form but simple in operation. They are complex in form in that they consist of more than one operation. They are simple in operation in that team members only face one choice, the rate at which the system produces. They consist of operations rigidly linked together into what is essentially a single complicated machine. These systems contain no flexible links.

“Still other systems are complex in form and in operation. They are complex in form in that they consist of more than one operation. They are complex in operation in they have at least one flexible production link choice. Team members must decide when and where to move product.”

were changed to:

“We can measure the complexity of production operations in two ways. We can count the number of production processes. By this measure, the simplest system is one that consists of a single process. Such a system is simple in *form*. We can also count the number of decisions that the production team face. By this measure, the simplest system is one that has only one decision. Such a system is simple in *operation*.

“The simplest system in operation is a “pull system” with no flexible links. A “pull system” is one in which customers “pull” product through the system. There is no production until there is a call for production from the customer. The customer, not the production team, sets the rate of production.”

Appendix D, *Types of Systems*, last three paragraphs

“The traditional means of classifying production systems is by batch size, the quantity of identical items produced at one time. Batch sizes range from one to infinity. At the low end of this scale is *custom production*. At the high end of the scale is *continuous process production*. Between the two extremes is *batch production*. Batch production systems near the low end of the scale are more like custom production; those near the high end of the scale are more like continuous process manufacturing.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Custom production is complex in **form and** operation. Its major advantages are flexibility and low capital costs. Most **custom (job)** shops use general-purpose machine tools grouped into departments by type of machine. Work flows from department to department. Capital costs **tend to be** low because general-purpose machine tools **let operators to use the same tool** to make a variety of parts. **Further, there is little machinery for transferring** work-in-process (WIP) from one **operation** to another. **Offsetting these two advantages are high direct labor, waste, WIP holding, and indirect unit costs.** Direct labor costs per unit are high because workers (1) **require** special skills, (2) spend much time setting up machines, and (3) waste time waiting for parts and work. Waste costs per unit are high because every tool setup is an opportunity to make mistakes. WIP holding costs per unit are high because flexible **production** links store WIP. **Indirect** costs per unit are high because flexible **production** links **require more scheduling, material handling, accounting, and supervising.**

“In contrast, continuous production processes, such as **those that manufacture paper and paper clips**, are **essentially complicated machines.** **They are complex in form but not in operation.** Compared to job shops, they sacrifice flexibility and capital to lower other costs.”

were changed to:

“**We can also** classify production systems by batch size, the quantity of identical items produced at one time. At the low end of this scale is *custom production*. At the high end of the scale is *continuous process production*. Between the two extremes is *batch production*.

“**Traditional custom (job shop)** production is complex in operation. Its major advantages are flexibility and low capital costs. Most job shops use general-purpose machine tools grouped into departments by type of machine. Work flows from department to department. Capital costs **are** low because **workers use the same** general-purpose tools to make a variety of parts. **They also use little equipment to move** (WIP) from one **process** to another.

“**The major disadvantage of job shops is their high cost per unit.** Direct labor costs per unit are high because workers (1) **need** special skills; (2) spend much time setting up machines; and (3) waste time waiting for parts and work. Waste costs per unit are high because every tool setup is an opportunity to make mistakes. WIP holding costs per unit are high because flexible links store WIP. **Decision related** costs per unit are high because flexible links **call for making decisions.**

“In contrast, continuous production processes, such as paper **mills**, are **relatively** simple in operation. Compared to job shops, they sacrifice flexibility and capital to lower costs per unit.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Batch production systems combine qualities of job shop and continuous processes. Those near the low end of the batch size scale are more like job shops. Those near the high end of the scale are more like continuous processes.”

Appendix D, *Folding in Operations*

“Imagine a world in which operational simplicity trumps all other production concerns. Each final product would have its own river-like continuous production line. The pink, four-wheel drive, club cab, lemon yellow leather interior, diesel V8, pickup truck production line would have twenty-four identical wheel bolt assembly lines, six for each of the four wheels.

“In the real world, production teams balance the costs of managing operational complexity against other costs. Among other things, they group the production of identical parts together. In effect, they fold in identical parts of the imaginary river-like production line on top of each other.

“Production teams can also fold in similar parts of production process on top of each other. This is a matter of producing batches of identical parts on machine tools capable of producing a variety of similar parts. Producing in batches lowers the cost of capital equipment and raises the cost of direct and indirect labor.

“For the folding in to be wise, the benefits of folding in must be greater than the costs of folding in. The lower the production rate, the greater the relative benefits of folding in become. A job shop is simply countless continuous process production lines folded in on themselves.”

were changed to:

“Imagine a world in which operational simplicity trumps all other concerns. Each product would have its own “pull” system with no flexible links. The pink, four-wheel drive, club cab, diesel V8, pickup truck production line would have twenty-four identical wheel bolt subassembly lines, six for each of the four wheels.

“In the real world, operational complexity does not trump all other concerns. Among other things, engineers plan to produce identical parts on the same subassembly line. In effect, they fold in identical parts of production lines on top of each other.

“Engineers can also fold in similar parts of production lines on top of each other. They do this by planning to produce batches of identical parts on machine tools capable of producing a variety of similar parts. For folding in to be wise, the benefits of folding in must be greater than the costs of folding in. The lower the production rate, the greater the relative benefits of folding in become.”

Appendix D, *Smoothing Flows*, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “smooth flows” to “the result of smoothing flows” in the last sentence.

Appendix D, *Smoothing Flows*, second paragraph

Changed “custom and continuous process systems” to “job shops and continuous processes” in the second sentence.

Changed “intensively” to “to build a variety of parts” in the third sentence.

Changed “easily vary” to “vary its character by varying” in the last sentence.

Changed “links” to “flexible links” in the last sentence.

Appendix D, *Smoothing Flows*, last paragraph

“The Toyota system combines a simple, elastic, and robust means of linking production operations (dual kanban) with the guiding principle of continual improvement (kaizen). The elasticity of the links allows the system to stretch to fit problems that are too complex for production engineers to solve alone, such as those created by folding in parts of the system. Stretching these links increases WIP and uneven flow in the flow of WIP. Tightening stretched links uncovers small production problems that team members are able to solve. Solving these problems reduces the WIP and uneven flow in the flow of WIP caused by ignorance of how to manage operational complexity. The system swallows and digests complex problems much as a snake swallows and digests mice.”

was changed to:

“The Toyota system combines a simple, elastic, and robust means of linking processes (dual kanban) with continual improvement (kaizen). The elasticity of the links allows the system to stretch to fit problems that are too complex for engineers to solve alone. Stretched links buffer the uneven flow of WIP. Tightening stretched links uncovers small production problems that team members are able to solve. Solving these problems smooths the flow of WIP. The system swallows and digests complex problems much as a snake swallows and digests mice.”

Appendix D, *Production Links*, first paragraph

Changed “operations” to “processes” in the first sentence.

Appendix D, *Production Links*, last paragraph

Changed “production operations” to “processes” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changes in Version 2006.01.07

Appendix D, *Organization, Procedures, and Tools*, title

Changed title to “*Machine Tools*.”

Appendix D, *Machine Tools*, first five paragraphs

“Toyota production lines form river-like structures. Raw material inventories and receiving docks are the sources; parts fabrication and subassembly operations are the tributaries; and final assembly is the main channel. Toyota machine tools are similar to those of traditional job shops in that they are flexible and relatively inexpensive. They are often simply modified versions of the same type of machines found in job shops. These modifications have three major ends: (1) automation, (2) fool-proofing, and (3) rapid tool setting (RTS).

“Toyota approaches automation differently than traditional Western manufacturers do. Rather than trying to get the most production from each machine, they try to get the most production from each full day’s work (the effort a person can put forth continuously without ill effect). Understanding this approach calls for understanding the benefits of multimachine staffing.

“Suppose that a firm needs six semiautomatic machine tools to fulfill current production requirements and that each machine tool requires human attention for fifty seconds every three minutes. The firm could assign six people to the process, one person to each machine tool. Alternatively, it could assign two people to two clusters of three machine tools. This saves four full day’s work each shift.

“This human centered approach to automation makes it possible to accumulate fractions of a full day’s work. This makes it possible to automate in small increments without wasting labor or creating uneven flows. Automating in small increments makes it easier for production teams to target routine, difficult, and dangerous operations. Routine operations are the least costly to automate, difficult ones exhaust a full day’s work in less than a full day, and dangerous ones threaten precious human capital.

“Multimachine staffing also makes adding and removing people from a process easier, which lowers the cost of adjusting to fluctuations in production levels and the cost of inducing knowledge by removing people.”

were changed to:

“Toyota production lines form river-like structures. WIP flows from receiving docks to shipping docks. Production equipment and small storage areas define the channels. Here and there are U-shaped clusters of machine tools. Within these oxbows, one person runs many machine tools. Compared to Western firms, machine tools are more

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

like those of job shops than those of continuous processes. Many are simply modified versions of the same types found in job shops. These modifications have three ends: (1) automation, (2) fool-proofing, and (3) rapid tool setting (RTS).

“From an industrial age view, factories are great machines in which people are interchangeable parts. The normative end is efficient production. From a knowledge age view, factories are learning organisms in which people are the most important part, the part that learns. The normative end is wise production. Toyota has a knowledge age view of automating tasks. Rather than trying to get the most out of each machine tool, they try to get the most out of each full day’s work. A full day’s work is the effort a team member can put forth over a long period without ill effect.

“Suppose that a line uses six machine tools run by six operators to produce wheel bolts. The Western approach to automating would be to replace these six machines with a single, fully automated machine capable of twice the production. The Toyota approach would be to modify the six machines so that they only call for a few seconds of human attention each minute. The team would then arrange these six machines in a cluster so that one or two people can run all six. This approach makes it possible to automate in small increments without wasting resources or creating uneven flows.”

Appendix D, *Machine Tools*, sixth paragraph

Changed “Multimachine staffing” to “The human centered approach to automating” in the first sentence.

Changed “At Toyota, they call production on autonomous machines” to “Toyota team members call production on such machines” in the second sentence.

Changed “inexpensive” to “cheap” in the third sentence.

Changed “inexpensive” to “cheap” in the third sentence.

Appendix D, *Machine Tools*, sixth paragraph

Changed “inexpensive” to “cheap” in the third sentence.

Changed “worker” to “team member” in the fourth sentence.

Deleted the sixth sentence: “It consists of a scale built into the line and a relay attached to the mechanism that advances the package.”

Changed “the relay” to “a relay switch connected to a scale” in the last sentence.

Changed “mechanism from advancing” to “conveyer from moving” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix D, *Machine Tools*, last four paragraphs

“Combining smooth flow with small batch size requires the ability to set up machine tools rapidly. Team members have learned many RTS techniques through experience, the simplest of which is dedicating machines to single items. Rather than setting up a machine to produce a given item, a team member simply walks over to the machine dedicated to that item. When these machines are not in use, they stand idle.

“The most important technique is adhering to a standard setup procedure. Good setup procedures separate tasks that workers can perform while the machine is running from those that require that the machine be idle. For example, the precise placement of tools and parts while the machine is running prevents searching for them while the machine is idle. Good procedures also use fool-proofing devices and color-coding to save time and reduce mistakes.

“Another technique is using separate front-end assemblies for each unique production operation that the machine tool performs. The goal is ending the need to make adjustments. To set up the machine tool, the operator simply removes one assembly and installs another. This technique raises capital costs, but not as much as dedicating entire machines to single items.

“Team members also create simple and inexpensive modifications to machine tools to promote RTS. These include replacing screws with wing nuts, welding wrenches to bolts, slotting safety guards for quick removal, and adding alignment pins to front end assemblies. Such simple modifications can cut setup times substantially.”

were changed to:

“**Rapid Tool Setting**

Smooth flow calls for rapid tool setting (RTS). The simplest RTS technique is to use cheap machines that produce only one product. Rather than setting up a costly machine, the team member simply uses the appropriate cheap machine. A more common RTS technique is to build front-end assemblies for each product. To set up the tool, the team member simply removes one assembly and installs another. An even more common technique is to modify common job shop tools for RTS. Such modifications include replacing screws with wing nuts, welding wrenches to bolts, slotting safety guards for quick removal, and adding alignment pins to assemblies.

“The most common RTS technique is to adhere to a standard setup procedure. Good procedures separate tasks that team members can perform while the machine is running from those that call for the machine to be idle. For example, the precise placement of tools and parts while the machine is running prevents searching for them while the machine is idle. Good procedures also use color-coding to save time and fool-proofing devices to reduce mistakes.”

Appendix D, *Production Links*, first two paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Understanding the Toyota system calls for understanding the two ways the system links production processes. Production teams link some manufacturing operations tightly and rigidly to form tasks, which one or more people perform at a work center. They join these tasks with flexible links.

“Each link that joins tasks consists of containers suitable for storing and conveying one batch. These containers cycle back and forth between the supplying work center and consuming work center. Associated with each container are two cards (*kanban*) that clearly identify the item, batch size, the work center supplying the item, and the work center consuming the item. One card controls *production* at the supplying work center (the P-kanban) and the other controls *conveyance* between the two work centers (the C-kanban). For this reason, the Toyota system is also known as the dual kanban system.”

were changed to:

“Toyota engineers join production processes together in two ways. They join some processes tightly together into tasks, which one or more people perform at a work center. They join tasks together with flexible links.

“Each flexible link consists of containers suitable for storing and moving one batch of identical items. These containers cycle back and forth between the supplying work center and consuming work center. Associated with each container are two cards (*kanban*) that clearly identify the item, batch size, the supplying work center, and the consuming work center. One card controls *production* at the supplying work center (the P-kanban) and the other controls *conveyance* between the two work centers (the C-kanban).”

Appendix D, *Production Links*, third paragraph

Changed “worker” to “team member” in the third and seventh sentences.

Changed colons into semicolons in the fifth and last sentences.

Appendix D, *Production Links*, last paragraph

“If the supplying center runs out of P-kanbans in its collection box or if these kanbans start to accumulate, the production link is out of balance. An out of balance link prompts the production team to look for a labor excellence problem. If the team cannot find a readily solvable problem, it tries to balance the process by shifting production operations from one work center to another. If it cannot do this, it adds a kanban pair (P- and C-kanban) to the link.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“If the supplying center runs out of P-kanbans in its collection box or if these kanbans start to accumulate, the production line is out of balance. An out of balance line prompts the team to look for a problem to solve. If the team cannot find a readily solvable problem, it tries to balance the line by shifting processes from one work center to another. If the team cannot do this, it adds a kanban pair (P- and C-kanban) to the link. Adding kanban adds to the WIP buffer between the supplying and consuming work centers.”

Changes in Version 2006.01.10

Chapter 2, Normative Science, last paragraph

“Science is nothing more than a refinement of everyday thinking. Temporal science is the result of the process of refining everyday thinking at a point in time. Normative science is the ever-evolving process of refining everyday thinking.”

was changed to:

“Worshippers of Newton confuse the results of science with the truth. They fail to distinguish between temporal science (the result of refining everyday thinking at a point in time) and normative science (the ever-evolving process of refining everyday thinking). Distinguishing between temporal science and normative science helps us to avoid confusing the results of science with the truth. It also provides us with a vision for improving science.”

Appendix D, *Knowledge Induction*, title

Changed title to “*Inducing Knowledge*.”

Appendix D, *Inducing Knowledge*

“A production team can induce the creation of knowledge of how to produce using less WIP by removing kanban pairs from production links until one of the production links fails. If the team finds a readily solvable problem, it solves the problem, balances the process, and continues production. If not, it balances the process and continues. If the link continues to fail after repeated balancing, the team replaces the removed kanban pair and continues production.”

“A production team induces knowledge by removing scarce resources from a complex process until the process fails, finding the problem that caused the failure, and solving that problem. The process must be complex enough that the team cannot find the problem at the time they remove the non-knowledge resource. If it could, it would simply solve the problem without suffering the cost of disrupting the process. Like athletic training, inducing knowledge has specific and general effects.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“A team can induce knowledge of how to increase the efficiency of labor and capital by removing time from the production process. It does this by cutting the time required to produce a batch or by increasing the batch size without increasing the time allotted to produce a batch. Continuing to remove time eventually creates a problem - at least one team member will fall behind. This bottleneck may or may not produce a readily solvable problem. If the team discovers one, it solves the problem, balances the process, and continues production. If it fails to find one, it balances the process and continues production. If it fails after repeated tries, it returns to a slower pace. In theory, this cycle continues until the marginal cost of inducing knowledge equals its marginal benefit. Practice approximates this goal.

“Where removing time from a process increases labor efficiency, capital efficiency, and output, removing people increases labor efficiency without changing capital efficiency or output. As in removing time, removing people will eventually cause a problem. If the team discovers a readily solvable problem, it solves the problem, balances the process, and continues production. If it fails to find one, it balances the process and continues production. If it fails after repeated tries, it returns a person to the process.

“The team can also learn to produce using less WIP by removing kanban. Removing kanban increases the efficiency of capital without changing output. The procedure is similar to removing labor and time.

“All three of these types of induction expose efficiency problems and so tend to raise labor and capital efficiency. Because the cause of many efficiency problems is poor quality, inducing knowledge also tends to increase product quality, for example, parts that deviate from design specifications often take extra time to fit together. Correcting quality problems may require: (1) eliminating deviations from design specifications by changing standard procedures or by adding automation or fool-proofing devices, (2) tightening current design specifications, or (3) changing the product design.

“Stressing the production system produces small manufacturing problems. These problems are not always obvious. To make sure that the team finds the problem that produces the best solution, companies train their teams to find problems. Techniques for finding problems range from statistical quality control methods to the Socratic *five whys*. By asking “Why?” at least five times, one may discover that the real cause of the labor efficiency problem in final assembly is a subassembly plant’s purchasing agent sleeping with an adhesive manufacturer’s representative.”

were changed to:

“WIP inventory buffers the uneven flow of WIP. It also hides problems to solve. A Toyota poster from the early eighties explained this to team members by comparing WIP inventory to water in a lake. Lowering the level of water in the lake uncovered hidden rocks.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Teams lower WIP inventory by removing kanban pairs from the production line until one of the work centers falls behind. If the team finds a problem to solve, it solves the problem and continues producing. If not, it balances the line and continues producing. If the line continues to fail, the team replaces the kanban pair and continues producing.

“Removing kanban in order to find problems to solve is a means of inducing the creation of useful knowledge. We induce knowledge by (1) removing scarce resources from a complex process until the process fails; (2) finding the problem that caused the process to fail; and (3) solving the problem.

“Like athletic training, inducing knowledge has both specific and general effects. When removing kanban, the team learns how to produce using less WIP inventory. When removing labor, the team learns how to produce using less labor. When removing time (by directing more demand to the line), the team learns how to produce more without using more labor and capital. The general effects are raising product quality and improving adaptability.”

Appendix D, *Visibility*, first paragraph

“Inducing knowledge is one means of finding problems. Another is making the production process as obvious as possible. The kanban system, low stock level markers, color coded stock areas, and production statistic charts near each work center help reveal the process to production supervisors and managers as they walk around the production area. Many plants also employ a lamp (*andon*) system to help them quickly assess the process from a distance. Each worker displays the status of his or her work center by turning on an overhead light. Sophisticated systems use different colored lights for different conditions. For example, a green light shows that all is going well; a yellow light warns that the worker is struggling to keep up; and a red light signals the need for immediate help. A well-run process displays green lights, a few yellow ones, and no red ones. Too many yellow lights signals trouble and all green lights shows the process is not being stressed enough to induce knowledge. Increasing visibility by these and other means makes it easier to find problems.”

was changed to:

“Stressing a complex system by removing scarce resources creates small problems. Techniques for finding these problems range from statistical quality control methods to the Socratic *five whys*. By asking “Why?” at least five times, one may discover that the real cause of a labor efficiency problem in final assembly is an affair between a purchasing agent and an adhesive sales representative. All of these techniques benefit from making the production system as transparent as possible.

“Production supervisors and managers also find problems to solve. Kanban, low stock level markers, color coded stock areas, and production statistic charts near each work center help them to do so. Many plants also employ a lamp (*andon*) system to help managers quickly assess stress from a distance. Each work center has an overhead

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

status light. A green light shows that all is going well; a yellow light warns that the worker is struggling to keep up; and a red light signals the need for immediate help. All green lights shows that the process is not being stressed enough to induce knowledge. Too many yellow and red lights signals too much stress. Increasing visibility by these and other means makes it easier for supervisors and managers to find problems to solve.”

Changes in Version 2006.01.14

Chapter 2, Normative Science, last paragraph

Added (“a God’s eye view of the Universe”) to the first sentence.

Chapter 2, Refining Everyday Thinking, third paragraph

Italicized “*completely just*” in the fourth sentence.

Italicized “*completely ignorant*” in the fourth sentence.

Chapter 2, Refining Everyday Thinking, fourth paragraph

Italicized “*ever more*” in the second sentence.

Appendix D, *Types of Systems*, title

Changed title to “*Operational Complexity*.”

Appendix D, *Operational Complexity*, first two paragraphs

“We can measure the complexity of production operations in two ways. We can count the number of production processes. By this measure, the simplest system is one that consists of a single process. Such a system is simple in *form*. We can also count the number of decisions that the production team face. By this measure, the simplest system is one that has only one decision. Such a system is simple in *operation*.”

“The simplest system in operation is a “pull system” with no flexible links. A “pull system” is one in which customers “pull” product through the system. There is no production until there is a call for production from the customer. The customer, not the production team, sets the rate of production.

were changed to:

“We can measure the complexity of production operations by counting the number of decisions that the production team faces. The simplest system is a “pull system” with

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

no flexible links. A “pull system” is one in which customers “pull” product through the system. There is no production until there is a call for production from the customer. The customer, not the production team, sets the rate of production. **This simple system has only one decision, which is whether it is available to produce or not.**

Appendix D, *Operational Complexity*, last five paragraphs

“**We can also** classify production systems by batch size, the quantity of identical items produced at one time. At the low end of this scale is *custom production*. At the high end of the scale is *continuous process production*. Between the two extremes is *batch production*.”

“Traditional custom (job shop) production is complex in operation. Its major advantages are flexibility and low capital costs. Most job shops use general-purpose machine tools grouped into departments by type of machine. Work flows from department to department. Capital costs are low because workers use the same general-purpose tools to make a variety of parts. They also use little equipment to move (WIP) from one process to another.

“The major disadvantage of job shops is their high cost per unit. Direct labor costs per unit are high because workers (1) need special skills; (2) spend much time setting up machines; and (3) waste time waiting for parts and work. Waste costs per unit are high because every tool setup is an opportunity to make mistakes. WIP holding costs per unit are high because flexible links store WIP. Decision related costs per unit are high because flexible links call for making decisions.

“In contrast, continuous production processes, such as paper mills, are relatively simple in operation. Compared to job shops, they sacrifice flexibility and capital to lower costs per unit.

“Batch production systems combine qualities of custom and continuous process systems. Those near the low end of the batch size scale are more like job shops. Those near the high end of the scale are more like continuous processes.”

were moved down a section and changed to:

“**Batch Size**

When production engineers expect production rates to be very low, they plan to produce in small batches on lines that are so greatly folded in that we no longer think of them as lines. When they expect rates to be very high, they plan to produce in very large batches on lines that are barely folded in. When they expect rates to be moderate, they plan to produce in batches on folded in lines.

Engineers classify production systems by batch size, the quantity of identical items produced at one time. At the low end of this scale is *custom production*. At the high

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

end of the scale is *continuous process production*. Between the two extremes is *batch production*.

“Traditional custom (job shop) production is complex in operation. Its major advantages are flexibility and low capital costs. Most job shops use general-purpose machine tools grouped into departments by type of machine. Work flows from department to department. Capital costs are low because workers use the same general-purpose tools to make a variety of parts. They also use little equipment to move (WIP) from one process to another.

“The major disadvantage of job shops is their high cost per unit. Direct labor costs per unit are high because workers (1) need special skills; (2) spend much time setting up machines; and (3) waste time waiting for parts and work. Waste costs per unit are high because every tool setup is an opportunity to make mistakes. WIP holding costs per unit are high because flexible links store WIP. Decision related costs per unit are high because flexible links call for making decisions.

“In contrast, continuous production processes, such as paper mills, are relatively simple in operation. Compared to job shops, they sacrifice flexibility and capital to lower costs per unit.

“Batch production systems combine qualities of custom and continuous process systems. Those near the low end of the batch size scale are more like job shops. Those near the high end of the scale are more like continuous processes.”

Appendix D, *Smoothing Flows*, second paragraph, last two sentences

“Like other batch systems, teams can vary its character by varying batch size. Unlike other batch systems, teams can vary its character by varying the tightness of its flexible links.”

were changed to:

“Unlike other batch systems, teams can control its operational complexity by varying the tightness of its flexible links.”

Appendix D, *Smoothing Flows*, last paragraph

“The Toyota system combines a simple, elastic, and robust means of linking processes (dual kanban) with continual improvement (kaizen). The elasticity of the links allows the system to stretch to fit problems that are too complex for engineers to solve alone. Stretched links buffer the uneven flow of WIP. Tightening stretched links uncovers small production problems that team members are able to solve. Solving these problems smoothes the flow of WIP. The system swallows and digests complex problems much as a snake swallows and digests mice.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“As described in the first appendix, the Toyota system swallows and digests problems too complex for production engineers to solve by themselves. Swallowing a complex problem is a metaphor for engineers implementing their crude solution to a complex problem. Engineers know that ignorance of how to deal with this complexity leads to the uneven flow of WIP. Engineers estimate how much uneven flow their crude solution will create. They then reduce expected uneven flow to manageable levels by stretching flexible links. The extra WIP inventory in stretched links buffers the uneven flow of WIP.

“Digesting complex problems is a metaphor for finding and solving small problems that create uneven flow. Solving these problems smoothes the uneven flow. It also improves procedures, machine design, trading relations, and product design.

“Putting these two processes together, engineers implement their crude solution to a complex problem. This crude solution creates uneven flow. The team solves small problems that create uneven flow. Solving these small problems embeds useful knowledge into the line. Once things are running smoothly, the team tightens one or more flexible links. This uncovers problems that create uneven flow. The team solves these problems. Once things are again running smoothly, the team tightens more links, which uncovers more problems to solve. This recursive process continues until the team can find no more problems to solve.”

Changes in Version 2006.02.06

These changes were the result of my decision to restructure the paper based on the first two chapters of this work, which I submitted to the Institute for Coherence and Emergence (ISCE) for publication in their journal, *Emergence*. I made this decision after receiving feedback from an anonymous reviewer of the ISCE paper and after reviewing this feedback with Michael Lissack, the founder of ISCE. Their comments made me realize that the first two chapters were too much of a compromise between the lay and academic audiences. I needed to beef up the paper and slim down the book. In both cases, I needed to be much more wary of terms that carried too much baggage.

Chapter 1, Living Wisely, title

Changed title to “Setting Words Aright.”

Chapter 1, Setting Words Aright, first two paragraphs

“We live well by satisfying our needs for those things that we need to live well. We live wisely by continually improving the process of satisfying our needs for those things that we need to live well.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Living wisely calls for thinking clearly about the process of satisfying our needs for those things that we need to live well. Thinking clearly about this process calls for the proper concepts for thinking about this process.”

were deleted.

Chapter 1, Economics’ Blind Spot, title

Changed “Economics’ Blind Spot” to “**Modern** Economics’ Blind Spot.”

Chapter 1, Excellence in Living Wisely, first paragraph, last two sentences

“In contrast, we commonly use the term ‘wise’ to describe people who are not only wise in satisfying their wants but are also wise in choosing them. “**Rational**” people consume cigars efficiently. “**Wise**” people do not smoke.”

was changed to:

“**Consuming cocaine efficiently is “rational.”** In contrast, we commonly use the term ‘wise’ to describe people who are not only wise in satisfying their wants but are also wise in choosing them. **Not consuming cocaine is wise.**”

Chapter 2, Managerial Excellence, title

Changed title to “**Excellence in Living Wisely.**”

Chapter 1, Excellence in Living Wisely, last two paragraphs

“The terms ‘normative’ and ‘temporal’ have broader meanings. ‘Normative’ describes what is normal. It is normal for living things to follow their natures. ‘Normative’ also prescribes norms. Living things owe it to themselves (ought) to follow their natures. ‘Temporal’ means worldly. When economists claim to be worldly philosophers, they accept splitting models based on our actions (revealed preferences) from models based on our natures. In modern terms, they accept splitting economics from moral philosophy.

“Theories based on our actions help us to predict how we will act. We ought to use these predictions to solve *temporal* problems. In contrast, theories based on our natures help us to explain how to act wisely. We ought to use these *timeless* explanations to find better *temporal* problems to solve. Given a concept of science based on what we need to live wisely, we will invent ever better means of testing both types of theories.”

were deleted.

Chapter 2, Normative Science, title

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

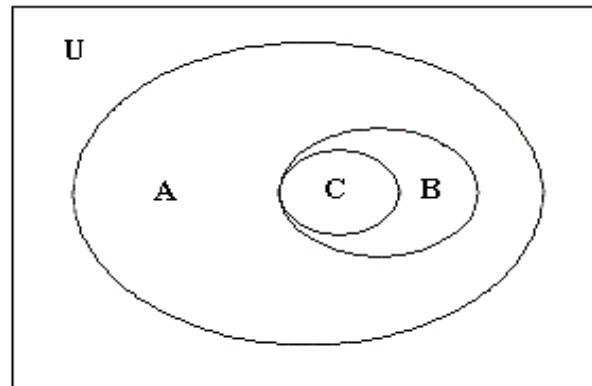
Changed title to “**The Process of Refining Everyday Thinking.**”

Chapter 2, The Process of Refining Everyday Thinking, second paragraph

Changed “**philosophical**” to “**logical and elegant**” in the last sentence.

Chapter 2, The Process of Refining Everyday Thinking, third and fourth paragraphs

“We further refine knowledge by testing theories against experience. Most specialists in testing theories believe that a good theory is a logical and elegant theory that we use to predict and explain a part of the Universe. They refine philosophical theories (B) by rejecting those that fail to meet empirical standards for predicting. What remains are scientific theories (C):



“Long ago members of the university of smiths, the university of tailors, and other craft guilds learned that their quality standards ought to reflect the needs of their customers rather than their own needs. Members of the university of scientists ignore this lesson at their peril. They are members of a guild, not a religious order. They ought to test theories based on the needs of those who use theories, not on their spiritual need to seek the truth. They ought to take to heart the story of John Harrison and the Board of Longitude.²”

² The Board of Longitude unjustly denied John Harrison a prize for solving the longitude problem. Some sociologists believe that this was because Harrison, a commoner with no scientific training, was an outsider. More likely it was because his work did not advance the search for truth. Sociologists ought to recognize that Benjamin Franklin, who was one of the most celebrated scientists at the time, was also a commoner with no scientific training. For more on John Harrison and the longitude prize, see the British National Maritime Museum’s website, <http://www.nmm.ac.uk/server/show/conWebDoc.355> (28 November 2005).”

were deleted.

Chapter 2, The Process of Refining Everyday Thinking, new fourth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We live in a complex world. If we are to live wisely, we need to test theories by how well they perform their roles in decision-making. We need to refine narratives (A) by **rejecting** those that fail to meet our empirical standards for predicting. What remains are **scientific theories** that we use to predict (C₁). **This set includes quantum mechanics and marginalist economics.** We also need to refine **philosophical** theories (B) by **rejecting** those that fail to meet our empirical standards for helping us find problems to solve. What remains are **scientific** theories that we use to explain (C₂). **This set includes Charles Darwin’s theory of evolution, Alfred Wegener’s theory of plate tectonics, and Edward Witten’s M-theory of physics:”**

were changed to:

“We live in a complex world. If we are to live wisely, we need to test theories by how well they perform their roles in decision-making. We need to refine narratives (A) by **culling out** those that fail to meet our empirical standards for predicting. What remains are **tested narratives** that we use to predict (C₁). We also need to refine **logical and elegant** theories (B) by **culling out** those that fail to meet our empirical standards for helping us find problems to solve. What remains are **tested logical and elegant** theories that we use to explain (C₂):”

Chapter 2, The Process of Refining Everyday Thinking, last three paragraphs

“Newton’s theories greatly expanded the depth and breadth of Kepler’s theory. We would have accepted them as tools for predicting and as tools for explaining. However, we would not have deemed them the sacred truth as Alexander Pope did in his intended epitaph for Newton:

Nature and Nature’s laws lay hid in night:
God said, “Let Newton be!” and all was light.

“Physicists today know that the universe is not as predictable as those who worship at Newton’s shrine believe it to be. Among other things, large asteroids occasionally collide with the earth, devastating its higher forms of life.

“Worshippers of Newton confuse the results of science with the truth (“a God’s eye view of the Universe”). They fail to distinguish between temporal science (the result of refining everyday thinking at a point in time) and normative science (the ever-evolving process of refining everyday thinking). Distinguishing between temporal science and normative science helps us to avoid confusing the results of science with the truth. It also provides us with a vision for improving science.”

were changed to:

“We can interpret Einstein’s definition of science two ways. If we interpret the term ‘refinement’ to mean the results of refining, science is the result of refining everyday thinking. Science concerns theories. If we interpret the term ‘refinement’ to mean the

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

process of refining, science is the ever-evolving process of refining everyday thinking. Science concerns research programs. If we fail to distinguish between these two definitions of science, we are likely to confuse current scientific theories with the truth rather than an assay of the truth.⁴ Again, the wise man says, “I am looking for the truth,” and the fool, “I have found the truth.””

“⁴ To confuse a scientific theory with the truth is to make the philosophical mistake of confirming the consequent. Formally, (1) if A is true, B is true; (2) B is true; therefore (3) A is true. For example, (1) if it rains, the ground is wet; (2) the ground is wet; therefore, (3) it rained. This bit of foolishness ignores dew, sprinkler systems, melting snow, and countless other things that make the ground wet. As Karl Popper observed, we cannot prove scientific theories true, we can only prove them false.”

Chapter 2, Economic Science, fourth paragraph, new fifth footnote

Changed “associate” to “**are likely to** associate” in the first sentence.

Changed “associate” to “**are likely to** associate” in the second sentence.

Chapter 2, Economic Science, fifth paragraph, last sentence

“**We ought to distinguish between *temporal tools* and *normative tools*.**”

was deleted.

Chapter 2, Economic Science, sixth paragraph, second sentence

Changed “the **study** of the **scientific** research program” to “the **research program** of the research program” in the first sentence.

Chapter 2, Refining Everyday Thinking, first paragraph

Changed “culling” to “culling **out**” in the last sentence.

Chapter 2, Refining Everyday Thinking, second paragraph

Changed “cull” to “cull **out**” in the first sentence.

Changed “cull” to “cull **out**” in the second sentence.

Chapter 2, Refining Everyday Thinking, second paragraph, third sentence

“**We ought to cull those based solely on sociobiology, which consider only our bodies; those based solely on postmodernism, which consider only our minds; and those based solely on our need to relink with the infinite Being, which consider only our spirits.**”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

was deleted.

Chapter 2, Refining Everyday Thinking, third paragraph

Changed “cull” to “cull **out**” in the first sentence.

Chapter 2, Refining Everyday Thinking, fourth paragraph

Changed “culling” to “culling **out**” in the first sentence.

Changed “cull” to “cull **out**” in the second sentence.

Changed “cull” to “cull **out**” in the third sentence.

Chapter 2, Refining Everyday Thinking, last paragraph

Changed “cull” to “cull **out**” in the first sentence.

Chapter 3, title

Changed “**Normative** Concepts” to “**Timeless** Concepts.”

Chapter 3, Introduction, first paragraph

Changed “**normative models**” to “**timeless intellectual tools**” in the first sentence.

Changed “**normative**” to “**timeless**” in the second sentence.

Changed “economic” to “**modern** economic” in the second sentence.

Chapter 3, Wealth, first paragraph

Changed “**Economists**” to “**Modern** economists” in the first sentence.

Changed “**Economists**” to “**Modern** economists” in the second sentence.

Chapter 3, Consumption, first paragraph

Changed “economists” to “**modern** economists” in the first sentence.

Chapter 5, *Consider the Justice of Interventions*, last paragraph

Changed “New Deal farm programs” to “**Though often changed in form**, New Deal farm programs” in the last sentence.

Appendix A, Ohno’s Normative Vision, title

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changed title to “**Ohno’s Vision.**”

Appendix D, A More Complete Normative View, title

Changed title to “**A More Complete Timeless View.**”

Changes in Version 2006.02.24

Acknowledgements, fourth paragraph

Changed title to “**and the possibility of losing my acceptances to the Stanford and Harvard graduate schools of business,**” in the eighth sentence.

Chapter 1, Excellence in Living Wisely, first paragraph

Reversed the order of the second and third sentences.

Chapter 2, The Process of Refining Everyday Thinking, title

Deleted “**The Process of.**”

Chapter 2, Refining Everyday Thinking, last paragraph

“**We can interpret Einstein’s definition of science two ways. If we interpret the term ‘refinement’ to mean the results of refining, science is the result of refining everyday thinking. Science concerns theories. If we interpret the term ‘refinement’ to mean the process of refining, science is the ever-evolving process of refining everyday thinking. Science concerns research programs. If we fail to distinguish between these two definitions of science, we are likely to confuse current scientific theories with the truth rather than an assay of the truth.⁴ Again, the wise man says, “I am looking for the truth,” and the fool, “I have found the truth.”**”

was deleted.

Chapter 2, Economic Science, title

Changed title to “**Science as a Process.**”

Chapter 2, Research Programs, second paragraph, last two sentences

“**One of the most valuable results of this ongoing research program was the division of labor. The division of labor has led to countless other inventions. These include ever more sophisticated (1) tools for enhancing our senses (telescopes, microscopes, thermometers, atomic clocks, radar); (2) tools for enhancing our common sense**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

(formal logic, algebra, analytical geometry, calculus, statistical analysis, computer simulation); and (3) testing strategies (reductionism, pragmatism, instrumentalism).”

were changed to:

“One of the most valuable results of this ongoing research program was the division of labor, which has given us specialized producers of goods and services, including intellectual tools.

“Most producers of tested intellectual tools base their concept of quality on technical excellence. In contrast, most other producers base their concept of quality on a combination of technical excellence and usefulness. They recognize that a technically perfect brass watermelon is still a brass watermelon, something that consumers neither need nor want.

“The solution to this tunnel vision problem is to define science to be the ever-evolving process of refining everyday thinking.⁴ This definition provides us with a vision of how best to improve the process of refining everyday thinking. It also reminds us that the products of science are useful assays of the truth rather than the truth itself.⁵

“⁴The belief that science is the result rather than the process of refining thinking tends to blind us to the possibility of learning. It does not take a theory to beat a theory. It takes an intellectual tool to beat an intellectual tool. A strategy for learning (research program) can beat a theory.

“⁵We base theories on assumptions. Not all of these assumptions are testable. To confuse a scientific theory with the truth is to make the philosophical mistake of confirming the consequent. Formally, (1) if A is true, B is true; (2) B is true; therefore (3) A is true. For example, (1) if it rains, the ground is wet; (2) the ground is wet; therefore, (3) it rained. This bit of foolishness ignores dew, sprinkler systems, melting snow, and countless other things that make the ground wet. Testing the consequences of a theory does not test its assumptions.”

“Economic Science

Nowhere is the need for this change more pressing than in the field of economics. Most economists believe that economics involves testing logical and elegant models that explain by how well they predict. Economists using this method presume that theories that predict well also explain well. As we saw in the EOQ example, this is not the case. We predict what happens in economies based on the knowledge that economic agents possess. If we explain what happens in economies based on the knowledge that economic agents possess, we will tend to blind ourselves to the possibility of learning. To avoid this, we need to explain what happens in economies based on how we would act if we had greater knowledge of what we ought to do. In other words, we need to explain based on how the wise would act.”

Chapter 2, Economic Science, new second paragraph, first two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Specialists have long struggled with how best to explain human action. The greatest difficulty in studying human action is the complex (reflexive⁵ / recursive) dynamic between the intellectual tools that we use to guide our actions and reality.”

were changed to:

“To make matters worse, there is a complex (reflexive⁶ / recursive) dynamic between the intellectual tools that we use to guide our actions and reality.”

Chapter 2, Economic Science, new third paragraph, third sentence

“The first is their tendency to become more popular.”

was changed to:

“The first is their tendency to become more popular, which is in part due to the lock-in effect created by the inexhaustibility of knowledge.”

Chapter 2, Economic Science, last two paragraphs

“We predict what happens in economies based on the knowledge that economic agents possess. If we explain what happens in economies based on the knowledge that economic agents possess, we will tend to blind ourselves to the possibility of learning. To avoid this, we need to explain what happens in economies based on how we would act if we had greater knowledge of what we ought to do. In short, we need to explain based on how the wise would act. Until all of us act wisely, we ought to distinguish between intellectual tools for helping us to predict, which help us evaluate alternatives, and intellectual tools for helping us to explain, which help us formulate alternatives.

“Fifty years ago, Milton Friedman defined (positive) economic science as “a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.”⁷ He warned economists not to use their (positive) theories to formulate alternatives. A more complete approach is to define economic science as the research program of the research program of, by, and for intelligent life. Economic science ought to be the premier *intelligent life science*.

⁷ Friedman, Milton, “The Methodology of Positive Economics,” *Essays in Positive Economics*, (Chicago: University of Chicago Press, 1953), 39.”

were changed to:

“To address this problem, economists ought to define economic science to be the science of practical wisdom, the research program of the research program of, by, and for intelligent life.⁸ Economic science ought to be the premier *intelligent life science*.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“⁸ The research program of, by, and for intelligent life describes the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world as it is) and normative in means (prescribing the means of improving our descriptions of the world).”

Chapter 2, Refining Everyday Thinking, title

Changed title to “Refining Theories That Explain.”

Chapter 2, Refining Theories That Explain, last paragraph

“The theories that remain after we cull out misleading and unethical theories deserve our tolerance. We base this tolerance on our ignorance of how best to live wisely rather than on the right to do as we please.”

was changed to:

“Logical and elegant theories for living wisely stand ready to be proven less useful than other theories in helping us to find problems to solve in the quest to live wisely.¹³ We can test these theories by creating an environment in which researchers - all of us - are free to choose which of these theories to test with our lives.¹⁴ Those that fellow researchers test with their lives deserve our tolerance. We base this tolerance on our ignorance of how best to live wisely rather than on the right to do as we please.”

“¹³ All technical means of testing these theories involve choosing a measure for living wisely. Choosing the best measure for living wisely is part of the research program of, by, and for intelligent life. Candidates include such measures as personal income, changes in per capita national income, personal assessments of well-being, and average lifespan. We can argue endlessly about the worth of these measures. For some people with a results-oriented view of science, these theories are nothing more than moral philosophy. For others with a results-oriented view of science, these theories are pseudoscience. For those people with a process-oriented view of science, these theories are simply theories that we cannot yet test by technical means.”

Chapter 3, Three Common Misbeliefs, last paragraph

Changed “hundreds of millions” to “millions” in the second sentence.

Appendix C, first two paragraphs

“Imagine a pill that improves practical wisdom. The immediate effect of releasing this product would be a drop in the demand for some goods and a rise in the demand for others. Some parts of the economy would contract and other parts would expand. Resources would flow from the contracting sectors to the expanding ones. This adjustment process would be neither immediate nor costless. Economists would record an immediate fall in aggregate production and rise in unemployment. Economic

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

science would portray one of the **most important** advances in human history as a disaster.

“Economists recognize problems in measuring services and improvements in quality. However, they **do not recognize** that all **consumer** goods and services are means to living wisely. The problem of measuring services is universal. Worse, the problem of measuring quality is **far more difficult** than economists believe it to be.”

were changed to:

“Imagine a pill that improves practical wisdom. **Releasing this product would change how people choose to live.** Some parts of the economy would **shrink** and other parts would **grow**. Resources would flow from the shrinking **parts** to the growing ones. **The immediate effect would be a** fall in aggregate production and **a** rise in unemployment. **Modern** economic science would portray one of the **greatest** advances in human history as a disaster.

“**The problem is one of measuring what we need to live wisely. Most modern** economists recognize problems in measuring services and improvements in quality. However, they **deny** that all goods and services are means to living wisely. The problem of measuring services is universal. Worse, the problem of measuring quality is **much harder** than **most modern** economists believe it to be.”

Appendix D, A More Detailed Timeless View, title

Changed title to “**A Finer Timeless View.**”

Appendix D, *Batch Size*, first paragraph

“When production engineers expect production rates to be very low, they plan to produce in small batches on lines that are so greatly folded in that we no longer think of them as lines. When they expect rates to be very high, they plan to produce in very large batches on lines that are barely folded in. When they expect rates to be moderate, they plan to produce in batches on folded in lines.”

was moved up to the end of the previous section, *Folding In Operations*.

Changes in Version 2006.02.28

Chapter 1, Setting Words Aright, last paragraph, first two sentences

“The inexhaustibility of knowledge gives knowledge in use an advantage over knowledge not yet in use. **When we combine knowledge into a network, this local “lock-in” effect can become large.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

² Arthur, W. Brian, “Positive Feedback in The Economy,” *Scientific American*, Feb. 1990, 92-99, reprinted in *Increasing Returns and Path Dependence in the Economy*, (Ann Arbor: University of Michigan Press, 1994).”

were changed to:

“The inexhaustibility of knowledge gives knowledge in use an advantage over knowledge not yet in use.”

² **When we combine knowledge into a network, this local “lock-in” effect can prevail over superior knowledge not yet in use.** Arthur, W. Brian, “Positive Feedback in The Economy,” *Scientific American*, Feb. 1990, 92-99, reprinted in *Increasing Returns and Path Dependence in the Economy*, (Ann Arbor: University of Michigan Press, 1994).”

Chapter 1, Excellence in Living Wisely, second paragraph

Moved the footnote from the end of the last sentence to the end of the second to last sentence.

Chapter 1, Deciding Wisely, last paragraph, last sentence

“Practical wisdom, trust, liberty, and capital are strategic assets **in living wisely.**”

was changed to:

“**In the quest to live wisely,** practical wisdom, trust, liberty, and capital are strategic assets.”

Chapter 2, Refining Theories That Explain, first paragraph

Inserted the paragraph:

“The research program of, by, and for intelligent life includes both theories that predict, which we use to evaluate alternatives, and theories that explain, which we use to formulate alternatives. We test theories that predict by testing how well they predict.⁹ We test theories that explain by how well they help us to find problems to solve in the quest to live wisely.

⁹ This is compatible with the instrumental interpretation of Milton Friedman’s definition of positive economic science as “a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.” Friedman, Milton, “The Methodology of Positive Economics,” *Essays in Positive Economics*, Chicago: University of Chicago Press, 1953), 39.”

Chapter 2, Refining Theories That Explain, new third paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Added the footnote:

“¹³Our needs for such things as nutrition and water arise on the level of our bodies. Our needs for such things as affection and esteem arise on the level of our minds. Our needs for such things as the longing to mystically link with something greater than ourselves arise on the level of our spirits. Until we thoroughly understand the complex relations that link our bodies, minds and spirits, we ought to cull out all teleonomic theories that focus on any one of these levels of abstraction. Focusing on any one of these levels will tend to blind us to needs that emerge on other levels.”

Chapter 3, Introduction, first paragraph

Changed “timeless intellectual tools” to “timeless concepts derived from the normative end of living wisely” in the first sentence.

Chapter 3, Profit, fourth footnote

Changed “normative” to “timeless” in the second sentence.

Chapter 3, Profit, first paragraph

Changed “acting wisely” to “living wisely” in the second sentence.

Chapter 4, Uneven Flow

Reversed the order of the second and third paragraphs.

Changed “flow~~s~~” to “flow” in all (6 occurrences).

Chapter 5, *Lower the Barriers to Trade*, second paragraph, last sentence

“Free markets call on people to seek pleasure, not to become fully human.”

was changed to:

“Industrial age culture call s on people to seek pleasure, not practical wisdom.”

Chapter 5, *Lower the Barriers to Trade*, last paragraph

Changed “the logic of the knowledge age” to “the new logic” in the second sentence.

“Free markets call on people to fulfill their natures, to become fully human.”

was changed to:

“Knowledge age culture call s on people to seek practical wisdom, not pleasure.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “the logic of the knowledge age” to “this new logic” in the last sentence.

Appendix D, Uneven Flow, second footnote, last sentence

“Most of this material first appeared in the 1992 version of *Wealth in the Information Age, A Humanistic Approach to Economics*.”

was deleted.

Changes in Version 2006.03.03

Chapter 2, Refining Theories That Explain, third paragraph

Changed “theories” to “members of this set” in the first sentence.

Chapter 2, Refining Theories That Explain, fourth paragraph

Changed “theories” to “members of this set” in the first sentence.

Chapter 2, Refining Theories That Explain, fifth paragraph

“If we can agree that to live wisely is to revere life, then we can develop rules for culling out unethical theories. For example, we can cull out those that fail to call on us to live ever more wisely. We can also cull out those that define who “we” are too narrowly.”

was changed to:

“If we can agree that to live wisely is to revere life, then we can develop rules for culling out unethical teleonomic theories. For example, we can cull out those that define who “we” are too narrowly.”

Changes in Version 2006.03.06

Acknowledgments, eighth paragraph

Added ““from the heart”” to the last sentence.

Chapter 5, Lower Barriers to Trade, last three paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“From a Marxist view, **free trade promotes** the predominant mode of production, **which in turn** determines the culture. The logic of the industrial age holds that economies are like great machines in which people are interchangeable parts performing mindless tasks. Industrial age culture calls on people to seek pleasure, **not practical wisdom**.

“**The history of the last three hundred years** supports this view. **There has been a** cultural trend away from following traditions toward seeking pleasure. We see this trend clearly in England, where the cultural ideal changed from fulfilling one’s role in God’s plan to hedonist Jeremy Bentham’s “greatest good for the greatest number.”

“The knowledge revolution has changed the logic of production. The new logic holds that economies are like great learning organisms in which people are the most important parts, the parts that learn. Knowledge age culture calls on people to seek **practical wisdom, not pleasure**. Given this new logic, lowering trade barriers promotes progress toward the Marxist normative end of all humans living fully human lives.”

were changed to:

“From a Marxist view, the predominant mode of production determines the culture. The logic of the industrial age holds that economies are like great machines in which people are interchangeable parts performing mindless tasks. Industrial age culture calls on people to seek pleasure.⁶

“The knowledge revolution has changed the logic of production. The new logic holds that economies are like great learning organisms in which people are the most important parts, the parts that learn. Knowledge age culture calls on people to seek **to live wisely**. Given this new logic, lowering trade barriers promotes **the predominant mode of production, which in turn promotes** progress toward the normative end of all humans living fully human lives.”

“⁶ **Supporting** this **materialist** view **is the** cultural trend away from following traditions toward seeking pleasure. We see this trend clearly in England, where the cultural ideal changed from fulfilling one’s role in God’s plan to hedonist Jeremy Bentham’s “greatest good for the greatest number.””

Changes in Version 2006.03.14

Preface, second paragraph

Changed “**intellectual** tools” to “**analytical** tools” in the third and last sentences.

Chapter 2, Refining Everyday Thinking, fourth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**narratives**” to “**theories**” in the fourth sentence.

Changed “**logical and elegant theories**” to “theories” in the last sentence.

Chapter 2, Science as a Process, first paragraph, last sentence

Added the footnote:

“⁴ The research program of, by, and for intelligent life describes the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world as it is) and normative in means (prescribing the means of improving our descriptions of the world).”

Chapter 2, Science as a Process, third paragraph, seventh footnote

Changed “**George Hegel’s internal contradictions of theories**” to “Hegel’s **dialectic**” in the first sentence.

Chapter 2, Economic Science, last paragraph

Changed “EOQ” to “EOQ/**RTS**” in the fourth sentence.

Chapter 2, Economic Science, last paragraph

“To address this problem, economists ought to define economic science to be the science of practical wisdom, the research program of the research program of, by, and for intelligent life.⁹ Economics science ought to be the premier *intelligent life science*.”

“⁹ The research program of, by, and for intelligent life describes the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world as it is) and normative in means (prescribing the means of improving our descriptions of the world).”

was changed to:

“Living wisely is a process. Like the problem of how best to improve the process of building cars, the problem of how best to improve the process of living wisely is an open-ended one. As we saw in the EOQ/RTS example, there are two basic methods of “solving” an open-ended problem. The first (EOQ) method is to reduce the open-ended problem to a finite model. The second (RTS) method is to devise a research program for how to improve the process of solving the open-ended problem.⁹

“For economic science as a whole, it is foolish to conflate these two methods. It is foolish to base the research program that defines economic science on a finite model. Doing so will tend to blind us to better problems to solve. Economic science ought to include both theories that predict what happens in economies¹⁰ and theories that

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

explain how to live wisely. We ought to use predictions to help us evaluate alternatives and explanations to help us formulate them.”

“⁹ Mathematicians face a similar (open-ended) problem when they seek to evaluate the transcendental number pi. Rather than seeking ever better rational approximations of pi: 3, 22/7, 355/113, ..., they seek ever better recursive processes for calculating pi: $\pi = 4(1 - 1/3 + 1/5 - 1/7 + 1/9 - 1/11 + \dots)$; $\pi = 2 \cdot \sqrt{3}(1 - 1/3 \cdot 3 + 1/5 \cdot 3^2 - 1/7 \cdot 3^3 + 1/9 \cdot 3^4 - 1/11 \cdot 3^5 + \dots)$; ..., where better recursive processes are those that converge more quickly.”

“¹⁰ We ought to test theories that we use to predict what happens in economies by how well they help us to predict what happens in economies. This is compatible with the instrumental interpretation of Milton Friedman’s definition of positive economic science as “a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.” Friedman, Milton, “The Methodology of Positive Economics,” *Essays in Positive Economics*, (Chicago: University of Chicago Press, 1953), 39.”

Chapter 2, Refining Theories That Explain, title

Changed title to “*Refining Theories That We Use to Explain.*”

Chapter 2, *Refining Theories That We Use to Explain*, first paragraph

“The research program of, by, and for intelligent life includes both theories that predict, which we use to evaluate alternatives, and theories that explain, which we use to formulate alternatives. We test theories that predict by testing how well they predict.⁹ We test theories that explain by how well they help us to find problems to solve in the quest to live wisely.”

“⁹ This is compatible with the instrumental interpretation of Milton Friedman’s definition of positive economic science as “a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.” Friedman, Milton, “The Methodology of Positive Economics,” *Essays in Positive Economics*, (Chicago: University of Chicago Press, 1953), 39.”

was changed to:

“Logical and elegant theories that we use to explain how best to live wisely stand ready to be proven less useful than similar theories in helping us to find problems to solve. Regrettably, we cannot test these theories in the same way that we test the theories that we use to predict what happens in economies. This is because we do not know, and will never know with certainty, what it is to live wisely.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Toyota provides us with a very different model for testing these theories. At Toyota, specialists help to create an environment in which team members solve problems that are too complex for specialists to solve by themselves. Specialists then help team members to improve the process of solving problems by helping team members to improve their problem solving skills and methods. Following this example, specialists can help to create an environment in which all of us test theories that we use to explain how best to live wisely. Specialists can then help us to improve the process of testing these theories by helping us to improve our research skills and methods.

“This means of testing theories requires more than free markets. It requires a vision for what we ought to do.”

Chapter 2, *Refining Theories That We Use to Explain*, last paragraph

“Logical and elegant theories for living wisely stand ready to be proven less useful than other theories in helping us to find problems to solve in the quest to live wisely. We can test these theories by creating an environment in which researchers - all of us - are free to choose which of these theories to test with our lives.¹⁵ Those that fellow researchers test with their lives deserve our tolerance. We base this tolerance on our ignorance of how best to live wisely rather than on the right to do as we please.”

“¹⁵ All technical means of testing these theories involve choosing a measure for living wisely. Choosing the best measure for living wisely is part of the research program of, by, and for intelligent life. Candidates include such measures as personal income, changes in per capita national income, personal assessments of well-being, and average lifespan. We can argue endlessly about the worth of these measures. For some people with a results-oriented view of science, these theories are nothing more than moral philosophy. For others with a results-oriented view of science, these theories are pseudoscience. For those people with a process-oriented view of science, these theories are simply theories that we cannot yet test by technical means.”

was changed to:

“**Conclusion**

Economic science ought to be the science of practical wisdom, the research program of the research program of, by, and for intelligent life. It ought to be the premier *intelligent life science*.”

Chapter 5, *Lower Barriers to Trade*, first paragraph

Changed “moral vision” to “vision of what we ought to do” in the second sentence.

Changed “promotes” to “tends to promote” in the second sentence.

Chapter 5, *Lower Barriers to Trade*, second paragraph, footnote

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**materialist**” to “**simplistic**” in the first sentence.

Afterword, end

Added the paragraph:

“I see the current culture war as a religious war, a war over civil religion. I am for replacing civil religion, especially the gospels of nativist James G. Blaine and socialist John Dewey, with the research program of, by, and for intelligent life.”

Appendix B, Human Needs, first paragraph

Changed “**ultimate** normative” to “normative” in the first sentence.

Appendix B, Balanced Excellence, first paragraph

Changed “mystical oneness with the infinite Being during life **is needed**” to “**we need** mystical oneness with the infinite Being during life” in the first sentence.

Appendix B, Balanced Excellence, second paragraph

Changed “**ultimate** normative” to “normative” in the first sentence.

Appendix B, Conclusion, first paragraph

Changed “**ultimate** normative” to “normative” in the first sentence.

Appendix C, first paragraph

Changed “**improves practical** wisdom” to “**makes people** wiser” in the first sentence.

Changes in Version 2006.03.24

Acknowledgments, fourth paragraph

“My frustration led to a vicious cycle of anger, anxiety, disgust, and depression.”

and

“Gordon knew that I had done the research and kindly gave me the lowest possible passing score.”

were deleted.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Acknowledgments, tenth paragraph

Changed “, and into her three sons” in the third sentence.

Chapter 1, Modern Economics' Blind Spot, third paragraph

Changed “learning to” to “learning how to” in the last sentence.

Chapter 1, Excellence in Living Wisely, last paragraph, first two sentences

“*Effectiveness in living wisely* is excellence in choosing temporal ends. *Efficiency in living wisely* is excellence in choosing means to temporal ends.”

were changed to:

“We can define *effectiveness in living wisely* to be excellence in choosing temporal ends and *efficiency in living wisely* to be excellence in choosing means to temporal ends.”

Chapter 1, Excellence in Living Wisely, end

Added the paragraph:

“The wise know how their tools work. These two managerial concepts allow us to plan our lives using timeless models and work our plans using temporal ones. In military terms, these concepts allow us to plan our lives using strategic models and work our plans using tactical ones. In economic terms, they allow us to plan our lives using macroeconomic models⁶ and work our plans using microeconomic ones. As we shall see, these two concepts help us to join many worldviews that are useful in living wisely.”

“⁶ This is only true of timeless macroeconomic models. It is not true for macroeconomic models based on Carl Menger’s temporal definition of wealth.”

Chapter 2, fourth footnote

“The research program of, by, and for intelligent life describes the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world as it is) and normative in means (prescribing the means of improving our descriptions of the world).”

was

deleted.

Chapter 2, new fourth footnote, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“A strategy for learning (research program) can beat a theory.”

was changed to:

“The RTS research program beat the EOQ theory.”

Chapter 2, Economic Science, last paragraph, last sentence

“We ought to use predictions to help us evaluate alternatives and explanations to help us formulate them.”

was changed to:

“Economic science ought to be the research program of the research program of, by, and for intelligent life. It ought to be the premier *intelligent life science*.¹⁰”

“¹⁰ This reflexive / recursive research program describes the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world) and normative in means (prescribing how we ought to improve our descriptions of the world).”

Chapter 2, Refining Theories That We Use to Explain, end

Returned the paragraph:

“The theories that remain after we cull out all misleading and unethical theories deserve our tolerance. We base this tolerance on our ignorance of how best to live wisely rather than on the right to do as we please.”

Chapter 2, Conclusion

“Economic science ought to be the science of practical wisdom, the research program of the research program of, by, and for intelligent life. It ought to be the premier *intelligent life science*.”

was deleted.

Chapter 3, Wealth, last paragraph

“For more on the subject of wealth, see Appendix C.”

was moved to the end of the Consumption section and changed to:

“For more on the subjects of wealth and consumption, see Appendix C.”

Chapter 3, Two Means of Living Wisely, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “for when our faculties are in jeopardy:” to “,” in the last sentence.

Chapter 4, Uneven Flow, title

Changed title to “Smoothing Flow.”

Chapter 4, Smoothing Flow, last paragraph

Changed “smoothing uneven flow” to “smoothing flow” in the last sentence.

Chapter 4, A Crude Look at the Whole, end

Added the footnote:

“³ This statement conflicts with the belief of Austrian economists, particularly Ludwig von Mises, that we do not need to test theories that explain human action. It also conflicts with the closely related belief of some scientists, notably physicist Stephen Wolfram, that we do not need to test computer models of emergent phenomena. See Lissack, M. R., & Richardson, K. A, “When Modeling Social Systems, Models ≠ The Modeled: Reacting to Wolfram’s A New Kind of Science,” *Emergence*, 2001, Vol. 3, No. 4, 95-111.”

Changes in Version 2006.03.30

Entire treatise

Changed “cull out” to “weed out” and “culling out” to “weeding out” (10 occurrences).

Acknowledgments, fourth footnote

Changed “simply could” to “could” in the second to last sentence.

Changed “later” to “late” in the last sentence.

Chapter 1, Setting Words Aright, second footnote

Changed “prevail over” to “withstand” in the first sentence.

Chapter 1, Excellence in Living Wisely, last paragraph, third sentence

“In economic terms, they allow us to plan our lives using macroeconomic models⁶ and work our plans using microeconomic ones.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“**This is only true of timeless macroeconomic models. It is not true for macroeconomic models based on Carl Menger’s temporal definition of wealth.**”

was deleted.

Chapter 1, Deciding Wisely, title

Changed title to “**Strategic Assets.**”

Chapter 1, Strategic Assets, second paragraph

Changed “**mercantilist** concept of wealth” to “concept of wealth **as precious metal coins and ingots**” in the second sentence.

Chapter 2, Science as a Process, last two paragraphs

Merged these two paragraphs.

Changed “**consumers**” to “**customers**” in the third sentence.

Chapter 2, Economic Science, fourth paragraph

Changed “**research program for**” to “**strategy for learning**” in the last sentence.

Chapter 2, Economic Science, last paragraph

“**For economic science as a whole, it is foolish** to conflate these two methods. **It is foolish** to base the research program that defines economic science on a finite model. **Doing so** will tend to blind us to better problems to solve. **Economic science** ought to include both theories that we use to predict what happens in economies⁹ and theories that we use to explain how to live wisely. **Economic science ought** to be the research program of the research program of, by, and for intelligent life. **It ought** to be the premier *intelligent life science*.¹⁰”

was changed to:

“In defining economic science, we ought not to conflate these two methods. **We ought not** to base the research program that defines economic science on a finite model, **as this** will tend to blind us to better problems to solve. **At the same time, we** ought to include both theories that we use to predict what happens in economies⁹ and theories that we use to explain how to live wisely. **We can meet both of these conditions by defining** economic science to be the research program of the research program of, by, and for intelligent life. **We can define economic science** to be the premier *intelligent life science*.¹⁰”

Chapter 2, Refining Theories That We Use to Explain, last paragraph, first sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Added the footnote:

“¹⁶ This includes both members of the set of teleonomic theories and members of the set of theories that we use to explain how to live wisely based on the set of teleonomic theories.”

Chapter 3, Introduction, first paragraph

“Wise managers use timeless concepts derived from the normative end of living wisely to become more effective. This chapter puts forward timeless macroeconomic alternatives to the modern economic concepts of wealth, consumption, trade, production, and profit.”

was changed to:

“The wise plan their lives using timeless models and work their plans using temporal ones. In military terms, the wise plan their lives using strategic models and work their plans using tactical ones. In economic terms, the wise plan their lives using macroeconomic models and work their plans using microeconomic ones. This chapter puts forward timeless alternatives to the modern economic concepts of wealth, consumption, trade, production, and profit.”

Changed title to “Two Types of Models.”

Chapter 3, Wealth, first paragraph

“Modern economists and wise managers both define wealth as goods and the resources to produce goods. They differ in how they define goods. Modern economists define goods as those consumer goods and services that we want. Wise managers define goods as those things that we need to live wisely.”

was changed to:

“Modern economists define wealth to be the consumer goods and services and the resources to produce the consumer goods and services that we want. In contrast, the wise define wealth to be the resources that we need to live wisely.”

Chapter 3, Consumption, first paragraph

“Unlike modern economists, wise managers consider practical wisdom. From the economic view, winning a fortune in the lottery will lead to a good life, and so it is unequivocally good. From the managerial view, winning a fortune in the lottery can be bad if the winner is foolish, as would be the case if the winner were an alcoholic who would use the money to pursue his or her self-destructive habit. Understanding this difference requires a deeper understanding of pleasure and pain.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“The wise consider practical wisdom. From the temporal view of modern economics, winning a fortune in the lottery is always good. From the timeless view of those who seek to live wisely, winning a fortune in the lottery can be bad if the winner is foolish, as would be the case if the winner were an addict who would use the money to pursue his or her self-destructive habit. Understanding this difference calls for a deeper understanding of pleasure and pain.”

Chapter 3, *Trust*, last paragraph

Changed “confidence men” to “swindlers” in the third sentence.

Chapter 3, *Three Common Misbeliefs*, last paragraph

Changed “consumers” to “shoppers” in all (2 occurrences).

Changed “customers” to “shoppers” in all (2 occurrences).

Changed “millions” to “hundreds of millions” in the second sentence.

Changed “merchandise” to “items” in the fifth sentence.

Chapter 5, *Lower Barriers to Trade*, last two paragraphs

“From a Marxist view, the predominant mode of production determines the culture. The logic of the industrial age holds that economies are like great machines in which people are interchangeable parts performing mindless tasks. Industrial age culture calls on people to seek pleasure.⁶

“The knowledge revolution has changed the logic of production. The new logic holds that economies are like great learning organisms in which people are the most important parts, the parts that learn. Knowledge age culture calls on people to seek to live wisely. Given this new logic, lowering trade barriers promotes the predominant mode of production, which in turn promotes progress toward the normative end of all humans living fully human lives.”

“⁶ Supporting this simplistic view is the trend away from following traditions toward seeking pleasure. We see this trend clearly in England, where the cultural ideal changed from fulfilling one’s role in God’s plan to hedonist Jeremy Bentham’s “greatest good for the greatest number.””

was reduced to a footnote at the end of the first paragraph:

“⁶ From a Marxist view, the predominant mode of production determines the culture. The logic of the industrial age holds that economies are like great machines in which

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

people are interchangeable parts performing mindless tasks. **The** culture calls on people to seek pleasure. Supporting this simplistic view is the trend away from following traditions **and** toward seeking pleasure. We see this trend clearly in England, where the cultural ideal changed from fulfilling one's role in God's plan to hedonist Jeremy Bentham's "greatest good for the greatest number." The knowledge revolution has changed the logic of production. The new logic holds that economies are like great learning organisms in which people are the most important parts, the parts that learn. **The** culture calls on people to seek to live wisely. Given this new logic, lowering trade barriers promotes the predominant mode of production, which in turn promotes progress toward the normative end of all humans living fully human lives."

Appendix B, Introduction, first paragraph

Changed "culling" to "weeding out" in the first sentence.

Appendix D, A Finer Timeless View, first paragraph

"Taiichi Ohno's vision involved folding **parts of** the production system in on itself. The resulting operational complexity creates uneven flow. **Teams learn to manage this complexity by finding and solving small problems that cause uneven flow. The goal is not smooth flow for its own sake. The goal is to produce ever more wisely.**"

was changed to:

"Taiichi Ohno's vision involved folding the production system in on itself. The resulting operational complexity creates uneven flow **of work-in-process (WIP). Production teams find and solve problems that cause uneven flow. Solving these problems improves procedures, machine design, trading relations, and product design.**"

Appendix D, *Operational Complexity*

Merged this section into the *Folding in Operations* section. Changed title to "***Folding in Processes.***"

Changed second paragraph from:

"We can measure the complexity of production operations by counting the number of decisions that the production team faces. The simplest system is a "pull system" with no flexible links. A "pull system" is one in which customers "pull" product through the system. There is no production until there is a call for production from the customer. The customer, not the production team, sets the rate of production. This simple system has only one decision, which is whether it is available to produce or not."

to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Operational complexity concerns the number of decisions production teams face. The fewer the number of flexible links, the simpler the operation is.”

Appendix D, *Folding In Operations*, new third paragraph

Changed ““pull system”” to “production line” in the second sentence.

Appendix D, *Folding In Operations*, new fourth paragraph

Changed “parts of the production line” to “processes” in the last sentence.

Appendix D, *Folding In Operations*, new fifth paragraph

Changed “parts of the production line” to “processes” in the first sentence.

Appendix D, *Folding In Operations*, last paragraph

Changed “production engineers” to “engineers” in the first sentence.

Deleted the last sentence:

“When they expect rates to be moderate, they plan to produce in batches on folded in lines.”

Appendix D, *Batch Size*, title

“**Batch Production**”

was deleted.

Appendix D, *Smoothing Flows*, second paragraph

Changed “teams” to “engineers” in the last sentence.

Added the sentence:

“They do so by adding or removing WIP from these links.”

Appendix D, *Smoothing Flows*, last three paragraphs

“As described in the first appendix, the Toyota system swallows and digests problems too complex for production engineers to solve by themselves. Swallowing a complex problem is a metaphor for engineers implementing their crude solution to a complex problem. Engineers know that ignorance of how to deal with this complexity leads to the uneven flow of WIP. Engineers estimate how much uneven flow their crude solution will create. They then reduce expected uneven flow to manageable levels by

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

stretching flexible links. The extra WIP inventory in stretched links buffers the uneven flow of WIP.

“Digesting complex problems is a metaphor for finding and solving small problems that create uneven flow. Solving these problems smooths the uneven flow. It also improves procedures, machine design, trading relations, and product design.

“Putting these two processes together, engineers implement their crude solution to a complex problem. This crude solution creates uneven flow. The team solves small problems that create uneven flow. Solving these small problems embeds useful knowledge into the line. Once things are running smoothly, the team tightens one or more flexible links. This uncovers problems that create uneven flow. The team solves these problems. Once things are again running smoothly, the team tightens more links, which uncovers more problems to solve. This recursive process continues until the team can find no more problems to solve.”

were changed to:

“Satisfying customers ever more wisely creates complex production problems. Production engineers devise and put into place crude solutions to these problems based on their ideas of how best to fold in lines. These crude solutions create uneven flow. Engineers buffer most of this uneven flow by adding WIP inventory to flexible links. In effect, they convert complex production problems into excess WIP problems.

“If the engineers have added too much WIP, there will be no workflow problems to solve. Without a problem to solve there can be no improvement. Engineers fix this by removing WIP from flexible links.

“If the engineers have added too little WIP, the resulting flood of workflow problems overwhelms the team. Engineers fix this by adding WIP to flexible links.

“If the engineers have added the right amount of WIP, there will be just enough problems for the team to solve while they produce. Solving these problems smooths the uneven flow and embeds useful knowledge into procedures, machine design, trading relations, and product design.

“Once things are running smoothly, engineers remove WIP from one or more flexible links. This uncovers problems that create uneven flow. The team solves these problems.

“Engineers continue the process of removing WIP from flexible links until the team can find no more problems that it is able to solve.”

Changes in Version 2006.03.31

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Excellence in Living Wisely, last paragraph

“The wise know how their tools work. These two managerial concepts **allow** us to plan our lives using timeless models and work our plans using temporal ones. In military terms, these concepts **allow** us to plan our lives using strategic models and work our plans using tactical ones. As we shall see, these **two** concepts help us to join **many worldviews that are useful in living wisely.**”

was changed to:

“The wise know how their tools work. These two managerial concepts **help** us to plan our lives using timeless models and work our plans using temporal ones. In military terms, these **two** concepts **help** us to plan our lives using strategic models and work our plans using tactical ones. As we shall see, these concepts help us to join **ideal models to practical ones.**”

Chapter 2, Science as a Process, last paragraph

“Most producers **of tested intellectual tools base their concept of quality on technical excellence. In contrast, most other producers** base their concept of quality on both technical excellence and usefulness. They recognize that a technically perfect brass watermelon is still a brass watermelon, something that customers neither need nor want. **The solution to this tunnel vision problem is to define** science to be the **ever-evolving** process of refining everyday thinking.⁴ This definition provides us with a vision of how best to improve the process of refining everyday thinking. It also reminds us that the products of science are useful assays of the truth rather than the **truth itself.**⁵”

was changed to:

“Most producers base their concept of quality on both technical excellence and usefulness. They recognize that a technically perfect brass watermelon is still a brass watermelon, something that customers neither need nor want. **In contrast, most producers of tested intellectual tools base their concept of quality solely on technical excellence. We can broaden the narrow** vision of these producers by defining science to be the process of refining everyday thinking.⁴ This definition provides us with a vision of how best to improve the process of refining everyday thinking. It also reminds us that the products of science are useful assays of the truth rather than the **whole truth.**⁵”

Changes in Version 2006.04.03

Chapter 1, Mainstream Economics' Blind Spot, fifth paragraph

Changed “RTS has” to “**the results of RTS have**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Mainstream Economics' Blind Spot, last paragraph

“For more on the subject of a learning worldview, see Appendix A.”

was reduced to a footnote at the end of the sixth paragraph and changed to:

“⁴ For more on the subject of a learning worldview, see Appendix A.”

Chapter 1, Excellence in Living Wisely, last paragraph, last sentence

“In military terms, these two concepts help us to plan our lives using strategic models and work our plans using tactical ones. As we shall see, these concepts help us to join ideal models to practical ones.”

was changed to:

“Timeless models help us to find problems to solve. They also help us to find mistakes.”

Chapter 1, Strategic Assets, title

Changed title back to “A Strategy for Learning.”

Chapter 2, Refining Theories That We Use to Explain, eighth paragraph

“For more on the subject of reverence for life, see Appendix B.”

was reduced to a footnote at the end of the sixth paragraph and changed to:

“¹⁶ For more on the subject of reverence for life, see Appendix B.”

Chapter 2, Refining Theories That We Use to Explain, seventh paragraph

Changed “helping others live” to “helping others to live” in the first sentence.

Changed “In short, we” to “We” in the last sentence.

Chapter 2, Refining Theories That We Use to Explain, last paragraph

Changed “all¹⁷ misleading and unethical” to “misleading and unethical¹⁷” in the first sentence.

Chapter 4, Smoothing Flow, last paragraph

“For more on the subject of smoothing flow, see Appendix D.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was reduced to a footnote at the end of the fourth paragraph and changed to:

“² For more on the subject of smoothing flow, see Appendix D.”

Chapter 6, first paragraph

Changed “as” to “to be” in the third sentence.

Changed “live” to “to live” in the fifth sentence.

Changes in Version 2006.04.04

Acknowledgments, fourth paragraph

Changed “problem” to “boundless problem” in the fifth sentence.

Changed “what I now know to be an infinitely large problem” to “this problem” in the sixth sentence.

Chapter 2, Science as a Process, last paragraph, footnote, first three sentences

“We base theories on assumptions. Not all of these assumptions are testable. To confuse a scientific theory with the truth is to make the philosophical mistake of confirming the consequent.”

was changed to:

“To confuse a scientific theory with the whole truth is to make the philosophical mistake of confirming the consequent.”

Chapter 2, Economic Science, last paragraph, last sentence, footnote

Changed “describes” to “seeks to describe” in the first sentence.

Chapter 3, Profit, footnote

Changed “definition” to “decision science based definition” in the first sentence.

Chapter 6, first paragraph, first four sentences

“We live well by satisfying our needs for those things that we need to live well. We live wisely by continually improving the process of satisfying our needs for those things that we need to live well. Living wisely calls for defining science to be the process of refining everyday thinking. The resulting research program embraces

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

theories that help us to predict what happens in economies and rejects theories that aim at providing us with consumer goods and services.”

was changed to:

“We ought to define science to be the process of refining everyday thinking. The resulting research program of, by, and for intelligent life embraces theories that help us to predict what happens in economies and rejects theories that aim at providing us with consumer goods and services.”

Afterword, third paragraph

Changed “postponing change” to “retarding the replacement of knowledge for non-knowledge resources” in the last sentence.

Appendix B, *Heroism*, first paragraph

Changed “heroism” to “the heroic act” in the first sentence.

Appendix B, *Heroism*, last paragraph

Changed “their societies” to “others” in the fifth sentence.

Appendix B, *Goodness and Rightness*, first paragraph

Changed “to choose what to do in life and death situations” to “to make major decisions” in the fifth sentence.

Changes in Version 2006.04.12

Chapter 2, Science as a Process, second paragraph

Deleted “, including intellectual tools” in the last sentence.

Chapter 2, Science as a Process, last paragraph

Changed “producers of tested intellectual tools” to “specialists in science” in the third sentence.

Chapter 2, *Refining Theories That We Use to Explain*, fifth paragraph, second and third sentences

“We ought to weed out those that consider only our bodies, or our minds, or our spirits. Fools consider only their bodies, or their minds, or their spirits.¹⁴”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

were changed to:

“We ought to weed out those that consider only our bodies, or our minds, or our spirits.¹⁴”

Chapter 2, *Refining Theories That We Use to Explain*, sixth paragraph

Changed “We” to “**In short, we**” in the last sentence.

Chapter 2, *Refining Theories That We Use to Explain*, last paragraph, first sentence

“**The theories that remain after we weed out misleading and unethical theories¹⁷** deserve our tolerance.”

“¹⁷ **This includes both members of the set of teleonomic theories and members of the set of theories that we use to explain how to live wisely based on the set of teleonomic theories.**”

was changed to:

“**Over time, we will learn ever more ways of weeding out theories. In our time, the theories that remain deserve our tolerance.**”

Chapter 3, *Two Types of Models*, first paragraph

“**In military terms, the wise plan their lives using strategic models and work their plans using tactical ones. In economic terms, the wise plan their lives using macroeconomic models and work their plans using microeconomic ones.**”

were deleted.

Chapter 5, *Choosing Our Leaders*, first paragraph

Changed “natures” to “nature” in the last sentence.

Afterword, last paragraph, end

Added the sentences:

“**We ought to consecrate the search for knowledge of how to live wisely, not our tribe. We ought to be on the side of wisdom. We ought to be on the side of our better angels.**”

Appendix A, *Ohno’s Vision*, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“In the early postwar years, Japan’s small market for trucks and Toyota’s lack of capital forced Toyota to produce trucks in small batches. Taiichi Ohno knew that Toyota could never catch up to the giant American firms by using their means of making cars and trucks. Instead, he imagined a means of capturing the scale economies of mass production in Toyota’s small factories. Scale economies would come from producing batches of similar goods rather than large numbers of identical goods. Batches of similar parts would flow like the continuous production of identical parts.”

was changed to:

“In the early postwar years, Japan’s small market for trucks and lack of capital forced Toyota to produce trucks in small batches. Taiichi Ohno knew that Toyota could never catch up to Western firms by using Western means of making trucks. Instead, he imagined factories making large numbers of similar parts rather than large numbers of identical parts. Batches of similar parts would flow like the continuous production of identical parts.”

Appendix A, Ohno’s Vision, second paragraph

Changed “strategy for learning” to “strategy for learning how to invent this knowledge” in the last sentence.

Appendix A, Ohno’s Vision, last three paragraphs

“The Toyota system is a batch production system. Like other batch systems, it combines characteristics of custom and continuous process production. It uses tools to build a variety of parts like a job shop, but its river-like plant layout is similar to that of continuous processes.

“Unlike other batch systems, the Toyota system combines a simple, elastic, and robust means of linking processes (*dual kanban*) with continual improvement (*kaizen*). The elasticity of these links allows the system to stretch to fit problems that are too complex for production engineers to solve by themselves. Tightening stretched links uncovers small production problems that team members are able to solve. Solving these simple problems solves the complex problem. In short, the Toyota system swallows and digests complex problems.

“Toyota first used this strategy for learning to realize Ohno’s goal of catching up to American firms. The company has since used it to learn to (1) build higher quality products at lower costs, (2) build a variety of products without increasing costs, and (3) introduce new products quickly.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“**This strategy for learning** combines a simple, elastic, and robust means of linking processes (*dual kanban*) with continual improvement (*kaizen*). The elasticity of these links allows the **production** system to stretch to fit problems that are too complex for engineers to solve by themselves. Tightening stretched links uncovers small problems that team members are able to solve. Solving these **small** problems solves the complex problem. In short, the system swallows and digests complex problems.

“Toyota first used this strategy for learning to **capture scale economies without scale**. The company has since used it to learn to produce higher quality products, a **wider** variety of products, and new products **ever more wisely**.”

Appendix B, *Schweitzer’s Universal Spiritual Need*, sixth paragraph

“Justice based on Schweitzer’s reverence for life is the ideal balance of social justice, international justice, intergenerational justice, and interspecies justice. Social justice considers the needs of members of a national society. International justice considers the needs of national societies. Intergenerational justice considers the needs of generations. Interspecies justice considers the needs of species. Justice based on reverence for life considers all these needs. All other forms of justice fall short of justice based on reverence for life.”

was deleted.

Appendix D, *A Finer Timeless View*, first paragraph

Changed “involved” to “involves” in the first sentence.

Appendix D, *Inducing Knowledge*, third paragraph

Changed “We” to “Teams” in the first sentence.

Changes in Version 2006.04.15

Preface, last paragraph

“**Strategies for learning to live wisely focus our attention on what we ought to learn**. At the dawn of the industrial age, Adam Smith’s example of a pin factory showed the wisdom of **pursuing** the virtuous circle of the division of labor and the expansion of market size. Today, Toyota’s strategy for learning how to produce ever more wisely shows the wisdom of **pursuing** the virtuous circle of good people and good products: Good people produce good products. Good products, *including good intellectual tools*, produce good people. Given this **virtuous circle**, we ought to learn more about good people and good products.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was moved to the end of the Afterword and changed to:

“At the dawn of the industrial age, Adam Smith’s example of a pin factory showed the wisdom of the virtuous circle of the division of labor and the expansion of market size. Today, Toyota’s strategy for learning how to produce ever more wisely shows the wisdom of the virtuous circle of good people and good products. Good people produce good products. Good products, *including good intellectual tools*, produce good people. Given this **wisdom**, we ought to learn more about good people and good products.”

Chapter 1, Excellence in Living Wisely, last paragraph

“**The wise know how their tools work. These two managerial concepts** help us to plan our lives using timeless models and work our plans using temporal ones. Timeless models help us to find problems to solve. They also help us to find mistakes.”

was appended to the preceding paragraph and changed to:

“**They** help us to plan our lives using timeless models and work our plans using temporal ones. Timeless models help us to find problems to solve. They also help us to find mistakes.”

Chapter 2, Science as a Process, last paragraph

Changed “**science**” to “**this process**” in the last sentence.

Chapter 2, Science as a Process, last paragraph

Changed “**science**” to “**this process**” in the last sentence.

Chapter 2, Economic Science, third paragraph

Changed “which is **in part** due” to “which, **in part**, is due” in the third sentence.

Chapter 2, Refining Theories We Use to Explain, sixth paragraph

Changed “**members of this set**” to “**theories**” in the first sentence.

Chapter 2, Refining Theories We Use to Explain, seventh paragraph

Changed “unethical **teleonomic** theories” to “unethical theories” in the first sentence.

Chapter 2, Refining Theories We Use to Explain, eighth paragraph

Appended to seventh paragraph.

Chapter 2, Refining Theories We Use to Explain, last paragraph, first sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Over time, we will **learn** ever more ways of weeding out theories.”

was changed to:

“Over time, we will **agree on** ever more ways of weeding out **both theories that we use to define our needs and theories that we use to explain how to satisfy them.**”

Chapter 3, Practical Wisdom, first paragraph

Changed “**ultimate** end of life is **happiness**, a life **well lived**” to “**normative** end of life is **living a good** life” in the first sentence.

Chapter 6, last paragraph

Changed “**We**” to “**To do so, we**” in the first sentence.

Appendix A, Ohno's Vision, last paragraph

Changed “**The company**” to “**It**” in the last sentence.

Appendix B, Introduction, title

Changed “**Introduction**” to “**Timeless Logic.**”

Appendix B, Timeless Logic, first paragraph

Changed “**such assumption**” to “**of these**” in the second sentence.

Changed “**ultimate**” to “**normative**” in the last sentence.

Appendix B, Timeless Logic, last paragraph

Changed “**ultimate**” to “**normative**” in the last sentence.

Appendix B, Conclusion, title

Changed “**Conclusion**” to “**Synthesis.**”

Appendix D, *Smoothing Flows*, third paragraph, last sentence

“**In effect, they convert complex production problems into excess WIP problems.**”

was deleted.

Appendix D, *Smoothing Flows*, fourth through sixth paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**have added**” to “add” in the first sentence of each paragraph.

Merged these three paragraphs together.

Changes in Version 2006.04.18

Chapter 2, Refining Everyday Thinking, second paragraph

Changed “**rejecting**” to “**weeding out**” in the fifth sentence.

Changed “**rejecting**” to “**weeding out**” in the seventh sentence.

Chapter 2, Refining Everyday Thinking, fourth paragraph, third sentence

Added the footnote:

“⁴ Strictly speaking, we do not “weed out” theories. We define the useful domain of theories by “weeding out” applications of theories that are not useful. Corn in a cornfield is a crop. Corn in a soybean field is a weed.”

Chapter 2, Refining Theories That We Use to Explain, second paragraph, last two sentences

“Following this example, specialists can help to create an environment in which all of us test theories that we use to explain how best to live wisely. Specialists can then help us to improve the process of testing these theories by helping us to improve our research skills and methods.”

were deleted. The third paragraph was then appended to the second..

Afterword, second paragraph, first sentence

“I am neither “liberal” nor “conservative” in the way that people in the United States use these terms.”

was deleted.

Afterword, third and fourth paragraphs

“I believe that those on the left ought to know that **revering life** creates turbulence. A nanny state that seeks to protect its people by retarding **the replacement of knowledge for non-knowledge resources** is unfair to its people, other societies, future generations, and other species.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“I also believe that those on the right ought to know that we cannot separate our right to choose from our responsibility to choose ever more wisely. Right wing elites once claimed that the United States owed its success to their **Anglo-Saxon Protestant** heritage. **Their children claimed it was their Protestant heritage. Their grandchildren claimed it was their Christian heritage. Their great-grandchildren** claim it was their Judeo-Christian heritage. **Their great-great-grandchildren** will likely claim it was their Abrahamic heritage. A wiser explanation is that the United States owes its success **not to any fixed cultural tradition but rather** to its tradition of freedom and progress **toward the normative end of revering life.**”

were changed to:

“I believe that those on the left ought to know that **progress** creates turbulence. A nanny state that seeks to protect its people by retarding **progress** is unfair to its people, other societies, future generations, and other species.

“I also believe that those on the right ought to know that we cannot separate our right to choose from our responsibility to choose ever more wisely. Right wing elites once claimed that the United States owed its success to their **Puritan** heritage. **Current right wing elites** claim it was their Judeo-Christian heritage. **Future elites** will likely claim it was their Abrahamic heritage. A wiser explanation is that the United States owes its success to its tradition of freedom and progress.”

Afterword, last paragraph, last two sentences

“We ought to be on the side of **wisdom. We ought to be on the side of our** better angels.”

were changed to:

“We ought to be on the side of **the** better angels **of our nature.**”

Changes in Version 2006.04.22

Chapter 1, Excellence in Living Wisely, last paragraph

Added “**(idealistic / cosmic)**” and “**(pragmatic / worldly)**” to the third sentence.

Chapter 4, Living Ever More Wisely, first paragraph, second sentence

Changed “**Living ever more wisely**” to “**Progress.**”

Added the footnote:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

² Inherent in this recursionist concept of progress is the belief that intelligent beings ought to be stewards for the whole of life. Modern economists recognize the roles that psychic income and transaction costs play in stewardship. They have been slow to recognize the potential benefits of inducing knowledge by removing resources. See Appendix D.”

Chapter 5, Justice, last paragraph, seventh sentence

“Ideally, the private charities, guided by the superior wisdom of their contributors, would drive the government out of the business of providing welfare.”

was changed to:

“Ideally, private charities would drive the government out of the welfare business.”

Appendix B, Schweitzer’s *Universal Spiritual Need*, fourth and fifth paragraphs

“Pure magical mysticism requires that we abandon life rather than live it. It only becomes practicable when mixed with ethical mysticism. Because it ignores our relation with the world, it offers no foundation for an ethical system. We see this manifest in ancient Hinduism’s failure to explain adequately how merit (karma), which concerns our relation with the infinite Being, relates to worldly duty (dharma), which concerns our relation with life. The result was a system that fixed people’s roles in society at birth. This means of allocating labor is a tremendous hindrance to living wisely.

“Ethical mysticism does not involve this problem. However, unlike the magical, it can be incomplete. Where complete ethical mysticism stems from a union with all life, incomplete forms stem from a union with something less. Incomplete forms include the mysticism of such modern Western movements as nationalism, socialism, fascism, and communism. Only the complete form can compete successfully with magical mysticism in satisfying the need for mystical oneness. In Schweitzer’s words:”

were changed to:

“Pure magical mysticism requires that we abandon life rather than live it. It only becomes practicable when mixed with ethical mysticism. Because it ignores our relation with the world, it offers no foundation for an ethical system.⁴ Ethical mysticism does not involve this problem. However, unlike the magical, it can be incomplete. Where complete ethical mysticism stems from a union with all life, incomplete forms stem from a union with something less.⁵ Only the complete form can compete successfully with magical mysticism in satisfying the need for mystical oneness. In Schweitzer’s words:”

⁴ We see this in ancient Hinduism’s failure to explain adequately how merit (karma), which concerns our relation with the infinite Being, relates to worldly duty (dharma),

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

which concerns our relation with life. The resulting caste system has been a tremendous hindrance to progress toward the normative end of living wisely.”

“⁵ Incomplete forms of ethical mysticism include those of such modern Western movements as nationalism, socialism, fascism, and communism.”

Changes in Version 2006.04.25

Chapter 2, Refining Everyday Thinking, third paragraph, third footnote, last sentence

“This excludes substantial changes to the decision-making group.”

was deleted.

Chapter 2, Science as a Process, last paragraph, fifth footnote

Changed “possibility of learning” to “best problems to solve” in the first sentence.

Chapter 2, Economic Science, last paragraph

“In defining economic science, we ought not to conflate these two methods. We ought not to base the research program that defines economic science on a finite model, as this will tend to blind us to better problems to solve. At the same time, we ought to include both theories that we use to predict what happens in economies¹⁰ and theories that we use to explain how to live wisely. We can meet both of these conditions by defining economic science to be the research program of the research program of, by, and for intelligent life. We can define economic science to be the premier *intelligent life science*.¹¹”

“¹⁰ We ought to test theories that we use to predict what happens in economies by how well they help us to predict what happens in economies. This is compatible with the instrumental interpretation of Milton Friedman’s definition of positive economic science as “a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.” Friedman, Milton, “The Methodology of Positive Economics,” *Essays in Positive Economics*, (Chicago: University of Chicago Press, 1953), 39.”

“¹¹ This reflexive / recursive research program seeks to describe the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world) and normative in means (prescribing how we ought to improve our descriptions of the world).”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“In defining economic science, we ought not to conflate these two methods. We ought not to base the research program that defines economic science on a finite model, as this will tend to blind us to better problems to solve. At the same time, we ought to include both theories that we use to predict what happens in economies and theories that we use to explain how to live wisely. We can meet both of these conditions by defining economic science to be the research program of the research program of, by, and for intelligent life. We can define economic science to be the premier *intelligent life science*.¹⁰”

“*Refining Theories That We Use to Predict*

We ought to refine the set of theories that we use to predict what happens in economies by testing how well they help us to predict what will happen in economies.¹¹ It is wise for us to assign this task to people who have the knowledge to do this task well.”

“¹⁰ This reflexive / recursive research program seeks to describe the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world) and normative in means (prescribing how we ought to improve our descriptions of the world).”

“¹¹ This is compatible with the instrumental interpretation of Milton Friedman’s definition of positive economic science as “a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.” Friedman, Milton, “The Methodology of Positive Economics,” *Essays in Positive Economics*, (Chicago: University of Chicago Press, 1953), 39.”

Chapter 2, *Refining Theories That We Use to Explain*, first paragraph

“Logical and elegant theories that we use to explain how best to live wisely stand ready to be proven less useful than similar theories in helping us to find problems to solve. Regrettably, we cannot test these theories in the same way that we test the theories that we use to predict what happens in economies. This is because we do not know, and will never know with certainty, what it is to live wisely.”

was changed to:

“We ought to refine the set of theories that we use to explain what happens in economies by testing how well they help us to find problems to solve in our quest to live wisely. It is foolish for us to assign this task to experts. This is because no one can explain to us how to live wisely, how to follow our ideal path toward living a good life. We must learn to do this for ourselves.”

Chapter 2, *Refining Theories That We Use to Explain*, second paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Toyota provides us with a very different model for testing these theories. At Toyota, experts help to create an environment in which team members solve problems that are too complex for experts to solve by themselves. Experts then help team members to improve the process of solving problems by helping team members to improve their problem solving skills and methods. This means of testing these theories requires more than free markets. It requires a vision for what we ought to do.”

was deleted.

Chapter 2, *Refining Theories That We Use to Explain*, new second paragraph

Changed “live wisely,” to “**learn to live wisely**” in the first sentence.

Changed “**possibility to live more wisely**” to “**best problems to solve**” in the last sentence of the twelfth footnote.

Chapter 2, *Refining Theories That We Use to Explain*, new third paragraph

“We ought to weed out members of **this** set that fail to help us identify what we need to live wisely. **We** ought to weed out those that consider only our bodies, or our minds, or our spirits.”

was changed to:

“We ought to weed out members of **the set of theories we use to explain what we need to live wisely** that fail to help us **find** what we need to live wisely. **For example**, we ought to weed out those that consider only our bodies, or our minds, or our spirits.”

Chapter 2, *Refining Theories That We Use to Explain*, last paragraph

Changed “**define**” to “**explain**” and “**them**” to “**our needs**” in the first sentence.

Changes in Version 2006.04.28

Chapter 1, *Modern Economics' Blind Spot*, last paragraph

Switched “**invest in learning-by-doing**” in the second sentence and “**improve the environment for learning how to set up tools more quickly**” in the last sentence.

Chapter 2, *Economic Science*, third paragraph, end

Added the sentence:

“**The harmony of these two tendencies is a siren song.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Economic Science, last two paragraphs

“Living wisely is a process. Like the problem of how best to improve the process of building cars, the problem of how best to improve the process of living wisely is an open-ended one. As we saw in the EOQ/RTS example, there are two basic methods of “solving” an open-ended problem. The first (EOQ) method is to reduce the open-ended problem to a finite model. The second (RTS) method is to devise a strategy for learning how to improve the process of solving the open-ended problem.⁹

“In defining economic science, we ought **not** to conflate these two methods. We ought not to base the research program that defines economic science on a finite model, as this will tend to blind us to better problems to solve. At the same time, we ought to **include** both theories that we use to predict **what happens in economies** and theories that we use to explain **how to live wisely**. We can **meet both of these conditions** by defining economic science to be the research program of the research program of, by, and for intelligent life. We can define economic science to be the premier *intelligent life science*.¹⁰”

“⁹ Mathematicians face a similar (open-ended) problem when they seek to evaluate the transcendental number pi. Rather than seeking ever better rational approximations of pi: 3, 22/7, 355/113, ..., they seek ever better recursive processes for calculating pi: $\pi = 4(1 - 1/3 + 1/5 - 1/7 + 1/9 - 1/11 + \dots)$; $\pi = 2 \cdot \sqrt{3}(1 - 1/3 \cdot 3 + 1/5 \cdot 3^2 - 1/7 \cdot 3^3 + 1/9 \cdot 3^4 - 1/11 \cdot 3^5 + \dots)$; ..., where better recursive processes are those that converge more quickly.”

“¹⁰ This reflexive / recursive research program seeks to describe the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world) and normative in means (prescribing how we ought to improve our descriptions of the world).”

were moved to the end of the chapter under the heading *Defining Economic Science* and changed to:

“We ought to define economic science **in a way that includes** both the theories that we use to predict and **those** that we use to explain. We can **do so** by defining economic science to be the research program of the research program of, by, and for intelligent life. We can define economic science to be the premier *intelligent life science*.¹⁶”

“¹⁶ This reflexive / recursive research program seeks to describe the world as it is in the process of becoming. From the positivist view of modern economics, it is positive in ends (describing the world) and normative in means (prescribing how we ought to improve our descriptions of the world).”

Chapter 2, Economic Science, end

Added the paragraph:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“If we all acted wisely all of the time, we would not need to distinguish between the theories that we use to predict and those that we use to explain. Given that we do not act wisely all of the time, we ought to distinguish between them.”

Chapter 2, *Refining Theories That We Use to Predict*, ninth footnote

Changed “positive” to “(positive)” in the first sentence.

Chapter 2, *Refining Theories That We Use to Explain*, second paragraph

Changed “specialists” to “experts” in all (3 occurrences).

Chapter 2, *Refining Theories That We Use to Explain*, third paragraph

Changed “our theories for living wisely” to “the theories that we use to explain how to satisfy our needs” in the fourth sentence.

Changed “our loose theories for living wisely” to “these loose theories” in the last sentence.

Changed “this set of theories” to “the set of theories that we use to explain what we need to live wisely” in the last sentence.

Chapter 2, *Defining Economic Science*, first paragraph

Changed “the open-ended problem to a finite model” to “it to a solvable model” in the new third sentence.

Changed “devise a strategy for learning how to improve the process of solving the open-ended problem” to “improve the process of solving it” in the last sentence.

Chapter 2, *Defining Economic Science*, second paragraph

Changed “finite” to “solvable” in the second and third sentences.

Changed “meet both of these conditions” to “do both” in the fourth sentence.

Changes in Version 2006.05.06

Preface, last paragraph

Changed “refining theories” to “weeding out members of the set of theories that we use to explain how to live wisely” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Preface, end

Added the paragraph:

“This research program yields a “God’s eye” view of life. Its timeless concepts help us to find the problems that we ought to solve and the things that we will need to solve them.”

Chapter 2, Refining Everyday Thinking, fourth footnote

Changed “theories” to “**scientific** theories” in the first sentence.

Changed “**define the useful domain of theories by** “weeding out” applications of theories **that are not useful**” to ““weed out” applications of **these** theories” in the second sentence.

Chapter 2, Science as a Process, second paragraph

Changed “**specialized**” to “**expert**” in the first sentence.

Chapter 2, Science as a Process, last paragraph

Changed “**specialists**” to “**experts**” in the third sentence.

Changed “**broaden the narrow vision of these producers**” to “**correct this**” in the fourth sentence.

Chapter 2, Economic Science, last paragraph

Changed “we do not” to “we **all** do not” in the last sentence.

Chapter 2, Refining Theories That We Use to Explain, first paragraph

Changed “**must**” to “**ought to**” in the last sentence.

Added the following footnote at the end of the last sentence:

“¹⁰ This clearly applies to refining the (microeconomic) theories that we as individuals seeking to live wisely use to explain what happens in economies. It also applies to refining the (macroeconomic) theories that we as individuals seeking to govern ourselves wisely use to explain what happens in economies. We ought to seek to change or abandon governments that hinder us from learning to live ever more wisely.”

Chapter 4, A Crude Look at the Whole, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**Specialists**” to “**Experts**” in the first sentence.

Chapter 5, Justice, last paragraph, last four sentences

“They would also include unlimited giving to private charities. The government would tax all other withdrawals as income. Ideally, private charities would drive the government out of the welfare business. The government safety net program, like a militia, would remain available for emergencies.”

was changed to:

“They would also include unlimited giving to private charities.⁷ The government would tax all other withdrawals as income. *The haves as well as the have-nots ought to learn to live ever more wisely.*”

“⁷ Ideally, private charities would drive the government out of the welfare business. The government safety net program, like a militia, would remain available for emergencies.”

Afterword, last paragraph, last sentence

Changed “**the better angels of our nature**” back to “**our better angels**” in the last sentence.

Changes in Version 2006.06.01

Preface, last paragraph

Changed “**things**” to “**resources**” in the last sentence.

Chapter 1, A Strategy for Learning, second paragraph

Changed “**ingots**” to “**bullion**” in the second sentence.

Chapter 2, Refining Everyday Thinking, second paragraph, last three sentences

“**A good example of knowledge that falls into this set and into no other set is that of an eyewitness who can identify but not describe a suspect’s face.** We refine worldly knowledge (U) by weeding out all worldly knowledge that we cannot express in words or symbols. What remains are **worldly narratives (A).** We refine **worldly narratives (A)** by weeding out those that **fail to meet standards for logic and elegance.** What remains **are logical and elegant theories (B):**”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We refine worldly knowledge by weeding out all worldly knowledge that we cannot express in words or symbols. What remains are **stories about the world**. We refine **these stories** by weeding out those **that are not clear, concise, and logical**. What remains **is the set of precise stories about the world (S₁)**.”

Chapter 2, Refining Everyday Thinking, Venn diagrams

The first diagram was deleted and the second was changed to reflect the new text.

Chapter 2, Refining Everyday Thinking, third paragraph

Changed “**theories**” to “**stories about the world**” in the first sentence.

Chapter 2, Refining Everyday Thinking, second footnote

Changed “**theories**” to “**stories**” in the first and fourth sentences.

Chapter 2, Refining Everyday Thinking, fourth paragraph

“We **live in a complex world**. **If we are to live wisely, we need to test theories** by how well they perform their roles in decision-making. We **need to refine narratives (A)** by weeding out **those** that fail to meet our empirical standards for predicting.⁴ What remains **are tested theories** that we use to predict (**C₁**). We also **need to refine logical and elegant theories (B)** by weeding out **those** that fail to meet our empirical standards for helping us find problems to solve. What remains **are tested theories** that we use to explain (**C₂**):”

was changed to:

“We refine **our stories about the world** by **testing** how well they perform their roles in decision-making. We refine **the set of precise stories about the world (S₁)** by weeding out **members** that fail to meet our empirical standards for predicting.⁴ What remains **is the set of refined stories** that we use to predict (**S₂**). We also refine **the set of precise stories about the world (S₁)** by weeding out **members** that fail to meet our empirical standards for helping us find problems to solve. What remains **is the set of refined stories** that we use to explain (**S₃**):”

Chapter 2, Refining Everyday Thinking, fourth footnote

Changed “**scientific theories**” to “**these stories**” in the first sentence.

Changed “**theories**” to “**stories**” in the fourth sentence.

Chapter 2, Refining Everyday Thinking, last two paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Consider how we would have used this testing process to refine early modern theories about the solar system. Copernicus had the planets traveling around the sun in epicyclical orbits. The best Ptolemaic theory had the sun and other planets traveling around the earth in more complex epicyclical orbits. Many experts believe that the best Ptolemaic theory was a better tool for predicting the overall trajectories of the planets than the Copernican theory was. If true, we would have rejected the Copernican theory as a tool for predicting the motion of the planets. All experts agree that the Copernican theory was a better tool for explaining the apparent retrograde motion of the planets and variations in the planets’ brightness. We would have accepted it as a tool for explaining the motion of the planets. It later proved its worth in this role by helping Kepler formulate his theory of planets traveling around the sun in elliptical orbits.

“Kepler’s theory was a better tool for predicting the motions of the planets than the best Ptolemaic theory. We would have accepted it as a tool for predicting the motions of the planets. Kepler’s theory was as at least as good at explaining the retrograde motion of the planets and variations in the planets’ brightness as the Copernican theory was. Further, it was simpler and more elegant. We would have accepted it as a tool for explaining the motions of the planets. It later proved its worth in this role by helping Newton formulate his theories of gravity and mechanics.”

were deleted.

Chapter 2, Science as a Process, last paragraph, fifth footnote

“The belief that science **is** the result rather than **the** process of refining thinking tends to blind us to the best problems to solve. It does not take a theory to beat a theory. It takes an intellectual tool to beat an intellectual tool. The RTS **research program** beat the EOQ theory.”

was changed to:

“The belief that science **ought to be a theory** (the result of a process of refining **everyday thinking**) rather than **a strategy for learning** (a process for refining everyday thinking / **research program**) tends to blind us to the best problems to solve. It does not take a theory to beat a theory. It takes an intellectual tool to beat an intellectual tool. The RTS strategy for learning beat the EOQ theory.”

Chapter 2, Economic Science, first paragraph

Changed “**models** that explain” to “**stories** that **we use to** explain” in the second sentence.

Changed “predict” to “**help us to** predict” in the second sentence.

Changed “**theories**” to “**stories**” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Economic Science, second paragraph

Changed “**intellectual tools**” to “**stories**” in the first sentence.

Changed “**tools**” to “**stories**” in the second sentence.

Changed “**statement**” to “**story**” in the last sentence.

Chapter 2, Economic Science, third paragraph

Changed “**tools**” to “**stories**” in all (three occurrences).

Chapter 2, Economic Science, last paragraph

Changed “**tools**” to “**stories**” in the first sentence.

Chapter 2, *Refining Theories that We Use to Predict*, title

Changed “*Theories*” to “*Stories.*”

Chapter 2, *Refining Stories that We Use to Predict*, first paragraph

“We ought to refine the set of **theories** that we use to predict what will happen in economies by **testing how well they** help us to predict what will happen in economies.⁹ **It is wise for us to assign this task to people who have the knowledge to do this task well.**”

was changed to:

“We ought to refine the set of **stories** that we use to predict what will happen in economies by **weeding out all stories that are not clear, concise, and logical. What remains is the set of precise stories that we use to predict what will happen in economies. We ought to refine this set by weeding out stories that fail to meet our (evolving) standards for helping us to predict what will happen in economies. What remains is the set of refined stories that we use to predict what will happen in economies.**”⁹”

⁹ This is compatible with the instrumental interpretation of Milton Friedman’s definition of (positive) economic science as “a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.” Friedman, Milton, “The Methodology of Positive Economics,” *Essays in Positive Economics*, (Chicago: University of Chicago Press, 1953), 39.”

Chapter 2, *Refining Theories that We Use to Explain*, title

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “*Theories*” to “*Stories*.”

Chapter 2, *Refining Stories that We Use to Explain*, first paragraph

“We ought to refine the set of **theories** that we use to explain what happens in economies by **testing how well they help us to find problems to solve in our quest to live wisely. It is foolish for us to assign this task to experts. This is because no one can explain to us how to live wisely, how to follow our ideal path toward living a good life. We ought to learn to do this for ourselves.**¹⁰”

“¹⁰ This clearly applies to refining the (microeconomic) theories that we as individuals seeking to live wisely use to explain what happens in economies. It also applies to refining the (macroeconomic) theories that we as individuals seeking to govern ourselves wisely use to explain what happens in economies. We ought to seek to change or abandon governments that hinder us from learning to live ever more wisely.”

was changed to:

“We ought to refine the set of **stories** that we use to explain what happens in economies by **weeding out all stories that are not clear, concise, and logical. What remains is the set of precise stories that we use to explain what happens in economies. We ought to refine this set by weeding out stories that fail to meet our (evolving) standards for helping us to find problems to solve. The rub is that we cannot agree on what it is that we ought to seek.**

“As living beings, we seek to live well. As living beings with the ability to live wisely, we owe it to ourselves to live wisely. We owe it to ourselves to learn to live better than we currently know how to live.

“Defining what we ought to seek to be something other than what we need to live wisely leads us to act foolishly. Worse, it causes us to embed mistakes into the web of knowledge that we use to live, that is, into our markets, technologies, legal systems, languages, and cultures. The greatest danger is in public policy. We tend to discover and correct our private mistakes. When we act foolishly in our private lives, the results are often pathetic but rarely tragic. In contrast, policy makers often fail to discover and correct their mistakes. When they act foolishly, the results are often tragic. The classic example is the mercantile system, which defines what policy makers ought to seek to be precious metal coins and bullion.

“In his most famous work, *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith provided the world with a better concept of what we ought to seek. Smith defined what we ought to seek to be the things that we want to consume.¹⁰ This was a great advance over the mercantilist concept. However, it is not the best concept. We would progress much faster if we sought *what we need to live wisely* rather than *what we currently want to consume*.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

¹⁰ In the opening sentence of *Wealth*, Smith speaks of nations working to provide the things that its people consume: “THE annual labour of every nation is the fund which originally supplies it with all the necessaries and conveniences of life which it annually consumes....” From the view of modern economics, this is a positive statement about what nations do. From the decision-oriented view of this work, it is an explanatory statement. We use explanatory statements to guide our actions, to help us to find problems to solve. Smith, Adam, *An Inquiry into the Nature and Causes of the Wealth of Nations*, (Edinburgh: 1776), reprinted in Project Gutenberg, <http://www.gutenberg.org/catalog>, (1 June 2006).”

Chapter 2, *Refining Knowledge That We Use to Explain*, second paragraph

“To learn to live wisely we need to consider all knowledge useful in living wisely, which includes knowledge useful in consuming wisely.¹¹ We can do so by looking to our nature — our internal programming — to explain what we need to live wisely.¹² In biological terms, we can base the theories that we use to explain how to satisfy our needs on the set of all “teleonomic theories.”¹³ We can then tighten these loose theories by weeding out members of the set of theories that we use to explain what we need to live wisely.”

¹¹ Addressing this problem requires that we make controversial assumptions about our ultimate ends. The most important of these concerns whether an immaterial part of us survives the death of our bodies. Carl Menger, the economist who provided modern economics with its theory of consumption, chose to avoid these controversies by defining ‘wealth’ as consumer goods and the resources to produce consumer goods. Supporters of this definition of wealth believe it to be value-neutral. It actually supports the current state of the world by tending to blind us to the best problems to solve.”

¹² We can separate our explanations of our needs from our explanations of how best to satisfy our needs by defining our needs and ultimate normative end tautologically. *Our needs are those things that we need to satisfy in order to live wisely and living wisely is what we achieve when we satisfy our needs.*”

¹³ Teleonomic theories are theories that look to our internal programming to explain motivation. Our beliefs and behaviors are evolving at a pace many orders of magnitude faster than the genetic level programming that underlies our higher level internal programming. Although we can improve the process by which our genetic programming develops into our higher-level programming, we cannot improve our higher level internal programming beyond the bounds set by our genetic programming. Therefore, we can safely assume that our fully realized internal programming is fixed. This may not always be the case. A major challenge of our era must be to accumulate the practical wisdom we will need to meet the challenges that will come with the ability to change our genetic programming.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“If we accept the concept of science as a process, we can envision a science based on the concept of what we ought to seek as what we need to live wisely. Although we cannot agree on a story about what we need to live wisely, we can agree on a strategy for learning what we need to live wisely. The most successful such strategy involves looking to our nature — our internal programming — to explain what we need to live wisely.¹¹ Formally, we can base the stories that we use to explain what happens in economies on the set of all stories that we use to define what we need to live wisely.¹² We can then tighten these loose stories by weeding out members of the set of stories that we use to define what we need to live wisely.”

“¹¹ As a group, stories that look to our nature to explain how to live wisely are more successful than stories that look elsewhere. See Chapter 3 and Appendix B.”

“¹² Our beliefs and behaviors are evolving at a pace many orders of magnitude faster than the genetic level programming that underlies our higher level internal programming. Although we can improve the process by which our genetic programming develops into our higher-level programming, we cannot improve our higher level internal programming beyond the bounds set by our genetic programming. Therefore, we can safely assume that our fully realized internal programming is fixed. This may not always be the case. A major challenge of our era must be to accumulate the practical wisdom we will need to meet the challenges that will come with the ability to change our genetic programming.”

Chapter 2, *Refining Knowledge That We Use to Explain*, new sixth paragraph

Changed “theories” to “stories” in the first sentence.

Chapter 2, *Refining Knowledge That We Use to Explain*, new seventh paragraph

Changed “theories” to “stories” in the second sentence.

Chapter 2, *Defining Economic Science*, first paragraph

Changed “theories” to “stories” in the first sentence.

Changed “economic science” to “it” in the last two sentences (2 occurrences).

Chapter 2, *Defining Economic Science*, footnote

Changed “positivist view” to “view” in the first sentence.

Chapter 4, *Franklin's Curse*, last paragraph

Changed “wisely” to “more wisely” in the first sentence.

Chapter 5, *Key Factors*, first paragraph, second and third sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“One key factor is the freedom to **choose**. Another is the quality of **doing what we ought to do**.”

were changed to:

“One key factor is the freedom to **decide**. Another is the quality of **deciding wisely**.”

Chapter 5, *Lower Barriers to Trade*, first paragraph

Added the sentence, “**Competition promotes replacing non-knowledge resources with knowledge resources**.”

Changed “**tends to** promote **practical** wisdom” to “promotes wisdom” in the new third sentence.

Chapter 5, *Justice*, second paragraph

Changed “wisely” to “**more** wisely” in all (4 occurrences).

Chapter 5, *Justice*, third paragraph

Changed “wisely” to “**more** wisely” in all (4 occurrences).

Chapter 5, *Justice*, third paragraph

Changed “**ever more wisely**” to “**more wisely**” in the last sentence.

Appendix B, *Goodness and Rightness*, first paragraph

Changed “**identical** results” to “results” in the sixth sentence.

Reduced to a footnote at the end of the first sentence of the Summary section.

Changes in Version 2006.06.03

Chapter 1, *Excellence in Living Wisely*, second paragraph

Changed “**Wise managers know that choosing**” to “**Choosing**” in the first sentence.

Changed “**They**” to “**The wise**” in the second sentence.

Chapter 1, *Excellence in Living Wisely*, third paragraph

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

“They also help us to find mistakes.”

was deleted.

Chapter 1, Excellence in Living Wisely, last paragraph, last sentence

Changed “**managerial** concepts” to “concepts” in the first sentence.

Chapter 2, Refining Everyday Thinking, third paragraph, second footnote, end

Added the sentences:

“**Better predictions help us to improve the accuracy of a given decision tree structure. Better explanations help us to improve the decision tree structure.**”

Chapter 2, Science as a Process, first paragraph, first sentence

“**It is in our nature to learn to live good lives.**”

was changed to:

“**As living beings, it is in our nature to seek to live well. As intelligent beings, it is in our nature to learn to live well.**”

Chapter 2, Science as a Process, last paragraph

Changed “producers” to “**expert** producers” in the first sentence.

Chapter 2, Economic Science, first paragraph

Changed “In **other words**” to “In **short**” in the last sentence.

Chapter 2, Refining Stories that We Use to Explain, second paragraph

“As living beings, **we** seek to live well. As living beings with the ability to **live wisely**, we owe it to ourselves to live **wisely**. We owe it to ourselves to **learn to live better than we currently know how to live.**”

was changed to:

“As living beings, **it is in our nature to** seek to live well. As living beings with the ability to **learn**, we owe it to ourselves to **learn to live better than we currently** live. We owe it to ourselves to **seek to live wisely.**”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2006.06.06

Acknowledgments, ninth paragraph

“I am especially grateful for his explanation of his intellectual make-up [*Hayek on Hayek, An Autobiographical Dialogue*, (Chicago: University of Chicago Press, 1994), 134-5].”

was changed to:

““We shall not grow wiser before we learn that much that we have done was very foolish.””

Chapter 2, Economic Science, first paragraph, fourth sentence

“As we saw in the EOQ/RTS example, this is not the case.”

was deleted.

Chapter 2, *Defining Economic Science*, title

Changed title to “*Moral Science*.”

Chapter 5, *Consider the Justice of Interventions*, second paragraph, fourth sentence

“The foolish attempt to prohibit the sale of alcohol undermined the authority of government in the United States.”

was changed to:

“The attempt to prohibit alcohol during the roaring twenties undermined the authority of government in the United States.”

Chapter 6, first paragraph

Changed “the wisdom of the virtuous circle” to “the wisdom of pursuing the virtuous circle” in the first and second sentences.

Afterword, fourth paragraph

Changed “ever more” to “(ever more)” in the first sentence.

Changes in Version 2006.06.09

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Acknowledgments, fifth paragraph, fifth and sixth sentences

“My **conscious** mind could not get around the boundless problem of how a theory could be both useful (in predicting what happens in education markets) and foolish (as a guide for making career decisions). **My unconscious mind would not let go of this problem.**”

was changed to:

“My mind could not get around the boundless problem of how a theory could be both useful (in predicting what happens in education markets) and foolish (as a guide for making career decisions).”

Chapter 2, Refining Everyday Thinking, end

Added the following paragraphs:

“**This will be hard for people who are used to the idea of testing stories that we use to explain by how well that they help us to predict.**”

“**Two rules arise from this distinction. First, we ought to use the term ‘cause’ only with models that we use to explain. We explain causes. We predict effects. ‘Cause’ is a cue for ‘explain.’ Second, we need not worry about the realism of models that we use to predict. We need realism to help us to find problems to solve, not to help us to predict.**”

Chapter 2, Economic Science, last paragraph

Moved the ninth footnote from the end of the first paragraph of the next section.

Added the paragraph:

“**Two rules arise from this distinction. First, we ought to use the term ‘cause’ only with models that we use to explain. We explain causes. We predict effects. ‘Cause’ is a cue for ‘explain.’ Second, we need not worry about the realism of models that we use to predict. We need realism to help us to find problems to solve, not to help us to predict.**”

Reverence web links

Tested reference web links and updated web link dates.

Changes in Version 2006.06.10

Chapter 1, Excellence in Living Wisely, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “problems” to “temporal problems” in the last sentence.

Chapter 2, Refining Everyday Thinking, second paragraph, last three sentences

“What remains are stories about the world. We refine these stories by weeding out those that are not clear, concise, and logical. What remains is the set of precise stories about the world (S_1).”

were changed to:

“What remains is the set of stories about the world (S_1).”

Chapter 2, Refining Everyday Thinking, fourth paragraph

“We refine our stories about the world by testing how well they perform their roles in decision-making. We refine the set of precise stories about the world (S_1) by weeding out members that fail to meet our empirical standards for predicting.⁴ What remains is the set of refined stories that we use to predict (S_2). We also refine the set of precise stories about the world (S_1) by weeding out members that fail to meet our empirical standards for helping us find problems to solve. What remains is the set of refined stories that we use to explain (S_3):”

was changed to:

“We refine our stories about the world by testing how well they perform their roles in decision-making. We refine the set of stories about the world (S_1) by weeding out stories that fail to predict well.⁴ What remains is the set of stories that we use to predict (S_2). We also refine the set of stories about the world (S_1) by weeding out stories that fail to help to us find problems to solve well. What remains is the set of stories that we use to explain (S_3):”

Chapter 2, Refining Everyday Thinking, end

Added the paragraph:

“Some parts of the world appear to us to be simple enough for us to use a single story to predict and explain everything we need to predict and explain about this part of the world. Within these islands of simplicity, we test the stories that we use to explain by how well they help us to predict. When the stories that we use to explain predict well, we say that we have found the truth about this part of the world. If we are wrong about how simple this part of the world is, acting on what we believe to be the truth will yield results that we do not expect.”

Chapter 2, Economic Science, first paragraph, second and third sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Most economists believe that economics involves testing logical and elegant stories that we use to explain by how well they help us to predict. Economists using this method presume that stories that predict well also explain well.”

were deleted.

Chapter 3, Human Capital, Work, and Leisure, last paragraph

“For more on the subjects of wealth and consumption, see Appendix C.”

was deleted.

Chapter 4, A Crude Look at the Whole, second paragraph, end

Added the footnote:

“⁴ For another example of unexpected results caused by using a too simple model, see Appendix C.”

Changes in Version 2006.06.14

Chapter 2, Refining Everyday Thinking, third paragraph, last footnote, last two sentences

“Better predictions help us to improve the accuracy of a given decision tree structure. Better explanations help us to improve the decision tree structure.”

was changed to:

“Better predictions help us to improve our assessments of uncertain events. Better explanations help us to improve the decision structure.”

Chapter 2, Science as a Process, last paragraph

Changed “EOQ theory” to “EOQ model’s marginalist theory” in the last sentence of the first footnote.

Changed “definition” to “timeless concept of science” in the fourth sentence.

Chapter 2, Economic Science, last paragraph, end

Added the footnote:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“¹⁰ To students of Milton Friedman, these two rules will seem familiar. There is a twist. Friedman accepts the prevailing belief that science concerns results (theories) rather than processes (research programs). From this temporal view of science, the distinction between positive science (theories that describe what is) and normative science (theories that prescribe what ought to be) makes sense. From the timeless view of science put forth in this work, the distinction between positive science and normative science makes less sense. Research programs prescribe how we ought to describe the world. They are normative in means and positive in ends.”

Chapter 2, *Refining Stories that We use to Explain*, fourth paragraph

Changed “we ought to seek” to “policy makers ought to seek” in the first sentence.

Changed “we ought to seek” to “they ought to seek” in the second sentence.

Changed “we sought” to “policy makers sought” in the last sentence.

Chapter 2, *Refining Stories that We use to Explain*, fifth paragraph

Changed “involves looking” to “looks” in the third sentence.

Chapter 2, *Refining Stories that We use to Explain*, six paragraph

Changed “or our minds, or our spirits” to “only our minds, or only our spirits” in the second sentence.

Chapter 2, Moral Science, end

Deleted the footnote:

“¹⁶ This reflexive / recursive research program seeks to describe the world as it is in the process of becoming. From the view of modern economics, it is positive in ends (describing the world) and normative in means (prescribing how we ought to improve our descriptions of the world).”

Chapter 3, Profit, footnote

Changed “timeless definition for the temporal task” to “timeless concept for the temporal task” in the second sentence.

Chapter 5, *Lower Barriers to Trade*, first paragraph, end, footnote

Changed “determines” to “greatly influences” in the first sentence.

Changed “simplistic view” to “view” in the fourth sentence.

Changes in Version 2006.06.16

Preface, last paragraph

“This research program yields a “God’s eye” view of life. Its concepts help us to find the problems that we ought to solve and the resources that we will need to solve them.”

was deleted.

Chapter 1, Excellence in Living Wisely, title

Deleted “Wisely.”

Chapter 1, Excellence in Living, third paragraph

Changed “normative” to “timeless (normative)” in the second sentence.

Changed “normative” to “timeless” in the third, fifth, and sixth sentences.

Moved footnote from the end of the paragraph to the end of the second sentence..

Chapter 1, Excellence in Living, fourth paragraph

Changed “normative” to “timeless” in the last sentence.

Chapter 1, Excellence in Living, last paragraph, last two sentences

“They help us to plan our lives using timeless (idealistic / cosmic) models and work our plans using temporal (pragmatic / worldly) ones. Timeless models help us to find temporal problems to solve.”

was moved into a new paragraph and changed to:

“To live wisely, we need both timeless (idealistic / cosmic) models and temporal (pragmatic / worldly) models. Timeless models help us to identify what we are likely to need in the future. Temporal models help us to make the most of what we currently have. To live wisely, we need to plan our lives using timeless models and work our plans using temporal ones. In military terms, we need to plan our lives using strategic models and work our plans using tactical ones.”

Chapter 2, Refining Everyday Thinking, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “islands of simplicity” to “islands of **apparent** simplicity” in the second sentence.

Chapter 2, Science as a Process, first paragraph

Changed “**scientific** research program” to “research program” in the second sentence.

Chapter 2, Science as a Process, last paragraph

Changed “**products**” to “**results**” in the last sentence.

Chapter 2, Economic Science, last paragraph

Changed “explain” to “explain **how to live wisely**” in the second sentence.

Chapter 2, *Refining Stories that We use to Predict*, first paragraph

Changed “remains is **the** set of precise stories” to “**will** remain is **a** set of precise stories” in the second sentence.

Changed “remains is **the** set” to “**will** remain is **a** set” in the last sentence.

Chapter 2, *Refining Stories that We use to Explain*, first paragraph

Changed “remains is **the** set of precise stories” to “**ought to** remain is **a** set of precise stories” in the second sentence.

Inserted the sentence:

“**What ought to remain is a set of refined stories that we use to find problems to solve.**”

Italicized the last sentence:

“***The rub is that we cannot agree on what it is that we ought to seek.***”

Chapter 2, *Refining Stories that We use to Explain*, second paragraph

“As living beings, it is in our nature to seek to live well. As **living** beings **with the ability to learn**, we **owe it to ourselves to learn to live better than we currently live**. We **owe it to ourselves to seek** to live wisely.”

was changed to:

“As living beings, it is in our nature to live well. As **intelligent** beings, we **ought to use our intellect** to **pursue the timeless end of living well**. We **ought** to live wisely.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, *Refining Stories that We use to Explain*, fourth paragraph, footnote

Changed “view” to “**temporal** view” in the second sentence.

Changed “**decision-oriented** view” to “**timeless** view” in the third sentence.

Chapter 2, *Refining Stories that We use to Explain*, seventh paragraph

Changed “**normative**” to “**timeless**” in the fourth sentence (2 occurrences).

Chapter 2, *Moral Science*, first paragraph

Changed “stories that we use to explain” to “**timeless** stories that we use to explain **how to live wisely**” in the first sentence.

Chapter 3, *Practical Wisdom*, first paragraph

Changed “**normative**” to “**timeless**” in the first sentence.

Chapter 4, *Living Ever More Wisely*, first paragraph, footnote, last sentences

“**Modern economists recognize the roles that psychic income and transaction costs play in stewardship. They have been slow to recognize the potential benefits of inducing knowledge by removing resources. See Appendix D.**”

were deleted.

Chapter 4, *Living Ever More Wisely*, second paragraph

Changed “**marginalists**” to “**modern economists**” in the second sentence.

Chapter 4, *Uneven Flow*, first paragraph

Changed “**create**” to “**cause**” in the first sentence.

Chapter 4, *Uneven Flow*, third paragraph, first sentence

“**Uneven flow of one resource tends to create uneven flow of other resources. Uneven flow of money and goods tends to cause uneven flow of labor. Uneven flow of labor tends to cause uneven flow of money and goods.**”

was deleted.

Chapter 4, *Uneven Flow*, new second paragraph, first sentence

“Uneven flow **is a form of** waste.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Uneven flow wastes **resources**.”

Chapter 4, A Crude Look at the Whole, third paragraph, first sentence

“Experts are likely to learn much more about progress and turbulence from studying computer models **of networks**.”

*“^s Barabási, Albert-László *Linked, How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*, (New York: Plume, 2003).”*

was changed to:

“Experts are likely to learn much more about progress and turbulence from studying computer models.”

Afterword, fourth paragraph

Changed “elites” to “**right wing** elites” in the fourth sentence.

Appendix B, Timeless Logic, last paragraph

Changed “**normative**” to “**timeless**” in the last sentence.

Appendix B, Timeless Logic, first paragraph

Changed “**normative**” to “**timeless**” in the first sentence.

Appendix B, Human Needs, first paragraph

Changed “**normative**” to “**timeless**” in the second sentence.

Appendix B, Balanced Excellence, second paragraph

Changed “**normative**” to “**timeless**” in the first sentence.

Appendix B, Synthesis, first paragraph

Changed “**normative**” to “**timeless**” in the first sentence.

Appendix D, *Folding in Processes*, third paragraph

Changed “**sub assembly**” to “**subassembly**” in the last sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Appendix D, *Machine Tools*, second paragraph

Changed “**normative**” to “**timeless**” in the second and fourth sentences.

Appendix D, *Visibility*, second paragraph

Changed “yellow and red lights” to “yellow **lights or a single** red light” in the sixth sentence.

Changes in Version 2006.06.22

Preface, first paragraph

Changed “twenty-**seven**” to “twenty-**eight**” in the first sentence.

Changed “**Stanford** MBA” to “MBA” in the second sentence.

Chapter 1, Excellence in Living, second paragraph

“**In current parlance, these two concepts** help us to “**think outside the box.**””

was changed to:

“**In doing so, they** help us to **see the world anew.**”

Chapter 1, Excellence in Living, last paragraph

“**To live wisely, we need both** timeless (**idealistic / cosmic**) models and temporal (**pragmatic / worldly**) models. Timeless models help us to identify what we are likely to need in the future. Temporal models help us to make the most of what we currently have. **To live wisely, we need** to plan our lives using timeless models and work our plans using temporal ones. **In military terms, we need to plan our lives using strategic models and work our plans using tactical ones.**”

was merged with the previous paragraph and changed to:

“**We can use this insight to help us plan our lives. We do so by distinguishing between** timeless and temporal models. Timeless models help us to identify what we are likely to need in the future. Temporal models help us to make the most of what we currently have.⁷ **We ought** to plan our lives using timeless models and work our plans using temporal ones.”

“⁷ **Timeless models are strategic, idealistic, and cosmic. Temporal models are tactical, pragmatic, and worldly.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, A Strategy for Learning, Title

Changed title to “A Timeless Model for Living Wisely.”

Chapter 1, A Timeless Model for Living Wisely, second paragraph, first sentence

“⁸ Decision-making is the process that begins with finding a problem to solve and ends with learning from experience. Formally, it includes (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) implementing the chosen alternative; and (6) learning from the experience. Most decisions do not justify all of these steps.”

Chapter 2, Refining Everyday Thinking, fourth paragraph, footnote

Changed “soybean” to “bean” in the last sentence.

Chapter 2, Refining Stories that We Use to Explain, second paragraph

Changed “live wisely” to “seek to live wisely” in the last sentence.

Chapter 4, first paragraph

Changed “elements” to “parts” in the last sentence.

Chapter 4, second paragraph, first two sentences

“Discontinuity is the most extreme form of non-linearity. Because of the nonlinear way in which we apply new information, a small change can have a small effect, no effect, or a large effect.”

were merged into the first paragraph and changed to:

“Due to these two discontinuities, a small change can have a small effect, no effect, or a large effect.”

Afterword, first paragraph

Changed “ if the conversation lasts long enough, it often turns” to “these conversations often turn” in the second sentence.

Deleted the last sentence:

“ My answer is that these terms are not the most useful tools for thinking about politics today.”

Afterword, fourth paragraph, end

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Added the following sentences:

“Those who profess to guard our civil liberties ought to heed Justice Oliver Wendell Holmes famous dissent in the 1919 Abrams case in which he argued that the purpose of free speech is to support free experiment:

Persecution for the expression of opinions seems to me perfectly logical. If you have no doubt of your premises or your power and want a certain result with all your heart you naturally express your wishes in law and sweep away all opposition. To allow opposition by speech seems to indicate that you think the speech impotent, as when a man says that he has squared the circle, or that you do not care whole-heartedly for the result, or that you doubt either your power or your premises. But when men have realized that time has upset many fighting faiths, they may come to believe even more than they believe the very foundations of their own conduct that the ultimate good desired is better reached by free trade in ideas -- that the best test of truth is the power of the thought to get itself accepted in the competition of the market, and that truth is the only ground upon which their wishes safely can be carried out. That at any rate is the theory of our Constitution. It is an experiment, as all life is an experiment. Every year if not every day we have to wager our salvation upon some prophecy based upon imperfect knowledge.”

Changes in Version 2006.06.23

Chapter 3, Production, first paragraph

Changed “products” to “products **for sale**” in the first sentence (2 occurrences).

Appendix A, Ohno's Vision, title

Changed title to “**Overview**.”

Appendix A, Overview, first paragraph

Changed “**Toyota**” to “**his firm**” in the second sentence.

Changed “**imagined**” to “**envisioned**” in the third sentence.

Changed “**continuous**” to “**mass**” in the last sentence.

Appendix A, Overview, third paragraph

Changed “**strategy for learning**” to “**timeless model**” in the first sentence.

Changed “**production** system” to “system” in the second sentence.

Changed “**engineers**” to “**experts**” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix A, Overview, last paragraph

Changed “Toyota” to “Toyota **teams**” in the first sentence.

Changed “**strategy for learning**” to “**system**” in the first sentence.

Changed “**It has**” to “**They have**” in the second sentence.

Chapter 3, Production, first paragraph

Changed “products” to “products **for sale**” in the first sentence (2 occurrences).

Appendix D, Summary, first paragraph

Changed “(of **saleable** product)” to “of products **for sale**” in the six sentence.

Changes in Version 2006.06.26

Chapter 2, Economic Science, last paragraph, footnote

Changed “makes **less**” to “**does not** make” in the fifth sentence.

Chapter 2, *Refining Stories that We Use to Explain*, third paragraph

Changed “**what** we need to live wisely” to “**those things that** we need to live wisely” in the first sentence.

Chapter 2, *Refining Stories that We Use to Explain*, fifth paragraph

“If we accept the timeless concept of science as a process, we can envision an economic science based on the concept of what we ought to seek as **what** we need to live wisely. **Although we cannot agree on a story about what we need to live wisely, we can agree on a strategy for learning what we need to live wisely. The most successful such strategy looks to our nature — our internal programming — to explain what we need to live wisely.**¹² **Formally, we can base the stories that we use to explain what happens in economies on the set of all stories that we use to define what we need to live wisely.**¹³ We can then tighten these loose stories by weeding out members of the set **of stories that we use to define what we need to live wisely.**”

¹² As a group, stories that look to our nature to explain how to live wisely are more successful than stories that look elsewhere. See Chapter 3 and Appendix B.”

¹³ Our beliefs and behaviors are evolving at a pace many orders of magnitude faster than the genetic level programming that underlies our higher level internal

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

programming. Although we can improve the process by which our genetic programming develops into our higher-level programming, we cannot improve our higher level internal programming beyond the bounds set by our genetic programming. Therefore, we can safely assume that our fully realized internal programming is fixed. This may not always be the case. A major challenge of our era must be to accumulate the practical wisdom we will need to meet the challenges that will come with the ability to change our genetic programming.”

was changed to:

“If we accept the timeless concept of science as a process, we can envision an economic science based on the concept of what we ought to seek as **those things that we need to live wisely.**¹² **We** can base the stories that we use to explain what happens in economies on the set of all stories that we use to define what we need to live wisely.¹³ We can then tighten these loose stories by weeding out members of this set.¹⁴”

“¹² **Although we lack the knowledge to agree on a story about what we need to live wisely, we have the knowledge to agree on a research program for learning what we need to live wisely.** As a group, stories that look to our nature to explain how to live wisely are more successful than stories that look elsewhere. See Chapter 3 and Appendix B.”

“¹³ **We do this by defining our needs and ends tautologically. Our needs are those things we need to achieve our ends and our ends are those things we achieve by satisfying our needs.**”

“¹⁴ Our beliefs and behaviors are evolving at a pace many orders of magnitude faster than the genetic level programming that underlies our higher level internal programming. Although we can improve the process by which our genetic programming develops into our higher-level programming, we cannot improve our higher level internal programming beyond the bounds set by our genetic programming. Therefore, we can safely assume that our fully realized internal programming is fixed. This may not always be the case. A major challenge of our era must be to accumulate the practical wisdom we will need to meet the challenges that will come with the ability to change our genetic programming.”

Chapter 4, A Crude Look at the Whole, second paragraph, footnote

Changed “a too simple model” to “too simple a model” in the first sentence.

Changes in Version 2006.06.28

Acknowledgments, last paragraph, end

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “professors” to “**business school** professors” in the last sentence.

Preface, last paragraph, end

Added the sentence: “**What follows is a concise guide to this research program.**”

Chapter 2, Science as a Process, last paragraph, footnote

Changed “**science put forth in this work**” to “**consumers**” in the last sentence.

Chapter 3, *Pleasure and Pain*, third paragraph

Changed “**interferes with**” to “**hinders**” in the last sentence.

Chapter 3, *Pleasure and Pain*, fourth paragraph

Changed “**interferes with**” to “**hinders**” in the third sentence.

Chapter 3, *Pleasure and Pain*, last paragraph

Changed “**most** basic” to “basic” in the third sentence.

Chapter 3, Trade, first paragraph

“Trade is the voluntary exchange of goods. **All** means of trade consist of a trade relation and at least one transaction. We invest in trade relations in order to lower the cost of transactions. The cost of trading includes not only the cost of **setting up new** trade relations and the cost of **individual** transactions but also the cost of ending trade relations. A reputation for ending trade relations fairly tends to lower the cost of starting new **trade** relations.”

was changed to:

“Trade is the voluntary exchange of goods. The means of trade consists of a trade relation and at least one transaction. We invest in trade relations in order to lower the cost of transactions. The cost of trading includes not only the cost of **starting** trade relations and the cost of transactions but also the cost of ending trade relations. A reputation for ending trade relations fairly tends to lower the cost of starting new relations.”

Chapter 3, Trade, first paragraph, footnote

Changed “Commercial” to “**As Ronald Coase observed in his seminal paper, “The Theory of the Firm,”** commercial” in the first sentence.

Changed “moving” to “**slowly** moving” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, *Trust*, second paragraph

Changed “promotes knowledge” to “promotes **the use of** knowledge” in the last sentence.

Changed “protecting knowledge **from theft**” to “protecting knowledge” in the last sentence.

Chapter 3, *Three Common Misbeliefs*, title

Changed title to: “***Three Mistakes.***”

Chapter 3, *Three Mistakes*, first paragraph

“Three common **beliefs** hinder **our ability to** improve trade. The first is the belief that we cannot improve trade. This belief tends to blind us to **the potential of improving** trade. **Failing to see the benefits of improving trade** caused many **manufacturing engineers to perceive** the Toyota system as a **collection** of techniques **for cutting work-in-process (WIP)**. **The Toyota system is much more than a collection of techniques for cutting WIP. It is** a strategy for learning.”

was changed to:

“Three common **mistakes** hinder **improving** trade. The first is the belief that we cannot improve **the means of** trade. This belief tends to blind us to **better means of** trade. **This mistake** caused many **Western experts to see** the Toyota system as a **set** of techniques **rather than as** a strategy for learning.”

Chapter 3, *Three Mistakes*, second paragraph

Changed “**common belief that hinders improving trade**” to “**mistake**” in the first sentence.

Changed “**a mahogany desk**” to “**teak**” in the third sentence.

Changed “**an otherwise identical desk**” to “**teak**” in the third sentence.

Changed “**purchasing products and services**” to “**Buying**” in the last sentence.

Chapter 3, *Three Mistakes*, third paragraph

Changed “**common belief that hinders improving trade**” to “**mistake**” in the first sentence.

Chapter 3, *Three Mistakes*, last paragraph

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changed “**hundreds of millions of hours annually**” to “**billions of hours**” in the first sentence.

Changes in Version 2006.06.29

Chapter 2, *Refining Stories that We Use to Explain*, first paragraph

Changed “**cannot agree on**” to “**do not know exactly**” in the last sentence.

Chapter 2, *Refining Stories that We Use to Explain*, fifth paragraph

Changed “**an economic science**” to “**a science**” in the first sentence.

Chapter 3, *Human Capital, Work, and Leisure*, first paragraph

Changed “**economic**” to “**temporal**” in the first sentence.

Chapter 3, *Human Capital, Work, and Leisure*, first paragraph

Changed “**managerial**” to “**timeless**” in the first sentence.

Afterword, third paragraph

Changed “**those**” to “**those on the left**” in the third sentence.

Changed “**famous dissent in the 1919 Abrams case**” to “**1919 Abrams case dissent**” in the third sentence.

Appendix D, all

Changed “**engineers**” to “**managers**” in all (15 occurrences).

Appendix D, Browning footnote

“Browning, Robert “Andrea del Sarto,” in **Robert Browning, ed. Adam Roberts (New York: Oxford University, 1997) 240-46.**”

was changed to:

“Browning, Robert “Andrea del Sarto,” in ***English Poetry III: From Tennyson to Whitman*. Vol. XLII, The Harvard Classics, (New York: P. F. Collier and Son, 1909-1914), reprinted in Bartelby.com, <<http://www.bartelby.com/42/675.html>> (29 June 2006).**”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Appendix D, *Folding in Processes*, fourth paragraph

Changed “processes” to “**production** processes” in the last sentence.

Appendix D, *Smoothing Flows*, third paragraph

Changed “**Production** managers” to “**M**anagers” in the second sentence.

Appendix D, *Inducing Knowledge*, last paragraph

Changed “**raising product quality and** improving adaptability” to “improving adaptability **and raising product quality**” in the last sentence.

Appendix D, *Visibility*, title

Changed title to “***Transparency.***”

Appendix D, *Transparency*, first paragraph

Changed “one” to “a line worker” in the last sentence.

Changed “**production** system” to “system” in the last sentence.

Appendix D, *Transparency*, last paragraph

Changed “**Production** managers” to “**M**anagers” in the first sentence.

Changed “**visibility**” to “**transparency**” in the last sentence.

Appendix D, *Summary*, first paragraph

Changed “of products for sale” to “**(of products for sale)**” in the sixth sentence.

Changes in Version 2006.06.30

Chapter 1, *Modern Economics’ Blind Spot*, title

Changed title to “**Economic Science’s Blind Spot.**”

Chapter 1, *Economic Science’s Blind Spot*, first paragraph

Changed “economics” to “**modern** economics” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Economic Science's Blind Spot, last paragraph

Changed “*excellence in means*” to “*learning-by-doing*” in the first sentence.

Chapter 2, Economic Science, last paragraph, footnote

Changed “*consumers*” to “*the wise*” in the fourth sentence.

Chapter 5, *Consider the Justice of Interventions*, title

Changed title to “*Judge Interventions.*”

Chapter 5, *Control the Money Passively*, second paragraph

“Central bankers affect economies by distorting prices. Distorting prices hides the best problems to solve. John Maynard Keynes warns us of the great danger in this power to hide the best problems to solve, “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose.”⁴

“The best monetary policy is the one that best helps us to learn how to live wisely. Central bankers face two major choices. **The first choice is** whether to control the supply or the price of money. **The second is** whether to **declare how they will decide far in advance**. **Ought they to be free to surprise people?** Of the four **choices** created by these two major choices, the least **distorting**, hence the **most helpful** to learning, is to control the money supply by means of **policies** declared far in advance.”

“⁴ Keynes, John Maynard, *The Economic Consequences of the Peace*, (London: Macmillan and Co., Limited, 1919) reprinted in The World War I Document Archive, *Post 1918*, chapter 6, <<http://www.gwpda.org/1918p/keynespeace.htm>>, (9 June 2006).”

was changed to:

“The best monetary policy is the one that best helps us to learn how to live wisely. Central bankers face two major choices. **They must choose** whether to control the supply or the price of money. **They must also choose** whether to **act with or without warning**. Of the four **policies** created by these two choices, the **one that distorts prices** the least, hence **the one that is least harmful** to learning **how to live wisely**, is to control the money supply by means of **actions** declared far in advance. **Central bankers should not bury the problems that create uneven flow. They should not hide these problems from the people best able to solve them.**”⁴

“⁴ **Central bankers affect economies by distorting prices. Distorting prices hides the best problems to solve. John Maynard Keynes warns us of the great danger in this**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

power, “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose. Keynes, John Maynard, *The Economic Consequences of the Peace*, (London: Macmillan and Co., Limited, 1919) reprinted in The World War I Document Archive, *Post 1918*, chapter 6, <<http://www.gwpda.org/1918p/keynespeace.htm>>, (30 June 2006).”

Appendix D, A Timeless View, first paragraph

“Taiichi Ohno’s vision involves folding the production system in on itself. The resulting operational complexity creates uneven flow of work-in-process (WIP). Production teams find and solve problems that cause uneven flow. Solving these problems improves procedures, machine design, trading relations, and product design.”

was changed to:

“Producing wisely is a matter of replacing non-knowledge resources with knowledge. In complex systems, this process has two steps. The first step is replacing non-knowledge resources with knowledge in some part of the system. The second step is adapting other parts of the system to this change. The following uses the metaphor of folding and smoothing to explain this timeless process.”

Appendix D, A Temporal View, title

Changed title to “**Temporal Details.**”

Appendix D, Temporal Details, first paragraph

“The Toyota system is more than a collection of techniques for reducing WIP. It is a strategy for learning how to produce ever more wisely. This section describes some of the details of the Toyota system as it was in the early nineteen eighties.²”

was changed to:

“Toyota teams learn to produce wisely by folding and smoothing. This section describes some of the details of this process as they were in the early nineteen eighties.²”

Changes in Version 2006.07.11

Acknowledgments, fifth paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“As Albert Einstein observed, perfection of means and confusion of ends seem to characterize our age.”

was deleted.

Acknowledgments, seventh paragraph

Changed “Einstein” to “Albert Einstein” in the last sentence.

Chapter 1, Excellence in Living Wisely, second paragraph, last sentence

“In doing so, they help us to see the world anew.”

was deleted.

Chapter 1, A Timeless Model for Living Wisely, last paragraph, fourth sentence

“The third is the liberty to live wisely without unjustly interfering with others’ liberty to live wisely.”

was changed to:

“The third is the liberty to live wisely, which includes rights to property.”

Chapter 1, A Timeless Model for Living Wisely, last paragraph, sixth sentence

“Practical wisdom includes both tools to help us choose temporal ends and tools to help us choose means to temporal ends.”

was changed to:

“Practical wisdom includes both timeless tools to help us choose temporal ends and temporal tools to help us choose means to these ends.”

Chapter 5, Provide a Moral Vision, last paragraph

Changed “better” to “wiser” in the second and third sentences.

Changed “wisely” to “more wisely” in the second and fourth sentences.

Chapter 5, Control the Money Supply Passively, footnote

“Central bankers affect economies by distorting prices. Distorting prices hides the best problems to solve. John Maynard Keynes warns us of the great danger in this power, “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Monetary policies change prices. Changing prices changes our perceptions of problems. Students of Austrian economics will recognize this power of monetary authorities from their malinvestment theory of inflationary booms. John Maynard Keynes warns us of the danger in this power, “There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency.”

Chapter 5, Justice, first paragraph, second sentence

“There would be no need for governments to force us to share our wealth wisely.”

was deleted.

Afterword, fifth paragraph, end

Added the sentence:

“Those on the right who believe that they know the whole truth ought to learn to see the world anew.”

Appendix D, *Folding in Processes*, eighth paragraph

Changed “(WIP)” to “work in process (WIP)” in the last sentence.

Changes in Version 2006.07.17

Preface, second paragraph

Added “by blinding them to the possibility that markets would not clear” to the end of the fourth sentence.

Changed “analytical tools” to “the tools that I used to guide my actions” in the last sentence.

Preface, third and fourth paragraphs

“I have since learned that my wish for a strategy for living based on a theory was foolish. Such a strategy would not be able to test the assumptions of its theory. It would deny testing core beliefs against experience. It would deny science.

“Rather than a strategy for living based on a theory, I ought to have wished for a strategy for weeding out members of the set of theories that we use to explain how to live wisely. Such a strategy would embrace testing core beliefs against experience. It

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

would embrace science. It would be a research program for living wisely. What follows is a concise guide to this research program.”

were changed to:

“I have since learned that my wish for a strategy for living based on a theory was foolish. I ought to have wished for a method of weeding out members of the set of theories that we use to explain how to live wisely. What follows is a concise guide to this method.”

Chapter 1, Excellence in Living Wisely, last paragraph

“We can use this insight to help us plan our lives. We do so by distinguishing between timeless and temporal models. Timeless models help us to identify what we are likely to need in the future. Temporal models help us to make the most of what we currently have.⁷ We ought to plan our lives using timeless models and work our plans using temporal ones.”

⁷ Timeless models are strategic, idealistic, and cosmic. Temporal models are tactical, pragmatic, and worldly.”

was changed to:

“We can use this insight to help us to live more wisely. We do so by distinguishing between timeless and temporal tools.⁷ Timeless tools help us to identify what we are likely to need in the future. Temporal tools help us to make the most of what we currently have. We ought to plan our lives using timeless tools and work our plans using temporal ones.”

⁷ Timeless tools (concepts, models, etc.) are strategic, idealistic, and cosmic. Temporal tools are tactical, pragmatic, and worldly.”

Chapter 2, Refining Everyday Thinking, third paragraph

Changed “produce predictions and explanations” to “predict and explain” in the first sentence.

Changed “assign” to “to assign” and “evaluate” to “to evaluate” in the fifth sentence.

Changed “find” to “to find” and “formulate” to “to formulate” in the sixth sentence.

Chapter 2, Science as a Process, last paragraph, fifth footnote

Deleted “/ research program” in the first sentence.

Chapter 2, Economic Science, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We explain causes. **We predict effects.** ‘Cause’ is a cue for **‘explain.’**”

were changed to:

“We explain causes. ‘Cause’ is a cue for **a tool for helping us to find problems to solve.**”

Chapter 2, Economic Science, last paragraph, tenth footnote

Changed “research programs” to “**strategies for learning** / research programs” in the second sentence.

Changed “**R**esearch programs” to “**S**trategies for learning / research programs” in the last sentence.

Afterword, fifth paragraph, last sentence

“**Those on the right who believe that they know the whole truth ought to learn to see the world anew.**”

was changed to:

“**Those who believe that they have found the Truth ought to learn to see the world anew.**”

Changes in Version 2006.07.24

Chapter 2, Science as a Process, first paragraph, first two sentences

“**As living beings, it is in our nature to seek to live well. As intelligent beings, it is in our nature to learn to live well. It is in our nature** to be both researchers and research subjects in the research program of, by, and for intelligent life.”

was changed to:

“**Every time we choose (to act or not to act), we test our beliefs against experience. We bet our welfare on beliefs based upon imperfect knowledge. Others learn from our experiences. We, in turn, learn from theirs. *We are born to be both researchers and research subjects in the research program of, by, and for intelligent life.***”

Chapter 2, Science as a Process, last paragraph

Added the footnote:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“^s Most scientists believe that they seek the truth per se rather than useful assays of the truth. In as much as their pursuit of the truth satisfies their need to be part of something greater than themselves, their pursuit of the truth is a religious quest. To true believers in the current concept of science, this timeless concept is heretical. For more on the relationship between science and religion, see Appendix B.”

Added “, which helps us to find problems to solve” to the fifth sentence.

Moved the footnote at the end of the fourth sentence to the end of the fifth sentence.

Chapter 2, Economic Science, first paragraph

Changed “change” to “timeless concept of science” in the first sentence.

Chapter 2, Economic Science, second paragraph, first sentence

Deleted the footnote:

“^r Soros, George, *The Alchemy of Finance*, (New York: Simon & Schuster, 1988).”

Chapter 2, Moral Science, first paragraph

Changed “research program of the research program” to “scientific study of the research program” in the second sentence.

Chapter 5, Lower Trade Barriers, last paragraph, last sentence, footnote

Changed “normative end” to “timeless end” in the last sentence.

Chapter 5, Choosing Leaders, title

Changed title to “Leadership.”

Appendix B, Schweitzer’s Universal Spiritual Need, fourth paragraph, second sentence, footnote

Changed “normative end” to “timeless end” in the last sentence.

Appendix B, Synthesis, first paragraph, first sentence, footnote

Changed “normative end” to “timeless end” in the last sentence.

Changes in Version 2006.07.26

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Setting Words Aright, first paragraph

Changed “**They**” to “**Concepts**” in the last sentence.

Chapter 1, Setting Words Aright, second paragraph

Changed “**others**” to “**other resources**” in the second sentence.

Changed “**they**” to “**knowledge resources**” in the third sentence.

Chapter 1, Setting Words Aright, last paragraph

Changed “**knowledge**” to “**concepts**” in the first sentence (2 occurrences).

Chapter 1, Economic Science’s Blind Spot, first paragraph

Changed “**drawback**” to “**flaw**” in the second sentence.

Chapter 1, Excellence in Living, last paragraph

Changed “**ought**” to “**owe it to ourselves**” in the last sentence.

Chapter 1, A Timeless Model for Living Wisely, first paragraph, footnote

Changed “**decisions do not**” to “**of our decisions are too small to**” in the last sentence.

Chapter 2, Economic Science, first paragraph

Changed “**what we ought**” to “**what it is that we owe to ourselves**” in first sentence.

Chapter 2, Economic Science, third paragraph, footnote

Changed “**chaos theory**” to “**complex adaptive system**” in last sentence.

Chapter 2, *Refining Stories that We Use to Predict*, first paragraph

Changed “**ought**” to “**owe it to ourselves**” in the first and third sentences.

Chapter 2, *Refining Stories that We Use to Explain*, first paragraph

Changed “**ought**” to “**owe it to ourselves**” in the first and third sentences.

Changed “**ought to**” to “**should**” in the second and fourth sentences.

Changed “**ought**” to “**owe to ourselves**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, *Refining Stories that We Use to Explain*, second paragraph

Changed “ought” to “owe it to ourselves” in the first sentence.

Changed “ought” to “owe it to ourselves” in the last sentence.

Chapter 2, *Refining Stories that We Use to Explain*, fourth paragraph

Changed “much faster” to “faster” in the last sentence.

Chapter 2, *Refining Stories that We Use to Explain*, sixth paragraph

Changed “ought” to “owe it to ourselves” in the first sentence.

Chapter 2, *Refining Stories that We Use to Explain*, seventh paragraph

Changed “ought” to “owe it to ourselves” in the first sentence.

Chapter 2, *Moral Science*, first paragraph

Changed “ought” to “owe it to ourselves” in the first sentence.

Chapter 4, *Living Ever More Wisely*, first paragraph

Changed “Progress” to “Living more wisely” in the second sentence.

Chapter 4, *Smoothing Flow*, first paragraph

Changed “decisions cause” to “decision-making causes” in the first sentence.

Changed “decisions also worsen” to “decision-making also worsens” in the third sentence.

Chapter 4, *A Crude Look at the Whole*, first paragraph

Changed “living more wisely” to “experimenting with new ways of living more wisely” in the third sentence.

Chapter 4, *A Crude Look at the Whole*, last paragraph, footnote

Changed “economists, particularly Ludwig von Mises,” to “School economists” in the first sentence.

Changed “scientists, notably physicist Stephen Wolfram,” to “complex adaptive system scientists” in the second sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Chapter 5, Liberty, first paragraph

Changed “leaders and policymakers” to “government policymakers” in the last sentence.

Chapter 5, *Provide Moral Vision*, first paragraph

Changed “ought” to “owe it to ourselves” in the second sentence.

Chapter 5, *Judge Interventions*, first paragraph

Changed “Policymakers” to “Government policymakers” in the first sentence.

Chapter 5, *Lower Trade Barriers*, first paragraph

Changed “ought” to “owe it to ourselves” in the second sentence.

Chapter 5, Justice, second paragraph

Changed “Policymakers” to “Government policymakers” in the first sentence.

Chapter 5, Leadership, first paragraph

Changed “leaders” to “government policymakers” in the second paragraph.

Chapter 6, first paragraph

Changed “ought” to “owe it to ourselves” in the last sentence.

Chapter 6, second paragraph

Changed “ought” to “need” in the first sentence.

Changed “ought to help others to live wisely” to “owe it to ourselves to help others live wisely” in the first sentence.

Afterword, third paragraph

Changed “ought” to “owe it to themselves” in the first sentence.

Afterword, third paragraph

Changed “ought” to “owe it to themselves” in the first sentence.

Afterword, last paragraph

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changed “**nativist**” to “**nationalist**” in the second sentence.

Appendix B, *Secular Humanism*, first paragraph

Changed “**ought**” to “**owe it to themselves**” in the second sentence.

Appendix B, *Secular Humanism*, last paragraph

Changed “**ought**” to “**owe it to themselves**” in the second sentence.

Appendix B, *Religious Fundamentalism*, last paragraph

Changed “**ought**” to “**owe it to themselves**” in the second sentence.

Changes in Version 2006.08.04

Appendix B, *Timeless Logic*, last paragraph

Changed “timeless end” to “timeless **ultimate** end” in the last sentence.

Appendix B, *Balanced Excellence*, last paragraph

Changed “mystical **experience**” to “mystical **oneness**” in the last sentence.

Appendix B, *Heroism*, title

Changed title to “**Heroic Death**.”

Appendix B, *Heroic Death*, last paragraph, second sentence

“**We owe it to ourselves to understand the ignorance at the heart of all forms of ritual death.**”

was deleted.

Appendix B, *Heroic Death*, last paragraph, last sentence

“***Fools and knaves* ritualize heroic death.**”

was put into a new paragraph and changed to:

“***Those who* ritualize heroic death **are either fools or knaves.**”**

Changes in Version 2006.08.12

Chapter 1, Excellence in Living, last paragraph

Changed “tools” to “tools (concepts, models, etc.)” in the second sentence.

Chapter 1, Excellence in Living, last paragraph, footnote

“Timeless tools (concepts, models, etc.) are strategic, idealistic, and cosmic. Temporal tools are tactical, pragmatic, and worldly.”

was moved to the end of the paragraph and changed to:

“In military terms, timeless tools are strategic and temporal tools are tactical. We owe it to ourselves to plan our lives using strategic tools and work our plans using tactical ones.”

Chapter 2, Refining Everyday Thinking, last paragraph

Changed “take to be the truth” to “believe to be the truth” in the last sentence.

Chapter 2, Refining Everyday Thinking, last paragraph

Deleted “everything we need to predict and explain about this part of the world” from the first sentence.

Chapter 2, Science as a Process, last paragraph

Deleted “, which helps us to find problems to solve” from the fifth sentence.

Chapter 2, Economic Science, first paragraph

Changed “In short” to “In other words” in the last sentence.

Chapter 2, Economic Science, second paragraph and third paragraphs

“To make matters worse, there is a complex (reflexive / recursive) dynamic between the stories that we use to guide our actions and reality. *We base these stories on reality. Our actions change reality.* Consider the statement, “Tulips are a good investment.” If enough people use this story to guide their actions, the price of tulips will rise enough for tulips to become a poor investment.

“The dynamic between the stories that we use to guide our actions and reality gives rise to a wide variety of phenomena, which range from simple speculative bubbles to

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

complex systems of human organizations. We can think about this dynamic as the interplay of two tendencies of these stories. The first is their tendency to become more popular, which, in part, is due to the lock-in effect created by the inexhaustibility of knowledge. The second is their tendency to undermine the conditions on which we base them. Repeatedly using these stories to guide our actions without considering how our actions change reality tends to lead us ever further away from ideal paths toward living good lives.⁸ The harmony of these two tendencies is a siren song.

“If we all acted wisely all of the time, we would not need to distinguish between the stories that we use to predict and those that we use to explain. Given that we all do not act wisely all of the time, we ought to distinguish between them.”

⁸ Western philosophers are likely to associate the second tendency with Hegel’s dialectic. Chinese philosophers are likely to associate it with Lao Tzu: “The Way that can be known is not the eternal Way.” In complex adaptive system terms, the compounding of errors leads us away from “attractors” that “emerge” from our teleonomic programming.”

was changed to:

“If we all acted wisely all of the time, we would not need to distinguish between the stories that we use to predict and those that we use to explain.⁸ Given that we all do not act wisely all of the time, we ought to distinguish between them.”⁹”

⁸ An apparent complicating factor here is the complex (reflexive / recursive) dynamic between the stories that we use to guide our actions and reality. The existence of this dynamic, which arises from our ignorance, does not conflict with our need to distinguish between the stories that we use to predict what will happen and those that we use to explain what happens. See Appendix E.”

Chapter 2, Economic Science, new second paragraph, second footnote

Moved this footnote, which references Friedman’s *The Methodology of Positive Economics*, to the end of the *Refining Stories that We Use To Predict* section.

Chapter 2, *Refining Stories that We Use to Explain*, first paragraph

Changed “should to” to “should” in the second and fourth sentences.

Afterword, third paragraph

Changed “Holmes 1919 Abrams case dissent in which he argued” was changed to “Holmes’s argument” in the fourth sentence.

Added the footnote:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“² Holmes’s dissent to the decision of *Abrams v. U. S.*, 250 U.S. 616 (1919).”

Afterword, fourth paragraph

Changed “**have found**” was changed to “**know**” in the last sentence.

Appendix B, *Heroic Death*, second paragraph, last sentence

Added the footnote:

“*Aristotle. Nicomachean Ethics*, book 10 chapter 4.”

Appendix D, A Finer Timeless View, first paragraph

Changed “this **timeless** process” was changed to “**Toyota’s approach to this process**” in the last sentence.

Appendix E, Reflexivity

Used what had been the second and third paragraphs of the Economic Science section as the first two paragraphs of Appendix E. Eliminated the footnote.

Added the following paragraph:

“We owe it to ourselves to base the stories that we use to guide our actions on reality. Reality contains at least two timeless elements that are critical to avoiding such major catastrophes as environmental disasters and religious wars. The first is inexhaustibility of knowledge. The second is our spiritual need to revere life. If we are to avoid these catastrophes, we need to think in terms of timeless ideals (ideal paths through time) rather than temporal ideals (ideal states of the world). To do so wisely, we need to distinguish between the stories that we use to predict what will happen and the stories that we use to explain what happens.”

Changes in Version 2006.08.18

Preface, Excellence in Living, second paragraph

Changed “**Black-Scholes** model would later lead **many traders** astray by blinding **them** to the possibility **that markets would not clear**” to “economic order quantity (EOQ) model would later lead **me** astray by blinding **me to the possibility of learning**” in the second sentence.

Chapter 1, Excellence in Living, second paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“This pair of concepts helps **us** to divide the problem of how best to pursue **our** ultimate end into easier to solve problems without losing sight of **our** ultimate end.”

was changed to:

“This pair of concepts helps **the wise** to divide the problem of how best to pursue **their** ultimate ends into easier to solve problems without losing sight of **their** ultimate ends.”

Chapter 1, Excellence in Living, second paragraph, footnote, fourth through sixth sentences

“All organization members would seek to be efficient. All members with superiors would leave matters of effectiveness to their superiors. The distinction between efficiency and effectiveness would **depend on one's level in the hierarchy.**”

was changed to:

“**What would be a matter of efficiency at a high level in the organization would be a matter of effectiveness at a lower level.**”

Chapter 1, A Timeless Model for Living Wisely, last paragraph

Changed “**willingness and ability to act**” to “**knowledge of how to decide**” in the third sentence.

Chapter 2 Refining Everyday Thinking, third paragraph, first footnote

Changed “[**requires**] **that we** know” to “**calls for** knowing” in the sixth sentence.

Chapter 2 Refining Everyday Thinking, last paragraph, end

Added the following sentences:

“**At best, such actions cause nothing more than minor unintended consequences. At worst, they embed mistakes into our stocks of knowledge that will cause major catastrophes.**”

Chapter 2, Economic Science, second paragraph, footnote, last two sentences

“**The existence of this dynamic, which arises from our ignorance, does not conflict with** our need to distinguish between the stories that we use to predict and those that we use to explain. **See Appendix E.**”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“So long as this complex dynamic does not prevent us from representing reality as a decision tree model, it does not eliminate our need to distinguish between the stories that we use to predict and those that we use to explain. For more about this dynamic, see Appendix E.”

Chapter 2, Economic Science, last paragraph

Changed “models” to “stories” in the second sentence.

Changed “models” to “stories” in the fourth sentence.

Chapter 2, *Refining Stories that We Use to Explain*

Changed “policy maker” to “policymaker” in all (4 occurrences).

Chapter 3, Two Types of Models, title

Changed title to “Two Types of Tools.”

Chapter 3, Timeless Tools, first paragraph

Changed “models” to “tools” in the first sentence.

Chapter 3, Profit, first paragraph

Changed “return on practical wisdom” to “expected return on the knowledge of how to decide wisely” in the first sentence.

Deleted the second sentence, “We profit from acting wisely.”

Changed “live” to “decide” in the new second sentence (2 occurrences).

Chapter 3, Profit, first paragraph, footnote, first two sentences

“This decision science based definition of profit tells us to invest in practical wisdom, which includes the knowledge of how to manage uncertainty wisely. We should never use this timeless concept for the temporal task of assessing practical wisdom.”

were changed to:

“We should never use this timeless concept of profit for the temporal task of assessing knowledge of how to decide wisely.”

Chapter 3, Profit, first paragraph, footnote

Changed “wise decision-making” to “deciding wisely” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**poor decision-making**” to “**deciding foolishly**” in the fourth sentence.

Chapter 4, Living Ever More Wisely, title

Changed title to “**Progress.**”

Chapter 4, Progress, first paragraph, first two sentences

“**To live wisely is to seek to live ever** more wisely. Living more wisely is a matter of converting new information into new applications of knowledge.²”

was changed to:

“**We progress by deciding** more wisely.² **Deciding** more wisely is a matter of converting new information into new applications of knowledge.”

Chapter 4, A Crude Look at the Whole, first paragraph

Changed “**live**” to “**decide**” in the first sentence.

Changed “**living**” to “**deciding**” in the second and third sentences.

Chapter 5, Provide Moral Vision, first paragraph

Changed “find” to “**to find**” in the last sentence.

Chapter 5, Provide Moral Vision, second paragraph

Changed “**more** wisely” to “wisely” in the last sentence.

Chapter 5, Justice, last paragraph

Changed “**live**” to “**decide**” in the last sentence.

Afterword, third paragraph, footnote

“**Holmes’s dissent to the decision of** *Abrams v. U S* , 250 U.S. 616 (1919).”

was changed to:

“*Abrams v. United States*, 250 U.S. 616, **630** (1919) (**Holmes, J., dissenting**).”

Appendix D, Temporal Details, first paragraph, footnote

Changed “**seminar**” to “**conference**” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “two week tour of JIT manufacturing plants” to “factory tour” in the first sentence.

Changed “lectured at both events” to “spoke to both groups” in the last sentence.

Appendix E, Reflexivity, last paragraph, last two sentences

“If we are to avoid these catastrophes, we need to think in terms of timeless ideals (ideal paths through time) rather than temporal ideals (ideal states of the world). To do so wisely, we need to distinguish between the stories that we use to predict what will happen and the stories that we use to explain what happens.”

was changed to:

“If we are to avoid these catastrophes, we need to pursue the timeless ideal of all intelligent life deciding wisely, which aims at the best of all possible histories for the whole of life. This timeless ideal is wiser than the temporal ideal of all of us satisfying our wants efficiently, which aims at a state of the world in which none of us can become better off without making at least one of us worse off.”

Changes in Version 2006.08.22

Chapter 1, Excellence in Living, third paragraph

Changed “living” to “how best to live” in the first sentence.

Chapter 2, Refining Everyday Thinking, last paragraph

Changed “will cause” to “will in time cause” in the last sentence.

Chapter 5, *Provide Moral Vision*, last paragraph

Changed “how to live wisely” to “how best to live wisely” in the first sentence.

Afterword, third paragraph

Changed “those on the left” to “those” in the third sentence.

Changes in Version 2006.08.24

Chapter 1, Economic Science's Blind Spot, fourth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “difficult” to “hard” in the fifth sentence.

Chapter 3, *Pleasure and Pain*, second paragraph

Changed “difficult” to “hard” in the third sentence.

Chapter 3, *Trust*, second paragraph

Changed “more difficult” to “harder” in the second sentence.

Appendix B, Timeless Logic, first paragraph

Changed “difficulty” to “problem” in the first sentence.

Appendix B, Timeless Logic, last paragraph

Changed “ultimate end” back to “end” in the last sentence.

Changes in Version 2006.08.26

Chapter 4, title

Changed “Progress and Turbulence” to “Progress.”

Chapter 4, Progress, start

Added the section, **The Timeless Ideal**:

“Modern economics aims at the temporal ideal of a state of the world in which none of us may be made better off without making at least one of us worse off. We progress toward this ideal by acting efficiently. In contrast, the research program of, for, and by intelligent life aims at the timeless ideal of the best of all possible futures for the whole of life. We progress toward this ideal by deciding ever more wisely.”

Chapter 4, Progress, title

Changed title to “Turbulence.”

Chapter 4, Turbulence

“We progress by deciding more wisely.² Deciding more wisely is a matter of converting new information into new applications of knowledge. This process has two discontinuities. First, the way in which we turn new information into new useful knowledge is discontinuous. New information may or may not cause us to form a

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

mental pattern that leads to new useful knowledge. Second, the decision to apply new knowledge is discontinuous. New useful knowledge may or may not cause us to apply new useful knowledge. Due to these two discontinuities, a small change can have a small effect, no effect, or a large effect. A small rise in the price of a raw material might (1) cause firms to react as modern economists predict; (2) have no immediate effect; or (3) trigger a firm to adopt a new process that changes the industry.

“Applying new useful knowledge causes a ripple of change to flow through an economy. These ripples interact with one another in unpredictable ways. For example, the simultaneous rise in the price of steel and fall in the price of plastic is likely to cause a more rapid substitution of plastic for steel than if the price of steel rises a month after the price of plastic falls.”

“² Inherent in this recursionist concept of progress is the belief that intelligent beings ought to be stewards for the whole of life.”

were changed to:

“Deciding more wisely is a matter of converting new information into new applications of knowledge in our quest to live wisely. Each new application of knowledge creates a ripple of change that flows through the economy. These ripples interact with one another in unpredictable ways.² For example, the simultaneous rise in the price of steel and fall in the price of plastic is likely to cause a more rapid substitution of plastic for steel than if the price of steel rises a month after the price of plastic falls. *Progress creates turbulence in the flow of economic resources.*”

“² In mathematical terms, progress involves two types of discontinuities. First, the way in which we turn new information into new useful knowledge is discontinuous. New information may or may not cause us to form a mental pattern that leads to new useful knowledge. Second, the decision to apply new knowledge is discontinuous. New useful knowledge may or may not cause us to apply new useful knowledge. Because of these discontinuities, a small change can have a small effect, no effect, or a large effect. A small rise in the price of a raw material might (1) cause firms to react as modern economists predict; (2) have no immediate effect; or (3) trigger a firm to adopt a new process that changes the industry.”

Chapter 4, Smoothing Flow

Changed “causes uneven flow” to “worsens turbulence” in the first sentence of the first paragraph.

Merged this section with the preceding section.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Economic Science, second paragraph, footnote

“⁸ An apparent complicating factor is the complex (reflexive / recursive) dynamic between the stories that we use to guide our actions and reality. So long as this complex dynamic does not prevent us from representing reality as a decision tree model, it does not eliminate our need to distinguish between the stories that we use to predict and those that we use to explain. For more about this dynamic, see Appendix E.”

was deleted.

Chapter 3, Wealth, last sentence.

Added the footnote:

“This teleonomic definition of wealth is not compatible with the current national accounting scheme. See Appendix C.”

Chapter 4, Turbulence, second paragraph, footnote

“² In mathematical terms, progress involves two types of discontinuities. First, the way in which we turn new information into new useful knowledge is discontinuous. New information may or may not cause us to form a mental pattern that leads to new useful knowledge. Second, the decision to apply new knowledge is discontinuous. New useful knowledge may or may not cause us to apply new useful knowledge. Because of these discontinuities, a small change can have a small effect, no effect, or a large effect. A small rise in the price of a raw material might (1) cause firms to react as modern economists predict; (2) have no immediate effect; or (3) trigger a firm to adopt a new process that changes the industry.”

was promoted to the new **Computer Models** section and changed to:

“In mathematical terms, progress involves two types of discontinuities. First, the way in which we turn new information into new **applications of** useful knowledge is discontinuous. New information may or may not cause us to form a mental pattern that leads to new useful knowledge. Second, the decision to apply new knowledge is discontinuous. New useful knowledge may or may not cause us to apply new useful knowledge. Because of these discontinuities, a small change can have a small effect, no effect, or a large effect. A small rise in the price of a raw material might (1) cause firms to react as modern economists predict; (2) have no immediate effect; or (3) trigger a firm to adopt a new process that changes the industry. **To explain this, we must explain the dynamics of knowledge in use, including the complex dynamic between the stories that we use to guide our actions and reality.**³ We are far from being able to do so.”

“³ See Appendix E.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, A Crude Look at the Whole, first paragraph

Changed “**decide**” to “**live**” in the first sentence.

Changed “**deciding**” to “**living**” in the second sentence.

Changed “**deciding**” to “**living**” in the third sentence.

Chapter 4, A Crude Look at the Whole, second paragraph, footnote

“For another example of unexpected results caused by using too simple a model, see Appendix C.”

was deleted.

Chapter 4, A Crude Look at the Whole, last paragraph

Changed “Experts **are likely to** learn **much** more” to “**In time**, experts **will** learn more” in the first sentence.

Moved paragraph to the end of the new **Computer Models** section.

Chapter 4, Franklin’s Curse

“This chapter rebuts the widely held beliefs that (1) the rich are willing to give up some liberty to purchase economic security and (2) socialism would rid us of capitalism’s “gales of creative destruction.”⁶ These beliefs are not the most useful for living wisely. More useful are the beliefs that (1) the wise are willing to accept turbulence as a regrettable result of progress and (2) socialism postpones turbulence by retarding progress. Those who give up essential liberty to purchase a little safety retard progress. In as much as the rest of the world continues to progress, they sow the seeds of catastrophe. As Benjamin Franklin wrote, they deserve neither liberty nor safety.

“We owe it to ourselves to learn to live more wisely. We owe it to ourselves to learn to thrive in winds and survive in gales of creative destruction.”

⁶Schumpeter, Joseph, *Capitalism, Socialism, and Democracy*, (New York: Harper & Row, 1942).”

was merged with the previous section and changed to:

“In as much as the rest of the world continues to progress, they **lead to** catastrophe.

“We owe it to ourselves to learn to live more wisely. We owe it to ourselves to learn to thrive in winds and survive in gales of creative destruction.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 5, Liberty, first paragraph

Changed “**policymakers**” to “**officials**” in the last sentence.

Chapter 5, Justice, second paragraph

Changed “**policymakers**” to “**officials**” in the first sentence.

Chapter 5, Leadership, title

Changed title to “**Choosing Governments.**”

Chapter 5, Choosing Governments, first paragraph

Changed “government **policymakers**” to “**governments**” in the second sentence.

Afterword, third paragraph

Changed “**nanny** state” to “government” in the second sentence.

Changed “**Those**” to “**People**” in the third sentence.

Afterword, fourth paragraph

Changed “**Those**” to “**People**” in the last sentence.

Appendix C, second paragraph

Changed “problem” back to “problem **here**” in the first sentence.

Appendix C, last paragraph

Changed “catastrophe” to “**major** catastrophe” in the last sentence.

Appendix E, title quotation attribution

Changed “**Tao Te Ching**, chap 1.” to “*Tao Te Ching*, Trans by John R. Leebriick (1980), chap 1, line 1, reprinted in Lao Tzu: *Tao Te Ching* (100+ Translations of Chapter 1), <<http://www.bopsecrets.org/gateway/passages/tao-te-ching.htm>> (30 August 2006).”

Appendix E, last paragraph

“We owe it to ourselves to base the stories that we use to guide our actions on reality. Reality **contains at least two timeless elements that are critical to avoiding such major catastrophes as environmental disasters and religious wars. The first is the**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

inexhaustibility of knowledge. **The second is** our spiritual need to revere life. **If we are to avoid these catastrophes, we need to pursue the timeless ideal of all intelligent life deciding wisely, which aims at the best of all possible histories for the whole of life. This timeless ideal is wiser than the temporal ideal of all of us satisfying our wants efficiently, which aims at a state of the world in which none of us can become better off without making at least one of us worse off.**”

was changed to:

“We owe it to ourselves to base the stories that we use to guide our actions on reality. Reality **includes the** inexhaustibility of knowledge **and** our spiritual need to revere life. **Including these two timeless elements in our models of how to live makes our models open-ended. Ignoring these two timeless elements greatly increases our risk of suffering environmental disasters, patriotic wars, religious strife, and other catastrophes. We can be wise or we can be certain. We cannot be both wise and certain.**”

Changes in Version 2006.09.05

Chapter 1, Excellence in Living, last paragraph

Changed “**the future**” to “**our quest to live wisely**” in the second sentence.

Added “**in solving current problems**” to the third sentence.

Chapter 2, Refining Everyday Thinking, last paragraph

Changed “mistakes into our stocks of knowledge **that in time will cause**” to “mistakes **that lead to major catastrophes** into our stocks of knowledge **in use**” in the last sentence.

Chapter 2, Economic Science, last paragraph, footnote

Changed “**the wise**” to “**science**” in the fourth sentence.

Chapter 2, *Refining Stories that We Use to Explain*, third paragraph

Changed “**the web of knowledge that we use to live**” to “**our stocks of knowledge in use**” in the second sentence.

Chapter 2, *Refining Stories that We Use to Explain*, sixth paragraph, footnote

Added the sentences:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“This rule for refining teleonomic theories weeds out (1) sociobiology, which ignores our minds and spirits; (2) postmodernist philosophy, which ignores our bodies and spirits; and (3) all spiritual philosophies that ignore our bodies and minds.”

Chapter 4, Turbulence, third paragraph, last sentence

Added the phrase: “workers who lose their jobs during slow times because labor contracts do not let wages fall.”

Chapter 4, A Crude Look at the Whole, second paragraph

Changed “uneven flow” to “turbulence” in the first sentence.

Changed “uneven flow” to “poor decision-making” in the second sentence.

Appendix E, second paragraph, last sentence

“The harmony of these two tendencies is a Siren song.”

was changed to:

“When these two tendencies unite, they lead us ever further away from our ideal paths toward living good lives. The further we are from our ideal paths, the greater is our potential for catastrophe.”

Appendix E, last paragraph

“We owe it to ourselves to base the stories that we use to guide our actions on reality. Reality includes the inexhaustibility of knowledge and our spiritual need to revere life. Including these two timeless elements in our models of how to live makes our models open-ended. Ignoring these two timeless elements greatly increases our risk of suffering environmental disasters, patriotic wars, religious strife, and other catastrophes. We can be wise or we can be certain. We cannot be both wise and certain.”

was changed to:

“To reduce our potential for catastrophe, we need to base the stories that we use to guide our actions on reality. Reality includes timeless elements. Chief among these are the inexhaustibility of knowledge and our insatiable need to revere life. Including these timeless elements in our models makes our models open-ended. Excluding these elements greatly increases our risk of suffering environmental disasters, patriotic wars, religious strife, and other catastrophes. We can aspire to be wise by including these elements or we can pretend to be certain by excluding them. We cannot be both wise and certain.”

Changes in Version 2006.09.15

Acknowledgments, sixth paragraph

Changed “a business forms manufacturing company that had **returned** over thirty percent **per year on equity for more than a dozen years**” to “a **closely held** business forms manufacturing company that **for the preceding dozen years had average annual sales growth and return on equity rates of** over thirty percent” in the first sentence.

Chapter 2, Economic Science, last paragraph, footnote

Added the sentence “**Acting on our beliefs about the world changes the world.**”

Chapter 2, *Refining Stories that We Use to Explain*, second paragraph

Changed “**We**” to “**In short, we**” in the last sentence.

Chapter 2, *Refining Stories that We Use to Explain*, sixth paragraph, footnote

Changed “postmodern**ist philosophy**” to “postmodern **moral relativism**” in the last sentence.

Chapter 4, title quote

Changed quote:

**“Big whorls have little whorls,
Which feed on their velocity,
And little whorls have lesser whorls,
And so on to viscosity.**

— Lewis F. Richardson”

“¹ Richardson, Lewis F., *Weather Prediction by Numerical Processes*, (London: Cambridge University Press, 1922).”

to:

“The way that can be told is not the eternal way.” — Lao Tzu”

“¹ *Tao Te Ching*, Trans by John R. Leebrick (1980), chap 1, line 1, reprinted in Lao Tzu: *Tao Te Ching* (100+ Translations of Chapter 1), <<http://www.bopsecrets.org/gateway/passages/tao-te-ching.htm>> (15 September 2006).”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, The Timeless Ideal, first paragraph

“Modern economics aims at the temporal ideal of a state of the world in which none of us may be made better off without making at least one of us worse off. We progress toward this ideal by acting efficiently. In contrast, the research program of, for, and by intelligent life aims at the timeless ideal of the best of all possible futures for the whole of life. We progress toward this ideal by deciding ever more wisely.”

was changed to:

“The research program of, by, and for intelligent life aims at the timeless ideal of the best of all possible futures for the whole of life. We progress toward this ideal by deciding ever more wisely.

“Deciding more wisely is a matter of converting new information into new applications of knowledge in our quest to live wisely. Each new application of knowledge creates the need to change other parts of the economy. In short, progress creates stress.

“The wise react to stress by adapting to their new circumstances in two ways. First, they try to find a better problem to solve, which is to say that they try to become more effective. Finding a new problem to solve usually increases the stress that they pass on to others. Second, they relieve stress by acting efficiently. Acting efficiently lessens the stress that they pass on to others.”

“If all of us were to act efficiently but not more effectively, the original shock of progress would flow through the economy as a ripple of change. In time, this ripple of change would die out as we would replace all stress with knowledge of how to act efficiently. Assuming that there is no additional shock to the economy, we would achieve a state of the world in which none of us can be made better off without making at least one of us worse off. To modern economists, this is the ideal state of general equilibrium.

“As hard as it is for many modern economists to grasp, the path toward the temporal ideal of general equilibrium is not the path toward the timeless ideal of the best of all possible futures for the whole of life. To achieve the temporal ideal, we need to act efficiently. To achieve the timeless ideal, we need to decide wisely. As we saw in the EOQ/RTS example, acting efficiently is not the same as deciding wisely.”

“² In time, unrelieved stress, like snow building up behind a snow fence, will eventually overwhelm the forces that hold it back and so release a catastrophic avalanche of change. A good example of this is the fall of the Soviet Union.”

Chapter 4, Transient Inflation

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Deciding more wisely is a matter of converting new information into new applications of knowledge in our quest to live wisely. This process is neither costless nor instantaneous. In the short run, it is inflationary in that it uses resources that would otherwise go towards producing things that we currently want. In the long run, it is deflationary in that the inexhaustible new knowledge in use provides us with more of the things that we will want. *Progress creates a “bow wave” of inflation.*”

“Poor decision-making wastes resources, thereby worsening bow waves of inflation. Imagine that a small biotech company invents a cheap method of producing ethanol from crop waste. If the current producers of ethanol buy this method, they will adopt existing production capacity to the new method. The cost of putting the new method into use will be relatively small. On the other hand, if the current firms choose not to buy this method, other firms will enter the ethanol business by investing in new capacity. The cost of putting the new method into use will be much larger. Hence, the bow wave of inflation will be much larger.

“In freely evolving economies, we test methods of deciding wisely. We adopt the best and discard the worst. We become ever better at deciding wisely.”

was deleted.

Chapter 4, Turbulence, title

Changed title to “Deciding Wisely.”

Chapter 4, Deciding Wisely

“Again, deciding more wisely is a matter of converting new information into new applications of knowledge in our quest to live wisely. Each new application of knowledge creates a ripple of change that flows through the economy. These ripples interact with one another in unpredictable ways. For example, the simultaneous rise in the price of steel and fall in the price of plastic is likely to cause a more rapid substitution of plastic for steel than if the price of steel rises a month after the price of plastic falls. *Progress creates turbulence in the flow of economic resources.*”

“Poor decision-making worsens turbulence. If we take a new job across the country, find that it does not satisfy our needs, and then return to our old job, we create ripples of change that flow through the economy. If we respond to a rise in the price of steel by replacing it with plastic, find that plastic does not work as well, and return to steel, we add to the ripples of change.

“We can recapture some of the waste created by poor decision-making by smoothing uneven flow. Capturing the benefit of smoothing flow may call for trading with those hurt by uneven flow. Mistrust and/or ignorance of better means of trade may constrain us from smoothing flow. Examples of this include (1) distributors who fail to share information about their customers with their suppliers for fear of losing business; (2)

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

workers who fail to tell their bosses about foolish procedures for fear of losing work; (3) people who fail to discover their genetic predispositions for fear of losing their insurance coverage; and (4) workers who lose their jobs during slow times because labor contracts do not let wages fall.

“In freely evolving economies, we test methods of smoothing flow. We adopt the best and discard the worst. We become ever better at smoothing flow.²

² For more on the subject of smoothing flow, see Appendix D.”

was changed to:

“Deciding wisely is an ideal that we almost never achieve. It calls on us to choose our temporal end wisely and then choose the means to this end wisely. In other words, it calls on us to find the best problem to solve and then to solve this problem using the least costly resources.

“As with other activities, we can improve our ability to decide wisely by understanding our failures. There are many ways to seek this knowledge. We can look for what we did or did not do. Did we waste resources, fail to find the best problem to solve, or fail to solve the problem? We can look for the factors of wise decision-making that we lacked. Did we lack practical wisdom, liberty, trust, or capital? We can also look for common patterns in our failures. For example, we can look for failures that concern trading and failures that concern the complex dynamic between the stories that we use to guide our actions and reality. We can even simulate deciding wisely on computers.

“*Trading Failures*

The uneven flow of resources wastes time and other resources.³ Capturing the benefit of smoothing flow may call for trading with those hurt by uneven flow. Mistrust and/or ignorance of better means of trade may constrain us from smoothing flow. Examples of such failures include (1) distributors who fail to share information about their customers with their suppliers for fear of losing business; (2) workers who fail to tell their bosses about foolish procedures for fear of losing work; (3) people who fail to discover their genetic predispositions for fear of losing their insurance coverage; and (4) workers who lose their jobs during slow times because labor contracts do not let wages fall. In time, we will learn to solve the trade problems that give rise to these decision failures.”

³ For more on the subject of smoothing flow, see Appendix D.”

Chapter 4, Computer Models, title

Changed title to “*Computer Models*.”

Chapter 4, *Computer Models*, first paragraph, first footnote

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“³See Appendix E.”

was changed to:

“⁴ Agent based computer simulations of the imperfect flow of resources should explain what modern economists call Kondratieff waves, business cycles, and asymmetrical information market failures. Regrettably, these high level models of the imperfect flow of economic resources take imperfect decision-making as a given and so tend to blind us to the most effective problem to solve, which is how best to improve the quality of decision-making. *From the timeless view, the cause of imperfect flow is imperfect decision-making, not imperfect markets.*”

Chapter 4, *Computer Models*, first paragraph

Changed “progress” to “deciding wisely” in the first sentence.

Deleted the last sentence, “We are far from being able to do so.”

Chapter 4, *Computer Models*, second paragraph

Changed “progress and imperfect flow” to “deciding wisely” in the first sentence.

Chapter 4, A Crude Look at the Whole, first paragraph

Changed “turbulence in the flow of economic resources” to “stress” in the first sentence.

Changed “turbulence” to “stress” in the second sentence.

Changed “Turbulence” to “Stress” in the third sentence.

Chapter 4, A Crude Look at the Whole, second paragraph, second and third sentences

“It focuses on the causes of uneven flow, progress and poor decision-making, rather than on the symptoms of poor decision-making, transient inflation and turbulence. When policies meant to treat these symptoms lower the quality of decision-making, they retard progress.”

was changed to:

“It focuses on progress and poor decision-making rather than on the effects of progress and poor decision-making, unemployment and inflation. When policies meant to treat these effects lower the quality of decision-making, they retard progress.”

Chapter 4, *Computer Models*, title

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed title to “Computer Models of Progress.”

Chapter 5, *Provide Moral Vision*

Changed title to “*Promote Practical Wisdom*.”

Moved this subsection to the end of the Liberty section.

Chapter 5, *Promote Practical Wisdom*

“A moral vision is more than a set of moral values; it is a strategy for living wisely. If this vision of what we owe it to ourselves to do is too specific, it will blind us to better means of living wisely. If it is too general, it will not help us to find better means of living wisely.”

“A moral vision is especially useful in wealthy economies, where the problems people face are more problems of ignorance than of material scarcity. The wiser we live, the harder it is to know what we need to live more wisely. Further, the wiser we all live, the faster things change. The faster things change, the harder it is to know how best to live wisely.”

was changed to:

“Practical wisdom is knowledge of how to decide wisely. Practical Wisdom is especially useful in wealthy economies, where the problems people face are more problems of ignorance than of material scarcity. The wiser we live, the harder it is to know what we need to live more wisely. Further, the wiser we all live, the faster things change. The faster things change, the harder it is to know how best to live wisely.”

“Governments ought to promote practical wisdom by promoting the research program of, by, and for intelligent life.”

Chapter 5, *Judge Interventions*, second paragraph

Changed “Two” to “Three” in the first sentence.

Added the following:

“Third, foolish interventions create adverse results, which in turn create the need for greater intervention.⁴ Controlling the price of rental housing inevitably leads to controlling the behavior of landlords, who no longer find supplying rental housing at prior levels of quality to be wise.”

⁴ Hayek, F. A., *The Road to Serfdom*, (Chicago, University of Chicago Press, 1944).”

Chapter 5, *Control the Money Supply Passively*, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**distorts prices the least, hence the one that** is least harmful to learning how to live wisely,” to “is least harmful to learning how to live wisely” in the fifth sentence.

Changed “**create uneven flow**” to “**disrupt the smooth flow of resources**” in the sixth sentence.

Chapter 5, *Lower Trade Barriers*, first paragraph, first footnote

Changed “**A good example of a barrier to trade is**” to “**Consider**” in the first sentence.

Changed “insurance” to “**medical** insurance” in the first, second, and third sentences.

Changed “live” to “**to** live” in the third and fourth sentences.

Chapter 5, *Lower Trade Barriers*, first paragraph

Changed “than” to “than **is**” in the last sentence.

Afterword, third paragraph

Changed “**turbulence**” to “**stress**” in the first sentence.

Changed “protect its people” to “protect its people **from stress**” in the second sentence.

Appendix E

Changed “**revere life**” to “**mystically link or relink with something greater than ourselves**” in the first sentence.

Italicized the last sentence of the last paragraph.

Moved the entire appendix to a new *Recursive Failures* subsection in Chapter 4.

All reference note URL links

Checked and updated all URL links in references.

Changes in Version 2006.09.21

Chapter 2, *Science as a Process*, last paragraph, last footnote

Changed “science and religion” to “**timeless** science and religion” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, *Refining Stories that We Use to Explain*, second paragraph

Changed “We” to “In short, we” in the last sentence.

Chapter 2, *Refining Stories that We Use to Explain*, fourth paragraph

Changed “faster” to “much more readily” in the last sentence.

Chapter 3, *Practical Wisdom*, third paragraph

Changed “incontinence” to “the loss of our ability to contain our emotions or appetites” in the last sentence.

Chapter 4, *Recursive Failures*, first paragraph

Changed “complex (reflexive / recursive) dynamic between the stories” to “complex dynamic between the stories (narratives, models, theories, etc.)” in the first sentence.

Added the following footnote at the end of the paragraph:

“Most intellectuals prefer ‘reflexive’ to ‘recursive’ to describe this complex dynamic. Arguably, this is because they see their role in the grand division of labor as seeking the truth for its own sake rather than seeking the truth that we need to progress. We see this in the distinction between philosopher of science Thomas Kuhn’s original concept of a paradigm shift as a change in the way that we conceive of the world and the resulting popular concept of a paradigm shift as a change in the way that we see the world that changes the world for the better. ‘Reflexive’ describes our mental hall of mirrors. ‘Recursive’ describes the process of making our way through this hall of mirrors.”

Chapter 6, last paragraph

Changed “research program of, by, and for intelligent life” to “universal research program” in the last sentence.

Appendix B, *Secular Humanism*, last paragraph

Changed “the quest” to “seeking” and “the quest for truth” to “seeking the whole truth” in the second sentence.

Changed “Wisely conceived,” to “In other words, timeless” and “science” to “timeless science” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Acknowledgments, ninth paragraph

Added the sentence:

“The science of practical wisdom is the road to living wisely.”

Chapter 1, A Timeless Model for Living Wisely, first paragraph, footnote

Changed “Formally” to “Ideally” in the second sentence.

Added the sentence:

“Practically, we balance the costs and benefits of decision-making.”

Chapter 2, A Timeless Model for Living Wisely, first paragraph, footnote

Changed “Formally” to “Ideally” in the second sentence.

Added the sentence:

“Practically, we balance the costs and benefits of decision-making.”

Chapter 2, *Moral Science*, first paragraph

Changed “timeless stories” to “stories” in the first sentence.

Chapter 4, The Timeless Ideal, second paragraph, footnote

Deleted “eventually” from the first sentence.

Moved footnote to the end of the third paragraph.

Chapter 4, The Timeless Ideal, third paragraph, first sentence

“The wise react to stress by adapting to their new circumstances in two ways.”

was changed to:

“The wise adapt to stress by deciding wisely.”

Chapter 4, The Timeless Ideal, fourth paragraph

“If all of us were to act efficiently but not more effectively, the original shock of progress would flow through the economy as a ripple of change. In time, this ripple of change would die out as we would replace all stress with knowledge of how to act efficiently. Assuming that there is no additional shock to the economy, we would

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

achieve a state of the world in which none of us can be made better off without making at least one of us worse off. To **modern economists**, this is the ideal state of general equilibrium.”

was changed to:

“**In contrast, modern economics would have us adapt to stress by acting efficiently.** Ripples of stress caused by shocks of progress **would** die out as we replace stress with knowledge of how to act efficiently. **The system would tend toward** a state of the world in which none of us can be made better off without making at least one of us worse off. This is the ideal state of general equilibrium.”

Chapter 4, *Trading Failures*, first paragraph, footnote

Moved the footnote from the end of the first sentence to the end of the paragraph.

Afterword, first paragraph

Changed “**seven**” to “**eight**” in the first sentence.

Changes in Version 2006.09.30

Acknowledgments, second paragraph

Changed “**would**” to “**should**” in the first sentence.

Acknowledgments, ninth paragraph

Deleted “**Although I finished my first draft before reading any of his works,**” from the second sentence.

Acknowledgments, last paragraph

Changed “**would**” to “**should**” in the first sentence.

Changed “also **would**” to “**should** also” in the second sentence.

Chapter 1, Excellence in Living, fourth paragraph

Changed “*living wisely*” to “*living*” in the first sentence (2 occurrences).

Changed “live **wisely**” to “live” in the last sentence.

Chapter 1, Excellence in Living, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “*currently have in solving temporal problems*” to “*have in solving current problems*” in the fourth sentence.

Chapter 2, Science as a Process, last paragraph, first footnote, last sentence

“For more on the relationship between timeless science and religion, see Appendix B.”

was deleted.

Chapter 2, Economic Science, first paragraph

Changed “*possess*” to “*use*” in the second and third sentences.

Changed “*would*” to “*should*” in the fourth sentence.

Chapter 2, Economic Science, second paragraph

Changed “*would*” to “*should*” in the first sentence.

Changed “*ought to*” to “*should*” in the last sentence.

Chapter 2, Refining Stories that We Use to Explain, fourth paragraph

Changed “*concept*” to “*concept of wealth*” in the fourth sentence.

Changed “*concept*” to “*concept of wealth*” in the fifth sentence.

Chapter 2, Refining Stories that We Use to Explain, fifth paragraph, last footnote

Changed “*the case*” to “*true*” in the fourth sentence.

Chapter 2, Refining Stories that We Use to Explain, seventh paragraph

Changed “*would*” to “*should*” in the second and third sentences.

Added the footnote:

“Rawls uses a first person conditional statement to determine moral obligation. The grammatically correct term for expressing a first person conditional statement is ‘should.’ To American ears, ‘should’ implies a moral obligation rather than a hypothetical circumstance. Americans may choose to replace the grammatically correct ‘should’ with the idiomatic ‘would.’”

Changed:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Under these conditions, we **would** want intelligent beings to live ever more wisely. **We should also want them to devote themselves** to devote themselves to helping others to live good lives. In short, we **would** want intelligent life to revere life.”

to:

“Under these conditions, we **should** want intelligent beings to live ever more wisely **and** to devote themselves to helping others to live good lives. In short, we **should** want intelligent life to revere life.”

Chapter 3, Consumption, first paragraph

Changed “**foolish, as would be the case if the winner were an addict who would use the money to pursue his or her self-destructive habit**” to “**heading down a dark path**” in the second sentence.

Chapter 4, title quotation and quotation reference

““The way that can be told is not the **eternal** way.” - Lao Tzu”

“*Tao Te Ching*, Trans by John R. Leebriick (1980), chap 1, line 1, reprinted in Lao Tzu: *Tao Te Ching* (100+ Translations of Chapter 1), <http://www.bopsecrets.org/gateway/passages/tao-te-ching.htm> (15 September 2006).”

were changed to:

““The way **forward** that can be told is not the **timeless** way.”- *Lao Tzu*”

“*Lǎozǐ, Dàodéjīng*, first line. Compare this interpretation by the author to the Lionel Giles translation (*The Sayings of Lao Tzu*, E. P. Dutton & Company, New York, 1905), “The Tao which can be expressed in words is not the eternal Tao;” the Arthur Whaley translation (*The Way and Its Power: A Study of the Tao Te Ching and its Place in Chinese Thought*, Allen & Unwin, London, 1934), “The Way that can be told is not the unvarying Way;” and the D. C. Lau translation (*Tao Te Ching*, Penguin Books, England, 1963), “The way that can be spoken of is not the constant way.””

Chapter 5, Liberty, first paragraph

Changed “**communicate**” to “**express**” in the first and third sentences.

Changed “**choose**” to “**decide what to do**” in the second sentence.

Moved footnote from third sentence to second sentence.

Moved last sentence into a new paragraph.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Chapter 6, first paragraph

Changed “wisdom” to “change” in the last sentence.

Afterword, fourth paragraph

Changed “claimed” to “declared” in the second sentence.

Changed “claim” to “declare” in the third and fourth sentences.

Appendix A, A Learning Worldview, second paragraph

Changed “viewpoint” to “point of view” in the third sentence.

Appendix B, Schweitzer’s Universal Spiritual Need, second paragraph

Changed “, while” to “;” in the last sentence.

Appendix D, Folding in Processes, tenth paragraph

Changed “Compared to” to “Compared with” in the second sentence.

Appendix D, Smoothing Flow, fourth paragraph

Changed “fix” to “correct” in all (2 occurrences).

Appendix D, Machine Tools, first paragraph

Changed “Compared to Western firms” to “Compared with Western plants” in the sixth sentence.

Changed “types” to “tools” in the seventh sentence.

Changes in Version 2006.10.09

Acknowledgments, eleventh paragraph

Deleted “The science of practical wisdom is the road to living wisely.”

Appendix A

Changed title from “The Toyota System” to “A Learning Worldview.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Moved **Overview** paragraphs to the **Economic Science's Blind Spot** section of the first chapter.

Deleted the “**Overview**” and “**A Learning Worldview**” section titles.

Changed “**rapidly**” to “**quickly**” in the second sentence of the last paragraph.

Chapter 1, Economic Science's Blind Spot, fourth paragraph

Changed “**RTS model is disturbing for those**” to “**simple model disturbs people**” in the second sentence.

Changed “the knowledge **will be used**” to “**we will use** the knowledge” in the second sentence.

Chapter 1, Economic Science's Blind Spot, new sixth paragraph

Added the sentence: “**We cannot judge the full value of RTS without understanding the part it played in Toyota's history.**”

Changed “**Taiichi**” to “**Production supervisor Taiichi**” in the second sentence.

Chapter 1, Economic Science's Blind Spot, new eighth paragraph

Changed “**timeless model**” to “**strategy for learning**” in the first sentence.

Changed “**system**” to “**production control system**” in the second sentence.

Chapter 1, Economic Science's Blind Spot, last paragraph

Changed “about learning-by-doing” to “about **the great value** of learning-by-doing” in the first sentence.

Chapter 4, Progress

Moved all sections to Economic Science section of chapter 2. (Demoted all headings by one.)

Moved chapter 5 to chapter 4.

Chapter 2, Deciding Wisely, last paragraph

Changed “calls **on**” to “calls **for**” in the first and second sentences.

Chapter 2, A Crude Look at the Whole, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We owe it to ourselves to learn to live more wisely. We owe it to ourselves to learn to thrive in winds and survive in gales of creative destruction.”

was moved to the end of the Profits section in the third chapter and changed to:

“We owe it to ourselves to learn to thrive in winds and survive in gales of creative destruction.”

Chapter 2, *Moral Science*

Deleted the subsection. (All material used in last paragraph of the Looking Forward section of chapter 2. See below.)

Chapter 2, end

Added the following:

“Looking Forward

In 1776, Adam Smith’s example of a pin factory showed the wisdom of pursuing the virtuous circle of the division of labor and the expansion of market size.²³ Four years later, a retired printer shared his thoughts on the future of science with a preacher friend:

“The rapid Progress *true* science now makes occasions my regretting sometimes that I was born so soon. It is impossible to imagine the Height to which may be carried, in a thousand years, the Power of Man over Matter. We may perhaps learn to deprive large Masses of their Gravity and give them absolute Levity, for the sake of easy Transport. Agriculture may diminish its labor and double its Produce; all Diseases may be by sure means prevented or cured, not excepting even that of Old Age, and our Lives lengthened at pleasure even beyond the antediluvian Standard. O that moral Science were in a fair way of Improvement, that Men would cease to be Wolves to one another, and that human beings would at length learn what they now improperly call Humanity!”²⁴

“Thus, in the midst of a world war, did Benjamin Franklin share his plea for moral science with his fellow amateur scientist, Joseph Priestley. Regrettably, Franklin’s plea went against Smith’s logic, which calls on us to please ourselves, not to live wisely.

“Today, Toyota’s strategy for learning how to produce ever more wisely shows the wisdom of pursuing the virtuous circle of good people and good products. Good people produce good products. Good products, *including good intellectual tools*, produce good people. Given this new logic, we ought to learn more about good people and good products. To do so, we need to define the whole of science to be the process of refining everyday thinking. We also need to define economic science in a way that

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

includes both the stories that we use to predict and the stories that we use to explain how to live wisely. We can do so by defining it to be the scientific study of the research program of, by, and for intelligent life. We can define it to be the premier *intelligent life science*.”

“²³ Smith, Adam, *An Inquiry into the Nature and Causes of the Wealth of Nations*, book 1, chap 1.”

“²⁴ Franklin, Benjamin, *The Writings of Benjamin Franklin*, edited by Albert Henry Smyth, (New York: Macmillan, 1905), vol. VIII, p 10.”

Chapter 6, Closing Thoughts

Deleted the chapter. (All material used in the first three paragraphs of the Looking Forward section of chapter 2. See above.)

Appendix D, Temporal Details, first paragraph, footnote, last sentence

“Taiichi Ohno **spoke to** both **groups**.”

was changed to:

“Both events focused on material found in the *Cambridge Corporation Report #1, TQC and Quality Circles*, (Tokyo: The Cambridge Corporation, 1982). Taiichi Ohno gave keynote addresses at **both** events. The author refreshed his memory with Masaaki Imai’s *Kaizen* (New York: Random House, 1986); the English translation of Taiichi Ohno’s *Toyota Production System* (Cambridge, Massachusetts: Productivity Press, 1988); and the revised edition of the Japan Management Association’s *Kanban, Just in Time at Toyota* (Cambridge, Massachusetts: Productivity Press, 1989).”

Changes in Version 2006.10.12

Preface, first paragraph

Changed “course” to “**pioneering** work” in the second sentence.

Chapter 1, Setting Words Aright, second paragraph

Changed “**knowledge resources**” to “**they**” in the third sentence.

Changed “**a pattern**” to “**knowledge**” in the last sentence.

Chapter 1, Economic Science's Blind Spot, ninth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “system” to “strategy for learning” in the last sentence.

Added the sentence: “RTS is a key part of this strategy.”

Chapter 1, Excellence in Living Wisely, last paragraph, second and third sentences

“We do so by distinguishing between timeless and temporal tools (concepts, models, etc.). Timeless tools help us to identify what we are likely to need in our quest to live wisely. Temporal tools help us to make the most of what we have in solving current problems.”

was changed to:

“We do so by using timeless tools (concepts, models, etc.) to help us to identify what we are likely to need in our quest to live wisely and temporal tools to help us to make the most of what we have.”

Chapter 1, Excellence in Living Wisely, last paragraph, footnote

“In military terms, timeless tools are strategic and temporal tools are tactical. We owe it to ourselves to plan our lives using strategic tools and work our plans using tactical ones.”

was promoted to body text.

Chapter 1, A Timeless Model for Living Wisely, last paragraph

Changed “liberty” to “freedom” in the sixth and last sentences.

Chapter 2, Refining Stories that We Use to Explain, sixth paragraph, footnote

Changed “teleonomic theories” to “theories about our needs” in the fourth sentence.

Deleted “for weeding out teleonomic theories” from sixth sentence.

Chapter 2, The Timeless Ideal, third paragraph

Changed “they try to find a better problem to solve, which is to say that they try to become more effective” to “they try to become more effective” in the second sentence.

Chapter 2, Deciding Wisely, last paragraph

Changed “liberty, trust, or capital” to “freedom, trust, capital, or time” in the sixth sentence.

Chapter 2, Trading Failures, first paragraph, footnote

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “Appendix **D**” to “Appendix **C**.”

Chapter 2, Looking Forward, first paragraph, end

Added the sentence:

“Perfection of means and confusion of ends characterized the age.”

Chapter 2, Looking Forward, last paragraph

Changed “strategy for learning **how to produce ever more wisely**” to “strategy for learning” in the first sentence.

Chapter 3, Wealth, first paragraph

“Modern economists define wealth to be the consumer goods and services and the resources to produce the consumer goods and services that we *want*. In contrast, the wise define wealth to be the resources that we *need* to live wisely.²”

² This **teleonomic** definition of wealth is not compatible with the current national income accounting scheme. See Appendix **C**.”

was changed to:

“Wealth is what we need to achieve our ends. Temporal wealth is what we need to get what we want. Timeless wealth is what we need to live wisely.² Timeless wealth includes practical wisdom, trust, freedom, capital, and time.”

² This **timeless** definition of wealth is not compatible with the current national income accounting scheme. See Appendix **D**.”

Chapter 3, *Human Capital, Work, and Leisure*, first paragraph

Changed “temporal view,” to “temporal view **of modern economics**,” in the first sentence.

Changed “income **potential**” to “income” in the first sentence.

Afterword, first paragraph

Changed ““**liberal**” or “**conservative**”” to ““**conservative**” or “**liberal**”” in the last sentence.

Afterword, third paragraph

Changed “believe” to “**also** believe” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “owe it to themselves” to “ought” in the first sentence.

Changed “People” to “Those” in the last sentence.

Afterword, fourth paragraph

Changed “also believe” to “believe” in the first sentence.

Changed “owe it to themselves” to “ought” in the first sentence.

Changed “People” to “Those” in the last sentence.

Moved paragraph to behind the second paragraph.

Afterword, fifth paragraph

“I see the current culture war as a religious war, a war over civil religion. I am for replacing civil religion, especially the gospels of nationalist James G. Blaine and socialist John Dewey, with the research program of, by, and for intelligent life. We ought to consecrate the search for knowledge of how to live wisely, not our tribe. We ought to be on the side of our better angels.”

was deleted.

Appendix C & D

Switched order of these appendices in order to match the order of their appearance in the book.

Changes in Version 2006.10.16

Acknowledgments, last paragraph, first sentence

“I should like to thank Daniel Brophy, John Swanson, Patrika Vaughn, Lucile Harris, and James Rogers Fox for their unwavering enthusiasm and countless critiques.”

was deleted.

Chapter 1, Excellence in Living, first paragraph, last two sentences

“Consuming cocaine efficiently is “rational.” Not consuming cocaine is wise.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Choosing an analog television standard in 1991 was “rational.” Choosing a digital standard was wise.”

Chapter 2, The Timeless Ideal, third paragraph, footnote

Changed “fall” to “collapse” in the last sentence.

Chapter 2, Deciding Wisely, last paragraph

Changed “and” to “or” in the seventh sentence.

Chapter 2, Looking Forward, last paragraph

Changed “scientific study” to “study of the management” in the seventh sentence.

Appendix D, second paragraph, second sentence

“Most modern economists recognize problems in measuring services and improvements in quality.”

was changed to:

“Most modern economists recognize problems in measuring the value of services and changes in product quality.”

Changes in Version 2006.12.04

Chapter 2, Science as a Process, last paragraph, first footnote

“Most scientists believe that they seek the truth per se rather than useful assays of the truth. In as much as their pursuit of the truth satisfies their need to be part of something greater than themselves, their pursuit of the truth is a religious quest. To true believers in the current concept of science, this timeless concept is heretical.”

was deleted.

Chapter 2, Science as a Process, last paragraph, second footnote

Changed “be a theory (the result of a process of refining everyday thinking)” to “concern the results of refining everyday thinking (theories)” in the first sentence.

Changed “a strategy for learning (a process for refining everyday thinking)” to “processes for refining everyday thinking (strategies for learning)” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Looking Forward, second paragraph

Changed “world war” to “war that spread from North America to the Indian subcontinent” in the first sentence.

Changes in Version 2006.12.30

Acknowledgments, tenth paragraph

Changed “Grinnell High School American history and German language students, including Harry Hopkins” to “three sons” in the third sentence.

Chapter 2, title

Changed “Science” to “Economic Science.”

Chapter 2, Science as A Process, first paragraph

Changed “(to act or not to act)” to “to act or not to act” in the first sentence.

Chapter 2, Science as A Process

Merged this section into the first section, Refining Everyday Thinking.

Chapter 2, Economic Science, title

Changed “Economic Science” to “Economics.”

Chapter 2, Refining Stories subsections

Combined “Refining Stories that We Use to Predict” and “Refining Stories that We Use to Explain” into a single subsection title “Refining Economic Stories.”

Chapter 2, Refining Economic Stories, first paragraph

“We owe it to ourselves to refine the set of stories that we use to predict what will happen in economies by weeding out all stories that are not clear, concise, and logical. What will remain is a set of precise stories that we use to predict what will happen in economies. We owe it to ourselves to refine this set by weeding out stories that fail to meet our (evolving) standards for helping us to predict what will happen in economies. What will remain is a set of refined stories that we use to predict what will happen in economies.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We owe it to ourselves to refine the set of stories that we use to predict what will happen in economies. **We may begin to refine these stories** by weeding out all stories that are not clear, concise, and logical. What will remain is a set of precise stories that we use to predict what will happen in economies. **We may then** refine this set by weeding out stories that fail to meet our (evolving) standards for helping us to predict what will happen in economies. What will remain is a set of refined stories that we use to predict what will happen in economies.”

Chapter 2, Refining Stories, second paragraph

“We owe it to ourselves to refine the set of stories that we use to explain what happens in economies by weeding out all stories that are not clear, concise, and logical. What should remain is a set of precise stories that we use to explain what happens in economies. **We owe it to ourselves to** refine this set by weeding out stories that fail to meet our (evolving) standards for helping us to find problems to solve. What should remain is a set of refined stories that we use to find problems to solve. *The rub is that we do not know exactly what it is that we owe to ourselves to seek.*”

was changed to:

“We also owe it to ourselves to refine the set of stories that we use to explain what happens in economies. **We may begin** by weeding out all stories that are not clear, concise, and logical. What should remain is a set of precise stories that we use to explain what happens in economies. **We may then** refine this set by weeding out stories that fail to meet our (evolving) standards for helping us to find problems to solve. What should remain is a set of refined stories that we use to find problems to solve. *The rub is that we do not know exactly what it is that we owe to ourselves to seek.*”

Chapter 2, Refining Stories, seventh paragraph, footnote

Changed “spiritual **philosophies**” to “spiritual **teachings**” in the last sentence.

Chapter 2, Deciding Wisely, last paragraph

Changed “**deciding wisely on computers**” to “**decision failures**” in the last sentence.

Chapter 2, Recursive Failures, first paragraph

Deleted “**(narratives, models, theories, etc.)**” in the first sentence.

Chapter 2, Computer Models, first paragraph, footnote, last sentence

“From the timeless view, the cause of imperfect flow is imperfect decision-making, not imperfect markets.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was deleted.

Chapter 2, Looking Forward, title

Changed title to “**Moral Science**” and demoted it one level.

Chapter 2, Moral Science, first paragraph

Added “ **in the midst of a war that had spread from North America to the Indian subcontinent,**” to the second sentence.

Added “**turned diplomat**” to the second sentence.

Chapter 2, Moral Science, second paragraph

Changed “**Thus, in the midst of a war that spread from North America to the Indian subcontinent,**” to “**Thus**” in the first sentence.

Changed “age” to “**industrial age**” in the last sentence.

Changes in Version 2007.02.24

Preface, third paragraph

“I have since learned that my wish for a strategy for living based on a theory was foolish. I ought to have wished for a method of weeding out members of the set of theories that we use to explain how to live wisely. What follows is a concise guide to this method.”

was changed to:

“I have since learned that my wish for a strategy for living based on a theory was foolish. **All theories contain ignorance in the form of untestable assumptions. A wise strategy for living contains a means of testing these assumptions. Hence,** I ought to have wished for a method of weeding out members of the set of theories that we use to explain how to live wisely. What follows is a concise guide to this method.”

Chapter 1, Modern Economics' Blind Spot, eighth paragraph

Changed “**these**” to “**kanban**” in the second sentence.

Changed “links” to “**kanban links**” in the third sentence.

Changed “system” to “**Toyota system**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Economic Science, first paragraph, first sentence

“**Nowhere is** the need for this timeless concept of science **more** pressing **than** in the field of economics.”

was changed to:

“**The** need for this timeless concept of science **is especially** pressing in the field of economics.”

Chapter 2, The Timeless Ideal, fourth paragraph

Changed “general equilibrium” to “**Pareto optimal** general equilibrium” in the last sentence.

Chapter 2, The Timeless Ideal, last paragraph

Changed “**As hard as it is for many modern economists to grasp, the**” to “**The**” in the first sentence.

Changed “general equilibrium” to “**Pareto optimal** general equilibrium” in the first sentence.

Chapter 2, Trading Failures, first paragraph

“The uneven flow of resources wastes time and other resources. Capturing the benefit of smoothing flow may call for trading with those hurt by uneven flow. Mistrust and/or ignorance of better means of trade may constrain us from smoothing flow. Examples of **such** failures include (1) distributors who fail to share information about their customers with their suppliers for fear of losing business; (2) workers who fail to tell their bosses about foolish procedures for fear of losing work; (3) **people who fail to discover their genetic predispositions for fear of losing their insurance coverage;** and (4) workers who lose their jobs during slow times because labor contracts do not let wages fall. In time, we will learn to solve the trade problems that give rise to these decision failures.”

was changed to:

“The uneven flow of resources wastes time and other resources. Capturing the benefit of smoothing flow may call for trading with those hurt by uneven flow. Mistrust and/or ignorance of better means of trade may constrain us from smoothing flow. Examples of **trading failures uncovered by comparing Western industrial age manufacturing practices to the Toyota system** include (1) distributors who fail to share information about their customers with their suppliers for fear of losing business; (2) workers who fail to tell their bosses about foolish procedures for fear of losing work; and (3) workers who lose their jobs during slow times because **their** labor contracts do

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

not let wages fall. Yet unsolved examples of trading failures include (1) people who fail to discover their genetic predispositions for fear of losing their health insurance coverage; (2) employees who stay in unsuitable jobs for fear of losing employee benefits, e.g., health insurance coverage or pension benefits; and (3) citizens who live under unsuitable governments for fear of losing government benefits, e.g., health insurance coverage or pension benefits. In time, we will learn to solve the trade problems that give rise to these decision failures.”

Chapter 2, Recursive Failures, first two paragraphs

“There is a **complex dynamic** between the stories that we use to guide our actions and reality. *We base these stories on reality. Our actions change reality.* Consider the statement, “Tulips are a good investment.” If enough people use this story to guide their actions, the price of tulips will rise enough for tulips to become a poor investment.¹⁹”

“The **dynamic relation between the stories that we use to guide our actions and reality** gives rise to a wide variety of phenomena, which range from simple speculative bubbles to complex systems of human organizations. We can think about **this dynamic** as the interplay of two tendencies of these stories. The first is their tendency to become more popular. This, in part, is due to the inexhaustibility of knowledge. The second is their tendency to undermine the conditions on which we base them. Repeatedly using these stories to guide our actions without considering how our actions change reality tends to lead us ever further away from ideal paths toward living good lives. When these two tendencies unite, they lead us ever further away from our ideal paths toward living good lives. The further we are from our ideal paths, the greater is our potential for catastrophe.”

were changed to:

“There is a **two-way relation** between the stories that we use to guide our actions and reality. We base these stories on reality. Our actions change reality. Consider the statement, “Tulips are a good investment.” If enough people use this story to guide their actions, the price of tulips will rise enough for tulips to become a poor investment. **This two-way relation** gives rise to a wide variety of phenomena, which range from simple speculative bubbles to complex systems of human organizations.¹⁹”

“We can think about the **cause of this rich variety of phenomena** as the interplay of two tendencies of the stories **that we use to guide our actions**. The first is their tendency to become more popular. This, in part, is due to the inexhaustibility of knowledge. The second is their tendency to undermine the conditions on which we base them. Repeatedly using these stories to guide our actions without considering how our actions change reality tends to lead us ever further away from ideal paths toward living good lives. When these two tendencies unite, they lead us ever further away from our ideal paths toward living good lives. The further we are from our ideal paths, the greater is our potential for catastrophe.”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Chapter 2, Recursive Failures, last paragraph, last sentence

“We cannot be both wise and certain.”

was deleted.

Chapter 3, Two Types of Tools, title

Changed title to: *“The Wise Use of Concepts.”*

Chapter 3, The Wise Use of Concepts, first paragraph, second sentence

“They plan their lives using timeless tools and work their plans using temporal ones.”

were changed to:

“The wise use timeless concepts to select temporal ends and temporal concepts to select the best means to temporal ends.”

Afterword, first paragraph, last two sentences

“I have also learned that these conversations often turn to *politics. Am I* “conservative” or “liberal” in the way that people in the United States use these terms?”

were changed to:

“I have also learned that these conversations often turn to *the question of whether I am* “conservative” or “liberal” in the way that people in the United States use these terms.”

Afterword, second paragraph, first sentence

“I oppose people who hinder *deciding* wisely.”

was merged with the first paragraph and changed to:

“My curt answer is that I oppose people who hinder *learning to* decide *ever more* wisely.”

Afterword, third paragraph

Changed *“profess to guard* civil liberties” to *“promote* civil liberties” in the third sentence.

Afterword, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**profess to guard** civil liberties” to “**promote** civil liberties” in the third sentence.

Changed “**Justice** Oliver Wendell Holmes’s” to “Oliver Wendell Holmes’s” in the third sentence.

Afterword, end

Added the paragraph:

“I am neither a “conservative” nor a “liberal” in the way that people in the United States use these terms.”

Changes in Version 2007.04.17

Acknowledgments, fifth paragraph, middle three sentences

“Charles Horngren taught me how accounting models color analysis. William Beaver showed me the wisdom of applying economic analysis to accounting models. **Charles Holloway gave me a thorough understanding of decision science.**”

was changed to:

“Charles Horngren **and Charles Holloway** taught me how accounting **and decision science** models color analysis. William Beaver showed me the wisdom of applying economic analysis to accounting models.”

Preface, third paragraph

Changed “**wise** strategy” to “**good** strategy” in the third sentence.

The last sentence:

“**What follows is a concise guide to this method.**”

was changed to:

“**I ought to have wished for a science of practical wisdom.**”

Preface, end

Added the paragraphs:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“For people who believe that science is definite knowledge of what is, the concept of a science of practical wisdom is nonsense. If scientists cannot define practical wisdom, which includes defining our ultimate ends, there can be no science of practical wisdom. On the other hand, if science is the pursuit of definite knowledge of what is, then the issue becomes whether it is possible to define a means of defining practical wisdom. Because it is possible to define a means of defining practical wisdom, there can be a science of practical wisdom.

“The concept of science as the pursuit of definite knowledge conflicts with the modern Western belief that science is separate and distinct from religion. Analytic philosopher Bertrand Russell clearly stated this modern belief in his definition of philosophy, which he used to introduce his popular history of Western philosophy:

“Philosophy, as I shall understand the word, is something intermediate between theology and science. Like theology, it consists of speculations on matters as to which definite knowledge has, so far, been unascertainable; but like science, it appeals to human reason rather than to authority, whether that of tradition or that of revelation. All *definite* knowledge — so I should contend — belongs to science; all *dogma* as to what surpasses definite knowledge belongs to theology. But between theology and science there is a No Man's Land, exposed to attack from both sides; this No Man's Land is philosophy.”

“In defining philosophy, Russell was true to his vision, which calls for ceasing analysis at the border of what he calls theology. It is no accident that Russell conflates theology, religion, and faith. For people interested in pursuing definite knowledge, this is a mistake. Theology, religion, and faith, are separate and distinct concepts. Theology is the pursuit of knowledge of God. Religion is the means of linking or relinking with something greater than ourselves; it is the means of satisfying what Albert Schweitzer called our need for mystical oneness. Faith is extra-reasonable certainty in our beliefs; it is what gives us certainty in our beliefs beyond that offered by reason alone. We can imagine using these concepts not only separately from one another, but also in conflict with one another. We can imagine people pursuing knowledge of God who lack either religious zeal or faith in the existence of God . We can imagine people putting their faith in either atheistic political movements or the chance to win a week of Las Vegas debauchery. We can imagine atheists either putting their faith in the non-existence of God or pursuing the transcendent values of truth, justice, and beauty with the religious zeal. Again, theology, religion, and faith are separate and distinct concepts. We should not confuse them with theistic religious faith, that is, with the zealous and extra-reasonable pursuit of knowledge of God.

“Further, what Russell calls science can never be completely free from what he calls dogma. This is because all belief systems, including scientific ones, call on us to put our faith in assumptions that we can never test completely. We can never be completely sure that all swans are either white or black, that nothing can exceed the speed of light, or even that all bachelors are unmarried. In terms of the philosophy of science, all belief systems are underdetermined by data. To make matters worse, this

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

problem extends to our beliefs about testing our beliefs. Judging our belief systems by determining the truth is an infinitely large problem.

“We solve infinitely large problems by finding processes that, when applied recursively (repeatedly with the output of one cycle becoming the input of the next cycle), move us ever closer to the solution. To solve the problem of determining the number pi, we find processes that, when applied recursively, move us ever closer to determining pi. To solve the infinitely large problem of judging belief systems by determining the truth, we find processes that, when applied recursively, move us ever closer to determining the truth.

“In general, we move ever closer to determining the truth by means of a recursive process that begins with finding a problem to solve and ends with learning from the experience of implementing the chosen solution to this problem. I refer to this process as decision-making. Given this expansive definition of decision-making, we move ever closer to determining the truth by deciding ever more wisely. We can decide ever more wisely by improving the factors of deciding wisely. These factors include practical wisdom, trust, liberty, and capital.

“Many modern thinkers will complain that I confuse seeking the truth (religion, philosophy, and science) with seeking the good (religion, ethics, politics, and economics). In making this claim, these people confuse the tactical problem of seeking the truth given what we currently know and the tactical problem of seeking the good given what we currently know with the strategic problem of seeking both the truth and the good. They confirm Albert Einstein’s observation, “Perfection of means and confusion of ends seem to characterize our [modern] age.”

“The essence of modernism is the process of breaking down complicated things into simpler things in order to do something better. We see this process in science (reductionism), philosophy (analysis), and economics (the division of labor). The major downside of this process of breaking down things is forgetting to consider the whole, especially how we fit into the whole. Despite the fact that definite knowledge of how we fit into the whole, like definite knowledge of pi, will likely remain forever beyond our grasp, we should not pass over it in silence.

“Most people decide based on what they know. In contrast, people who want to decide ever more wisely decide not only based on what they know but also on what they need to learn in order to decide more wisely. They embrace their ignorance. To embrace their ignorance wisely, they distinguish between the intellectual tools that they use to find problems to solve and the intellectual tools that they use to solve given problems. In military terms, they distinguish between the strategic and the tactical. In philosophical terms, they distinguish between the timeless and the temporal. In scientific terms, they distinguish between explanations and predictions. In economic terms, they distinguish between effectiveness and efficiency. They then use the right tool for the right job.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The target audience for this book is people who are looking for tools for solving given problems. In the first chapter, I seek to convince these people that all of the problems they face in life are part of the timeless problem of deciding how best to improve the process of living. I go on to describe a strategy for improving this decision-making process. In the second chapter, I provide them with a conceptual framework - a tool kit - for following this strategy. In the third, I apply this tool kit to the problem of pursuing the truth and the good. In the last chapter, I apply this tool kit to the problem of governance.

“Enjoy.”

Chapter 1, Setting Words Aright, last paragraph

Changed “wisely” to “(ever more) wisely” in the last sentence.

Chapter 1, A Timeless Model for Living Wisely, second paragraph

Changed “dotcom” to “dot.com” in the first sentence.

Chapter 2, “Economic Science”

Moved this chapter to behind “Timeless Concepts.”

Chapter 3, tenth footnote, last sentence

“See Chapter 3 and Appendix B.” was deleted.

Chapter 4, Justice, last paragraph

Changed “*more wisely*” to “*ever more wisely*” in the last sentence.

Afterword, last paragraph, end

Added the sentences:

“I am a conservative idealist, by which I mean that I seek to conserve the ideals that I find in the Declaration of Independence and the Gettysburg Address. These ideals are classically liberal in means and progressive in ends.”

Afterword, second paragraph

Added “(“a God’s eye view of the Universe”)” to the second sentence.

Appendix B, Secular Humanism, title

Title changed to “Atheism.”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Appendix B, Atheism, first paragraph

Deleted “(“a God’s eye view of the Universe”)” in the second sentence.

Deleted the last sentence and footnote:

“In short, timeless religion supports timeless science.¹³”

“¹³ The existence of a religious need for mystical oneness is compatible with both the materialist and dualist worldviews. *Rather than distinguishing between secular and religious humanism, we ought to distinguish between materialist and dualist humanism.*”

Appendix B, Atheism, last paragraph

Changed “*Secular humanists*” to “*Atheists*” in the first sentence.

Appendix B, “Religious Fundamentalism”, title

Title changed to “**Theism.**”

Appendix B, Theism, last paragraph

Changed “*Religious fundamentalists*” to “*Theists*” in the first sentence.

Changes in Version 2007.04.23

Acknowledgments, tenth paragraph

Changed “three sons” to “**Grinnell High School students, including Harry Hopkins, and into her** three sons” in the third sentence.

Chapter 1, Setting Words Aright, first two paragraphs

“Concepts are tools for thinking and communicating. **We use them to refine what we mean from what we do not mean. We use the concept ‘house’ to refine what we mean by ‘house’ from what we do not mean by ‘house.’ Similarly, we use the concept ‘fast’ to refine what we mean by ‘fast’ from what we do not mean by ‘fast.’** Metaphorically, **concepts are containers for meaning.**”

“When we use **concepts** wisely, they help us to achieve our ends. **They** are *knowledge resources.*”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Concepts are tools for thinking and communicating. When we use **these tools** wisely, they help us to achieve our ends. **Concepts** are *knowledge resources*.”

Chapter 1, Economic Science's Blind Spot, title

Changed title to “**Excellence in Means**.”

Chapter 1, Excellence in Means, first paragraph

Changed “the modern **economic** concept” to “the modern concept” in the second sentence.

Chapter 1, Excellence in Means, second paragraph

Changed “**The wise**” to “**People who seek to decide wisely**” in the second sentence.

Chapter 1, Excellence in Living, second paragraph

Changed “**The wise**” to “**Accordingly, people who seek to decide wisely**” in the second sentence.

Changed “**the wise**” to “**them**” in the last sentence.

Chapter 2, The Wise Use of Concepts, first paragraph

Changed “**The wise**” to “**People who seek to decide wisely**” in the first sentence.

Chapter 2, Two Means of Living Wisely, first paragraph

Changed “**the wise**” to “**others**” in the second sentence.

Chapter 2, Alternatives to Living Wisely, first paragraph, first two sentences

“The **wise pursue** the virtuous circle of pleasure and joy. **The major alternatives** are pursuing pleasure or pursuing nothing.”

was changed to:

“The **two major alternatives to pursuing** the virtuous circle of pleasure and joy are pursuing pleasure and pursuing nothing.”

Chapter 3, Economics, first paragraph, last sentence

“**In other words, we need to explain based on how the wise would act.**”

was deleted.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, Refining Economic Stories, seventh paragraph

Changed “The wise” to “People who seek to live wisely” in the first sentence.

Chapter 3, The Timeless Ideal, third paragraph

Changed “The wise” to “People who seek to live wisely” in the first sentence.

Chapter 3, Trading Failures, first paragraph, fifth sentence

“Yet unsolved examples of trading failures include (1) people who fail to discover their genetic predispositions for fear of losing their health insurance coverage; (2) employees who stay in unsuitable jobs for fear of losing employee benefits, e.g., health insurance coverage or pension benefits; and (3) citizens who live under unsuitable governments for fear of losing government benefits, e.g., health insurance coverage or pension benefits.”

was changed to:

“Yet unsolved examples of trading failures include people who fail to discover their genetic predispositions for fear of losing their health insurance coverage and employees who stay in unsuitable jobs for fear of losing employee benefits.”

Chapter 3, Moral Science

Restored title to primary (section) level.

Chapter 3, Moral Science, second paragraph, last sentence

“Perfection of means and confusion of ends characterized the industrial age.”

was deleted.

Chapter 3, Moral Science, last paragraph, fifth through seventh sentences

“To do so, we need to define the whole of science to be the process of refining everyday thinking. We also need to define economic science in a way that includes both the stories that we use to predict and the stories that we use to explain how to live wisely. We can do so by defining it to be the study of the management of the research program of, by, and for intelligent life. We can define it to be the premier *intelligent life science*.”

was changed to:

“To do so wisely, we need to define economic science to be the study of the pursuit of the truth and the good, which is to say the study of the research program of, by, and

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

for intelligent life. We **need to** define **economic science** to be the premier *intelligent life science*.”

Chapter 4, Judge Interventions, first paragraph

Changed “**The wise**” to “**Wise policymakers**” in the second sentence.

Chapter 4, Lower Trade Barriers, last footnote

“From a Marxist view, the predominant mode of production greatly influences the culture. The logic of the industrial age holds that economies are like great machines in which people are interchangeable parts performing mindless tasks. The culture calls on people to seek pleasure. Supporting this view is the trend away from following traditions and toward seeking pleasure. We see this trend clearly in England, where the cultural ideal changed from fulfilling one’s role in God’s plan to hedonist Jeremy Bentham’s “greatest good for the greatest number.” The knowledge revolution has changed the logic of production. The new logic holds that economies are like great learning organisms in which people are the most important parts, the parts that learn. The culture calls on people to seek to live wisely. Given this new logic, lowering trade barriers promotes the predominant mode of production, which in turn promotes progress toward the timeless end of all humans living fully human lives.”

was deleted.

Chapter 4, Justice, last paragraph

Italics removed from the last sentence:

“**The haves as well as the have-nots ought to learn to decide ever more wisely.**”

Afterword, third paragraph

Changed “promote **civil liberties**” to “**defend free speech but constrain free action in order to promote their vision of a just society**” in the third sentence.

Afterword, last paragraph

Added “, **the Bill of Rights,** ” to the second to last sentence.

Appendix B, Heroic Death, second paragraph

Changed “**The wise**” to “**People who seek to decide wisely**” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Preface, third paragraph

Changed “live wisely” to “live” in the fourth sentence.

Preface, sixth paragraph

“In defining philosophy, Russell was true to his vision, which calls for ceasing analysis at the border of what he calls theology. It is no accident that Russell **conflates theology, religion, and faith**. For people interested in pursuing definite knowledge, this is a mistake. Theology, religion, and faith, are separate and distinct concepts. Theology is the pursuit of knowledge of God. Religion is the means of linking or relinking with something greater than ourselves; it is the means of satisfying what Albert Schweitzer called our need for mystical oneness. Faith is extra-reasonable certainty in our beliefs; it is what gives us certainty in our beliefs beyond that offered by reason alone. We can imagine using these concepts **not only separately from one another, but also** in conflict with **one another**. We can imagine people pursuing knowledge of God who lack either religious zeal or faith in the existence of God . We can imagine people putting their faith in either atheistic political movements or the chance to win a week of Las Vegas debauchery. We can imagine atheists either putting their faith in the non-existence of God or pursuing the transcendent values of truth, justice, and beauty with the religious zeal. Again, theology, religion, and faith are separate and distinct concepts. **We should not confuse them with theistic religious faith, that is, with the zealous and extra-reasonable pursuit of knowledge of God.**”

was changed to:

“**Russell’s definition of philosophy is consistent with, if not based upon, the modern habit of confusing theology, religion, and faith.** Theology, religion, and faith are separate and distinct concepts. **They are not synonyms for the zealous and extra-reasonable pursuit of knowledge of God.** Theology is the pursuit of knowledge of God. Religion is the means of linking or relinking with something greater than ourselves; it is the means of satisfying what Albert Schweitzer called our need for mystical oneness. Faith is extra-reasonable certainty in our beliefs; it is what gives us certainty in our beliefs beyond that offered by reason alone. We can imagine using these **three** concepts in conflict with **the zealous and extra-reasonable pursuit of knowledge of God**. We can imagine people pursuing knowledge of God who lack either religious zeal or faith in the existence of God. We can imagine people putting their faith in either atheistic political movements or the chance to win a week of Las Vegas debauchery. We can imagine atheists either putting their faith in the non-existence of God or pursuing the transcendent values of truth, justice, and beauty with the religious zeal. **Again, theology, religion, and faith are separate and distinct concepts. They are not synonyms for the zealous and extra-reasonable pursuit of knowledge of God.**”

Preface, seventh paragraph, first sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Further, what Russell calls science can never be completely free from what he calls dogma.”

was changed to:

“This confusion of theology, religion, and faith hides a fatal flaw in Russell’s belief system: what Russell calls science can never be completely free from what he calls dogma.”

Preface, tenth paragraph

Changed “Many modern thinkers” to “Some people” in the first sentence.

Changed “They” to “I believe that they” in the last sentence.

Added the paragraph:

“To students of complexity science, there is some beauty in unpacking this argument. There was a time when lovers of wisdom distinguished between the strategic and the tactical by capitalizing the strategic. Using this bygone convention, the truth is correspondence to reality based on what we currently know; the Truth is correspondence to reality based on all that can be known. The good is what we need to live well based on what we currently know; the Good is what we need to live well based on all that can be known. We need the truth to pursue the Good. We also need the good to pursue the Truth. Hence, the pursuit of the Good and the pursuit of the Truth are intertwined - pursuing one calls for pursuing the other. In as much as we are born with the need to live well, we are born with the need to pursue both the Good and the Truth. To believe that we can break down the timeless pursuit of the Good and the Truth, which are intertwined, into the temporal search for the truth and the temporal search for the good is to confuse the complex with the merely complicated.”

Preface, new twelfth paragraph

Changed “likely remain” to “remain” in the last sentence.

Preface, new thirteenth paragraph

Changed “want to decide ever more wisely” to “pursue both the Good and the Truth” in the second sentence.

Chapter 3, Recursive Failures, first paragraph, footnote

“Most intellectuals prefer ‘reflexive’ to ‘recursive’ to describe this complex dynamic. Arguably, this is because they see their role in the grand division of labor as seeking the truth for its own sake rather than seeking the truth that we need to progress. We see this in the distinction between philosopher of science Thomas Kuhn’s original

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

concept of a paradigm shift as a change in the way that we conceive of the world and the **resulting** popular concept of a paradigm shift as a change in the way that we see the world that changes the world for the better. ‘Reflexive’ describes our mental hall of mirrors. ‘Recursive’ describes the process of **making our way** through this hall of mirrors.”

was changed to:

“Most intellectuals prefer ‘reflexive’ to ‘recursive’ to describe this complex dynamic. Arguably, this is because they see their role as seeking the truth rather than seeking **both the truth and the good**. We see this in the distinction between philosopher of science Thomas Kuhn’s concept of a paradigm shift as a change in the way that we conceive of the world and the popular concept of a paradigm shift as a change in the way that we see the world that changes the world for the better. ‘Reflexive’ describes our mental hall of mirrors. ‘Recursive’ describes the process of **moving forward** through this hall of mirrors.”

Chapter 3, Recursive Failures, second paragraph

“We can think about the cause of **this rich variety of** phenomena as the interplay of two tendencies of the stories that we use to guide our actions. The first is their tendency to become more popular. **This**, in part, is due to the inexhaustibility of knowledge. The second is their tendency to undermine the conditions on which we base them. Repeatedly using these stories to guide our actions without considering how our actions change reality tends to lead us ever further away from **ideal paths toward living good lives**. When these two tendencies unite, they lead us ever further away from our ideal paths toward living good lives. The further we are from **our** ideal paths, the greater is our potential for catastrophe.”

was changed to:

“We can think about the cause of **these** phenomena as the interplay of two tendencies of the stories that we use to guide our actions. The first is their tendency to become more popular, **which**, in part, is due to the inexhaustibility of knowledge. The second is their tendency to undermine the conditions on which we base them. Repeatedly using these stories to guide our actions without considering how our actions change reality tends to lead us ever further away from **the least costly means of living well**. When these two tendencies unite, they lead us ever further away from **these ideal means of living well**. The further we are from **these ideal means**, the greater is our potential for catastrophes **caused by the sudden replacement of knowledge for non-knowledge resources**.”

Chapter 3, Recursive Failures, third paragraph

Changed “our **models** makes **our models open-ended**” to “**the stories that we use to guide our actions** makes **these stories timeless**” in the fourth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**patriotic wars**” to “**financial collapses**” in the fifth sentence.

Appendix B, Theism, first paragraph

“The preceding arguments focused on individuals. Focusing on the universe as a whole leads to different problems, arguments, and conclusions. For example, the simplest theories for explaining the creation of the universe include a Creator.”

was deleted.

Changes in Version 2007.05.07

Preface, sixth paragraph

“Russell’s definition of philosophy is consistent with, if not based upon, the modern habit of confusing theology, religion, and faith. **Theology, religion, and faith are separate and distinct concepts. They are not** synonyms for the zealous and extra-reasonable pursuit of knowledge of God. **Theology is the pursuit of knowledge of God. Religion is the means of linking or relinking with something greater than ourselves; it is the means of satisfying what Albert Schweitzer called our need for mystical oneness. Faith is extra-reasonable certainty in our beliefs; it is what gives us certainty in our beliefs beyond that offered by reason alone.** We can imagine using these three concepts in conflict with the zealous and extra-reasonable pursuit of knowledge of **God**. We can imagine people pursuing knowledge of **God** who lack either religious zeal or faith in the existence of **God**. We can imagine people putting their faith in either atheistic political movements or the chance to win a week of Las Vegas debauchery. We can imagine atheists either putting their faith in the non-existence of **God** or pursuing the transcendent values of truth, justice, and beauty with **the religious zeal. Again, theology, religion, and faith are separate and distinct concepts. They are not synonyms for the zealous and extra-reasonable pursuit of knowledge of God.**”

was changed to:

“Russell’s definition of philosophy is consistent with, if not based upon, the modern habit of confusing theology, religion, and faith. **From this modern view, all three concepts** are synonyms for the zealous and extra-reasonable pursuit of knowledge of the Divine. **In contrast, I contend that humans have a spiritual need to link or relink with something greater than themselves. Humanistic psychologist Abraham Maslow described this as the spiritual need of those who are living fully human lives to pursue the transcendent values of truth, beauty, and justice. Christian theologian, concert organist, medical doctor, and humanitarian Albert Schweitzer described it as the need for mystical oneness, which we satisfy by either denying or embracing the world and life. Because this spiritual need is independent of belief, I contend that in the pursuit of**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

living a fully human life it is useful to distinguish between knowledge of the Divine, which I call theology; the pursuit of linking or relinking with something greater than ourselves, which I call religion; and certainty beyond reason, which I call faith. We can imagine using each of these three concepts in conflict with the zealous and extra-reasonable pursuit of knowledge of the Divine. We can imagine people pursuing knowledge of the Divine who lack either religious zeal or faith in the existence of the Divine. We can imagine people putting their faith in either atheistic political movements or the chance to win a week of Las Vegas debauchery. We can imagine atheists either putting their faith in the non-existence of the Divine or pursuing the transcendent values of truth, justice, and beauty with religious zeal. In the pursuit of living fully human lives, we owe it to ourselves to distinguish between the concepts of theology, religion, and faith.”

Preface, eighth paragraph

Changed “confusion” to “modern confusion” in the first sentence.

Preface, ninth paragraph

Changed “and capital” to “capital, and time” in the last sentence.

Preface, tenth paragraph

Changed “believe” to “contend” in the last sentence.

Changes in Version 2007.05.12

Preface, third paragraph

Changed “assumptions” to “beliefs” in the second sentence.

Changed “assumptions” to “beliefs” in the third sentence.

Preface, sixth paragraph, third sentence

“Because this spiritual need is independent of belief, I contend that in the pursuit of living a fully human life it is useful to distinguish between knowledge of the Divine, which I call theology; the pursuit of linking or relinking with something greater than ourselves, which I call religion; and certainty beyond reason, which I call faith.”

was changed to:

“Our spiritual need to link or relink with something greater than ourselves does not depend on what we believe or how strongly we believe. Hence, I contend that in our

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

natural pursuit of living a fully human life it is useful to distinguish between knowledge of the Divine, which I call theology; the pursuit of linking or relinking with something greater than ourselves, which I call religion; and certainty beyond reason, which I call faith.”

Deleted the sentence: “**In terms of the philosophy of science, all belief systems are underdetermined by data.**”

Preface, seventh paragraph

Changed “**assumptions**” to “**beliefs**” and “**test**” to “**verify**” in the second sentence.

Preface, seventh paragraph, third sentence

“We can never be completely sure that all swans are either white or black, **that nothing can exceed the speed of light**, or even that all bachelors are unmarried.”

was changed to:

“We can never be completely sure that all swans are either white or black (**the induction problem**), that all bachelors are unmarried (**the analytic versus synthetic truth problem**), or that a particular belief is false when a belief system does not produce results that correspond to reality (**the reductionism problem**).”

Preface, tenth paragraph

Changed “**religion, philosophy,**” to “philosophy” and “**religion, ethics**” to “ethics” in the first sentence.

Chapter 2, Wealth, first paragraph, last sentence

“**Timeless wealth includes practical wisdom, trust, freedom, capital, and time.**”

was deleted.

Afterword, second paragraph

Changed “**ever more** wisely” to “wisely” in the third sentence.

Afterword, second paragraph, first three sentences

“I believe that **those on the right ought to know that** we cannot separate our right to choose from our responsibility to choose (**ever more**) wisely. **Right wing** elites once declared that the United States owed its success to their Puritan heritage. Current **right wing** elites declare it was their Judeo-Christian heritage. Future **right wing** elites will likely declare it was their Abrahamic heritage.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“I believe that we cannot separate our right to choose from our responsibility to choose wisely. **Political** elites once declared that the United States owed its success to their Puritan heritage. Current **political** elites declare it was their Judeo-Christian heritage. Future elites will likely declare it was their Abrahamic heritage. A wiser explanation is that the United States owes its success to its tradition of freedom and progress. Those who believe that they know the Truth (“a God’s eye view of the Universe”) ought to learn to see the world anew.”

Afterword, third paragraph, third sentence

“I also believe that **those on the left ought to know that** progress creates stress. A government that seeks to protect its people from stress by retarding progress is unfair to its people, other societies, future generations, and other species. Those who **defend free speech but constrain free action** in order to **promote their vision of a just society** ought to heed Oliver Wendell Holmes’s argument that the purpose of free speech is to support free experiment:”

was changed to:

“I also believe that progress creates stress. A government that seeks to protect its people from stress by retarding progress is unfair to its people, other societies, future generations, and other species. Those people who **seek to limit freedom** in order to **reduce stress** ought to heed Oliver Wendell Holmes’s argument about free speech and free experiment:”

Changes in Version 2007.06.28

Preface, sixth paragraph

Appended the clause “**that does not depend on what we believe or how strongly we believe**” to the third sentence.

Changed “**those who are**” to “**people**” in the fourth sentence.

Deleted the fifth sentence:

“**Our spiritual need to link or relink with something greater than ourselves does not depend on what we believe or how strongly we believe.**”

Preface, eleventh paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**Good and the Truth**” to “**Truth and the Good**” in the eighth and ninth sentences.

Preface, thirteenth paragraph

Changed “**Good and the Truth**” to “**Truth and the Good**” in the first sentence.

Chapter 1, Setting Words Aright, first paragraph

Changed “**wisely**” to “**well**” in the second sentence.

Chapter 1, Setting Words Aright, last paragraph

Changed “**(ever more) wisely**” to “**make the best use of our knowledge**” in the last sentence.

Chapter 1, Excellence in Means, ninth paragraph

Changed “**ever more wisely**” to “**ever better**” in the second sentence.

Chapter 1, Excellence in Means, tenth paragraph, last sentence

“People who seek to decide wisely look beyond the current “efficiency frontier.””

was deleted.

Chapter 1, Excellence in Living, second paragraph

Changed “**decide wisely**” to “**make the most of their knowledge**” in the second sentence.

Chapter 1, Excellence in Living, third paragraph

Changed “**wisely**” to “**well**” in the first sentence.

*“**Living well is the timeless end of achieving happiness. This is not the happiness that comes from satisfying what we want, but rather the happiness that comes from satisfying what we need to live what Aristotle called living a good life and psychologist Abraham Maslow called living a fully human life. See Chapter 2 on the distinction between the temporal and timeless concepts of consumption.**”*

Chapter 1, Excellence in Living, fourth paragraph

Changed “**wisely**” to “**well**” in the last sentence (2 occurrences).

Chapter 1, Excellence in Living, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “wisely” to “well” in the first sentence.

Changed “wisely” to “well” in the second sentence.

Chapter 1, A Timeless Model for Living Wisely, title

Changed “Wisely” to “Well” in the title.

Chapter 1, A Timeless Model for Living Well, first paragraph, first sentence

Inserted the sentence: “We seek to live well by living wisely, that is, by seeking to make the best use of all of our knowledge.”

Chapter 1, A Timeless Model for Living Well, last paragraph

Changed “wisely” to “well” in the last sentence.

Chapter 2, The Wise Use of Concepts, title

Changed title to “Introduction.”

Chapter 2, Introduction, first paragraph

Changed “People who seek to” to “The first chapter explained how people who” in the first sentence.

Chapter 2, Wealth, first paragraph

Changed “wisely” to “well” in the first sentence.

Chapter 2, Wealth, first paragraph, footnote

“This teleonomic definition of wealth is not compatible with the current national income accounting scheme. See Appendix D.”

was changed to:

“Governing wisely is a matter of helping all of us decide ever more wisely. This calls for a timeless concept of wealth. Our current national income accounting system uses a temporal concept. This mistake creates major catastrophes. See Chapter 4 and Appendix D.”

Chapter 2, Wealth, first paragraph

Changed “wisely” to “well” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Consumption, first paragraph

“From the temporal view of modern economics, winning a fortune in the lottery is always good. From the timeless view of those who seek to live wisely, winning a fortune in the lottery can be bad if the winner is heading down a dark path. Understanding this difference calls for a deeper understanding of pleasure and pain.”

was changed to:

“Consuming is the process of using wealth to achieve our ends. From the temporal view of modern economics, consuming is the process of using wealth to satisfy our wants. Winning a fortune in the lottery is always good. From the timeless view of people who seek to make the most of their knowledge in order to live well, consuming is the process of using wealth to live well. Winning a fortune in the lottery can be bad if the winner is heading down a dark path. Understanding this difference calls for a deeper understanding of pleasure and pain.”

Chapter 2, *Pleasure and Pain*, second paragraph

“There are two sorts of pleasure. The first is the pleasure that we derive directly from an activity, such as that which we derive from playing tennis or eating ice cream. The second is the pleasure that is the result of an activity. We can think of the first as pleasure-in-acting and the second as pleasure-in-being. We commonly refer to pleasure-in-acting as “pleasure” and pleasure-in-being as “joy.””

was changed to:

“There are two sorts of pleasure. The first is the pleasure that we derive directly from an activity. The second is the pleasure that is the result of an activity. We can think of the first as pleasure-in-acting and the second as pleasure-in-being. Eating junk food gives us pleasure-in-acting. Eating healthy food gives us pleasure-in-being. We commonly refer to pleasure-in-acting as “pleasure” and pleasure-in-being as “joy.””

Chapter 2, *Practical Wisdom*, first paragraph

Changed “a good life” to “well (a good life)” in the first sentence.

Changed “a good life” to “well” in the second sentence.

Chapter 2, *Practical Wisdom*, second paragraph

Changed “wise” to “good” in the first sentence.

Chapter 2, Production, first paragraph, last sentence

“To produce wisely is to seek to produce ever more wisely.”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

was changed to:

“To produce **well** is to produce (ever more) wisely.”

Chapter 2, Profit, first paragraph

Changed “**wisely**” to “**well**” in the first sentence.

“To decide **wisely** is to **seek to** decide ever more wisely.”

was changed to:

“ To decide **well** is to decide (ever more) wisely.”

Chapter 3, Refining Everyday Thinking, third paragraph

Changed “**seek to** live” to “live” in the last sentence.

Chapter 3, Refining Economic Stories, eighth paragraph

Changed “live **ever more** wisely” to “live wisely” and “live **a good life**” to “live **well**” in the fifth sentence.

Chapter 3, The Timeless Ideal, first paragraph

Changed “**deciding ever more** wisely” to “**living** wisely” in the last sentence.

Chapter 3, The Timeless Ideal, second paragraph, first sentence

“**Deciding more** wisely is a matter of converting new information into new applications of knowledge in our quest to live **wisely**.”

was changed to:

“**Living** wisely is **often** a matter of converting new information into new applications of knowledge in our quest to live **well**.”

Chapter 3, A Crude Look at the Whole, second paragraph

Changed “**the effects of progress and poor decision-making**” to “**their**” in the second sentence.

Chapter 3, Moral Science, last paragraph

Changed “**wisely**” to “**well**” in the fifth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Key Factors, title

Changed title to “**Introduction.**”

Chapter 4, Introduction, first paragraph

“People live and work together to do together what they cannot do alone. Living and working together wisely calls for rules to govern how people live and work together. A government is a system of rules and a means of enforcing these rules.”

was changed to:

“**Moral science is the process of determining what is truly good. The convention of distinguishing between temporal and timeless ends by capitalizing timeless ends helps us to summarize this research program. Following this convention, the truth is correspondence to reality based on what we currently know; the Truth is correspondence to reality based on all that can be known. The good is what we need to live well based on what we currently know; the Good is what we need to live well based on all that can be known. We need the truth to pursue the Good. We also need the good to pursue the Truth. Hence, the pursuit of the Good and the pursuit of the Truth are intertwined - pursuing one calls for pursuing the other. In as much as we are born with the need to live well, we are born with the need to pursue both the Good and the Truth. We are born to be researchers and research subjects in the research program of, by, and for intelligent life.**

“**We are not all knowing and all good. Our truth is not the Truth; our good is not the Good. We are not even angels, beings without the worldly concerns that arise from physical bodies. Hence, we can benefit from intellectual tools for helping us to live wisely, that is, for helping us to pursue the Good and the Truth.**

“**The first chapter of this book put forth a strategy for learning to live wisely. The second chapter put forth timeless concepts based on this strategy. The third chapter applied these timeless concepts to the problem of how best to pursue the Truth and the Good. This chapter applies these timeless concepts to the problem of how best to govern wisely, that is, how best to manage the rights for deciding how best to pursue the Truth and the Good.**

“**Sovereignty**

“**A major source of conflict within any group living and working together is the issue of who has a particular right. One way to avoid such conflicts is to assign rights permanently, that is, to assign sovereign rights.**

“**For a sovereign right to be secure, those charged with securing it must believe that they ought to secure it. The belief that they ought to secure a sovereign right arises from the beliefs that its basis is good and that it will be exercised well. Further, for a**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

sovereign right to be secure, those charged with securing it must have the coercive power needed to secure it.

“The need for coercive power to secure a sovereign right falls with the moral authority of the sovereign right. The moral authority of a sovereign right arises from the beliefs that its basis is just and that it will be exercised justly.

“There are three basic means of securing the beliefs that secure sovereign rights. The first is to tell stories that appeal to what people currently believe is good. We may call this the pragmatic approach. The second is to tell stories that attempt to change what people believe is good. We may call this the propaganda approach. The third is to tell stories that appeal to what people believe is the ideal good. We may call this the idealistic approach.

“Governments are experiments that test the claims of goodness that secure sovereign rights. If these experiments are well run, that is, if people act in accordance to the claims of goodness that secure sovereign rights, the success or failure of the government tells us something of about the truth of these claims. In scientific terms, the claims of goodness that secure sovereign rights are propositions.

“The Explicit Experiment

“If the United States of America is an exceptional nation, it is because of the sovereign rights story put forth in its Declaration of Independence:

“We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.--That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed, --That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness.”²

“What makes this sovereign rights story truly exceptional is its form. A self-evident truth is a belief that is not only true but one that no one can imagine not being true. It is true beyond all doubt. The authors knew that their idealistic claims of sovereignty were not self-evident. Yet they claimed that they were. In effect, they were saying, “We hold these claims to be true beyond all doubt. We will act as if these claims are true beyond all doubt. In doing so, we seek to prove that these claims are true beyond all doubt.” They put their sovereign rights story in the form of a proposition to be tested.

“Abraham Lincoln confirmed this interpretation in a dedicatory remark to honor young men who had recently given their lives to continue what Lincoln saw as the American experiment. He ended his remark with an appeal not only to continue the experiment but also to expand it:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Four score and seven years ago our fathers brought forth on this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal.

“Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this.

“But, in a larger sense, we can not dedicate -- we can not consecrate -- we can not hallow -- this ground. The brave men, living and dead, who struggled here, have consecrated it, far above our poor power to add or detract. The world will little note, nor long remember what we say here, but it can never forget what they did here. It is for us the living, rather, to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us -- that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion -- that we here highly resolve that these dead shall not have died in vain -- that this nation, under God, shall have a new birth of freedom -- and that government of the people, by the people, for the people, shall not perish from the earth.”³

“The idealistic story of sovereignty put forth in the Declaration of Independence is not the only American story of sovereignty. The United States Constitution puts forth a pragmatic story in the form of a social contract. In this story, sovereignty resides in “We the People of the United States.” Neither the Constitution nor its amendments mention the Creator. In fact, the first amendment:

“Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.”⁴

has often been interpreted by the courts to deny public expressions that refer to the Creator. Perhaps the most eloquent defender of this competing story as the basis for the American experiment is Supreme Court Justice Oliver Wendell Holmes, who wrote the following in his dissenting opinion of a decision that upheld a law limiting free speech during the First World War:

“Persecution for the expression of opinions seems to me perfectly logical. If you have no doubt of your premises or your power and want a certain result with all your heart you naturally express your wishes in law and sweep away all opposition. To allow opposition by speech seems to indicate that you think the speech impotent, as when a man says that he has squared the circle, or that you do not care whole-heartedly for the result, or that you doubt either your power or your premises. But when men have realized that time has upset many fighting faiths, they may come to believe even more than they believe the very foundations of their own conduct that the ultimate good desired is better reached by free trade in ideas — that the best test of truth is the power of the thought to get itself accepted in the competition of the market, and that truth is the only ground upon which their wishes

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

safely can be carried out. That at any rate is the theory of our Constitution. It is an experiment, as all life is an experiment. Every year if not every day we have to wager our salvation upon some prophecy based upon imperfect knowledge.”⁵

“There are at least two ways of reconciling these conflicting sovereign stories. One is to claim that the Declaration of Independence story concerns justice and the Constitution story concerns legality. This conflicts with the political agenda of those who want to enshrine their socialistic faith in law. Another is to dismiss the Creator statement in the Declaration of Independence as a nominally religious statement that has become ritual and non-religious through long customary usage. This claim of “ceremonial deism” conflicts with the political agenda of those who want to enshrine their theistic faith in law.⁶

“True believers in socialism and theism share several beliefs. First, both believe that what they believe to be good is superior to what others believe to be good. Second, both believe that the government ought to protect their superior beliefs in the marketplace of ideas. Third, both believe that the government ought to use its power to persuade to promote their beliefs. In short, both believe that the government ought to insure the success of their beliefs of the good in the marketplace of ideas.

“Both of these religious groups have seen past political success put the government at risk. The social justice inspired Smoot Hawley Tariff Act of 1930 and National Recovery Act (NRA) of 1933 extended and deepened the Great Depression. Had the Supreme Court not struck down Title I of the NRA in 1935, the United States might have followed Italy and Germany into national socialism or the Soviet Union into international socialism. The Christianity inspired Amendment XVIII to the Constitution, which outlawed the manufacture, sale, and transportation of intoxicating liquors in late 1917, led to widespread government corruption. Had this amendment not been repealed in late 1933, it might have so undermined the legitimacy of the government as to have made the government unable to cope with the crises of the late thirties and early forties.

“The Sovereign Story of Moral Science

“The confused American experiment in government raises the question of how expansive a sovereign story ought to be. Is it wise to expand sovereign stories to include beliefs that can be tested in the marketplace of ideas? If not, what beliefs remain? What is the sleekest safe hull for a ship of state facing gales of creative destruction?

“Moral science provides us with a simple and straightforward answer to this question. Government ought to conform to moral science. Government of, by, and for intelligent life ought to be based on the research program of, by, and for intelligent life.

“Using the American Declaration of Independence as a model, moral science yields a simple story of sovereignty: We hold these beliefs to be true beyond all doubt, that all intelligent life has the sovereign right and responsibility to seek to live wisely.--That

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

to secure this right and this responsibility, governments are instituted that derive their powers from the consent of the governed.--That whenever a government becomes an obstacle to this end, it is the right and the responsibility of the governed to alter or to abolish it, and to institute a new government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect living wisely.

“The promise of this sovereign story is to improve the overall quality of decision-making, thereby yielding the greatest progress toward the timeless ideal with the least amount of turbulence in the flow of resources. Supported by good economic policies, this sovereign story should fulfill its promise. A ship of state so designed, handled well, should cut through turbulent seas like no other.”

“² The full text of the Declaration of Independence is available on the United States national archive site, <http://www.archives.gov/national-archives-experience/charters/declaration_transcript.html>, (18 June 2007).”

“³ Lincoln delivered this speech at the dedication of the Soldiers’ National Cemetery at Gettysburg, Pennsylvania on November 19, 1863. It is commonly known as the Gettysburg Address. This is the complete text of the Bliss Copy, which most historians believe to be the last copy written by Lincoln.”

“⁴ The first ten amendments to the United States Constitution, which are known as the Bill of Rights, are available on the United States national archive web site, <http://www.archives.gov/national-archives-experience/charters/bill_of_rights_transcript.html>, (18 June 2007).”

“⁵ *Abrams v. United States*, 250 U.S. 616, 630 (1919) (Holmes, J., dissenting).

“⁶ True believers in socialism and theism share several beliefs. First, both believe that what they believe to be good is superior to what others believe to be good. Second, both believe that the government ought to protect their superior beliefs of the good in the marketplace of ideas. Third, both believe that the government ought to use its power to persuade to promote their beliefs of the good. In short, both believe that the government ought to insure the success of their beliefs of the good in the marketplace of ideas.”

Chapter 4, Liberty, title

Changed to the title to “Economic Policy.”

Chapter 4, Economic Policy, first paragraph, first sentence

Inserted the sentences, “From the decision-oriented view of moral science, governing wisely is a matter of helping all of us to live wisely. One key factor in living wisely is the freedom to decide.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Economic Policy, first paragraph

Changed “government officials” to “policymakers” in the last sentence

Chapter 4, *Judge Interventions*

Replaced the title with the introductory sentence:

“One way that government policymakers can help us to decide wisely is judge their interventions rather than our behaviors.”

Chapter 4, *Control the Money Supply Passively*, first paragraph

Changed “live wisely” to “live ever more wisely” in the first and fifth sentences.

Chapter 4, *Lower Trade Barriers*, first paragraph

Changed “human” to “person” in the last sentence (2 occurrences).

Chapter 4, *Promote Practical Wisdom*, title

Changed title to “Promote *Moral Science*.”

Chapter 4, *Promote Moral Science*, first paragraph

Changed “Practical wisdom” to “It” in the new third sentence.

Chapter 4, *Promote Moral Science*, last paragraph

Changed “research program of, by, and for intelligent life” to “moral science” in the first sentence. Merged this single sentence paragraph with previous paragraph.

Changed “Government officials” to “Policymakers” in the last sentence.

Chapter 4, Justice, title

Changed title to “Promote *Savings for Welfare*.”

Chapter 4, *Promote Savings for Welfare*, second paragraph

Changed “Government officials” to “Policymakers” in the first sentence.

Chapter 4, *Promote Savings for Welfare*, last paragraph

Changed “decide ever” to “live” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Afterword, third paragraph

Changed “heed Oliver Wendell Holmes’s argument that the purpose of free speech is to support free experiment” to “remember Benjamin Franklin’s rebuke that those who would give up essential liberty to purchase a little temporary safety deserve neither liberty nor safety” in the third sentence.

Afterword, third paragraph, quote

““Persecution for the expression of opinions seems to me perfectly logical. If you have no doubt of your premises or your power and want a certain result with all your heart you naturally express your wishes in law and sweep away all opposition. To allow opposition by speech seems to indicate that you think the speech impotent, as when a man says that he has squared the circle, or that you do not care whole-heartedly for the result, or that you doubt either your power or your premises. But when men have realized that time has upset many fighting faiths, they may come to believe even more than they believe the very foundations of their own conduct that the ultimate good desired is better reached by free trade in ideas — that the best test of truth is the power of the thought to get itself accepted in the competition of the market, and that truth is the only ground upon which their wishes safely can be carried out. That at any rate is the theory of our Constitution. It is an experiment, as all life is an experiment. Every year if not every day we have to wager our salvation upon some prophecy based upon imperfect knowledge.””

“² Abrams v. United States, 250 U.S. 616, 630 (1919) (Holmes, J., dissenting).”

was deleted.

Afterword, last paragraph, last two sentences

“I am a conservative idealist, by which I mean that I seek to conserve the ideals that I find in the Declaration of Independence, the Bill of Rights, and the Gettysburg Address. These ideals are classically liberal in means and progressive in ends.”

were deleted.

Appendix A, last paragraph

Changed “wisely” to “well” in the last sentence.

Changes in Version 2007.06.30

Preface, seventh paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Italicized the last sentence:

“ Judging our belief systems by determining the truth is an infinitely large problem.”

Preface, eleventh paragraph, second sentence

“There was a time when lovers of wisdom distinguished between the strategic and the tactical by capitalizing the strategic.”

was changed to:

“There was a time when lovers of wisdom distinguished between the **timeless** and the **temporal** by capitalizing the **timeless**. **In military terms, they distinguished between the strategic and the tactical by capitalizing the strategic.**”

Preface, second to last paragraph, fifth sentence

“In military terms, they distinguish between the strategic and the tactical.”

was moved to behind the sixth sentence.

Preface, last paragraph

Changed “pursuing the **truth** and the **good**” to “pursuing the **Truth** and the **Good**” in the second to last sentence.

Chapter 4, Introduction, second paragraph, first two sentences

“We are not all knowing and all good. **O**ur truth is not the Truth; our good is not the Good.”

were changed to:

“We are not all knowing and all good: **o**ur truth is not the Truth; our good is not the Good.”

Chapter 4, Introduction, second paragraph, last sentence

“Hence, we can benefit from intellectual tools **for helping us to live wisely, that is,** for helping us to pursue the Good and the Truth.”

was changed to:

“Hence, we can benefit from intellectual tools for helping us to pursue the Good and the Truth, **that is, for helping us to live wisely.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Introduction, last paragraph, last sentence

“This chapter applies these tools to the problem of how best to govern **wisely, that is, how best to manage the rights for deciding how best to pursue** the Truth and the Good.”

was changed to:

“This chapter applies these tools to the problem of how best to govern **the process of pursuing** the Truth and the Good.

“**We govern wisely by managing rights and responsibilities well. A right is the authority to decide a matter. A responsibility is the obligation to exercise a right well.**”

Chapter 4, Sovereignty, last paragraph

Changed “propositions” to “propositions **to be tested**” in the last sentence.

Chapter 4, *The Explicit Experiment*, fifth paragraph

Changed “This” to “This **claim of a source of justice above and beyond the general will of society**” in the second sentence.

Chapter 4, *The Explicit Experiment*, seventh paragraph

Changed “**of these** groups” to “groups **of true believers**” in the second sentence.

Changes in Version 2007.07.04

Preface, sixth paragraph, third through sixth sentences

“In contrast, I contend **that humans have a spiritual need to link or relink with something greater than themselves that does not depend on what we believe or how strongly we believe. Humanistic psychologist Abraham Maslow described this as the spiritual need of people living fully human lives to pursue the transcendent values of truth, beauty, and justice. Christian theologian, concert organist, medical doctor, and humanitarian Albert Schweitzer described it as the need for mystical oneness, which people satisfy by either denying or embracing the world and life. Hence, I contend that** in our natural pursuit of living a fully human life it is useful to distinguish between knowledge of the Divine, which I call theology; the pursuit of linking or relinking with something greater than ourselves, which I call religion; and certainty beyond reason, which I call faith.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“In contrast, I contend that in our natural pursuit of living a fully human life it is useful to distinguish between knowledge of the Divine, which I call theology; the pursuit of linking or relinking with something greater than ourselves, which I call religion; and certainty beyond reason, which I call faith.”

Preface, eleventh paragraph

Changed “I contend that they” to “They” in the last sentence.

Chapter 1, A Timeless Model for Living Well, last paragraph, third sentence

“The first is practical wisdom — our knowledge of how to decide wisely.”

was changed to:

“The first is the knowledge of how to decide wisely, which we commonly call practical wisdom.”

Chapter 2, Introduction, first paragraph

“The first chapter explained how people who live wisely use timeless concepts to select temporal ends and temporal concepts to select the best means to temporal ends. They plan their lives using timeless concepts and work their plans using temporal ones. This chapter puts forward timeless alternatives to the modern economic concepts of wealth, consumption, trade, production, and profit.”

was changed to:

“The first chapter explained how people who live wisely plan their lives using timeless concepts and work their plans using temporal ones. This chapter puts forth timeless alternatives to the modern economic concepts of wealth, consumption, trade, production, and profit.”

Chapter 2, Wealth, first paragraph, footnote

“² Governing wisely is a matter of helping all of us decide ever more wisely. This calls for a timeless concept of wealth. Our current national income accounting system uses a temporal concept. This mistake creates major catastrophes. See Chapter 4 and Appendix D.”

was deleted.

Chapter 3, Economics, third paragraph

Added the following footnote to the end of the second sentence:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“⁷ More accurately, ‘cause’ is a cue for a tool for helping us to find problems to solve within a given set of conditions.”

Chapter 3, *Recursive Errors*, last paragraph

Added the following footnote to the end of the last sentence:

“²¹ A good example of pretending to be certain is our current national income accounting system, which uses a temporal rather than a timeless concept of wealth. See Appendix D.”

Chapter 3, *Computer Models*, last sentence, footnote, first paragraph

“Regrettably, these high level models of the imperfect flow of economic resources take imperfect decision-making as a given and so tend to blind us to the most effective problem to solve, which is how best to improve the quality of decision-making.”

was changed to:

“The purpose of these high level models of imperfect flow ought to be to improve flow by improving the quality of decision-making.”

Chapter 3, *Computer Models*, first paragraph

Changed “these models” to “most of these models” in the last sentence of the footnote.

Changed “including” to “which includes” in the last sentence.

Chapter 3, *Moral Science*, last paragraph

Changed “*intelligent life science*” to “moral science” in the last sentence.

Chapter 4, *The Explicit Experiment*, second paragraph

“What makes this sovereign rights story truly exceptional is its form. A self-evident truth is a belief that is not only true but one that no one can imagine not being true. It is true beyond all doubt. The authors knew that their idealistic claims of sovereignty were not self-evident. Yet they claimed that they were. In effect, they were saying, “We hold these claims to be true beyond all doubt. We will act as if these claims are true beyond all doubt. In doing so, we seek to prove that these claims are true beyond all doubt.” They put their sovereign rights story in the form of a proposition to be tested.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“What makes this sovereign rights story truly exceptional is its form. In his original draft of the Declaration of Independence, Thomas Jefferson opened the sovereign rights passage with the phrase, “We hold these truths to be sacred.” Benjamin Franklin struck through ‘sacred’ and wrote ‘self-evident.’ By changing this single word, Franklin changed the Declaration’s sovereign rights story to an explicit proposition to be tested.³”

“³ A self-evident truth is a belief that is not only true but one that no one can imagine not being true. It is true beyond all doubt. Franklin knew that the following claims of sovereignty were not self-evident. In effect, he was stating, “We hold these claims to be true beyond all doubt. We will act as if these claims are true beyond all doubt. In doing so, we seek to prove that these claims are true beyond all doubt.””

Chapter 4, *The Explicit Experiment*, third paragraph

Changed “this interpretation” to “the experimental nature of the Declaration’s sovereign rights story” in the first sentence.

Changed “expand it” to “expand it beyond the three-fifths legal rendition frozen in the Constitution” in the second sentence.

Chapter 4, *The Explicit Experiment*, fifth paragraph

Changed “those” to “true believers in socialism” and “their socialistic faith” to “what they believe to be good” in the third sentence.

Changed “those” to “true believers in theism” and “their theistic faith” to “what they believe to be good” in the last sentence.

Chapter 4, *The Explicit Experiment*, sixth paragraph

Changed “True believers in socialism and theism” to “These two groups of true believers” in the first sentence.

Chapter 4, *The Sovereign Story of Moral Science*, third paragraph

Changed “right and responsibility” to “right” in the second sentence.

Changed “right and this responsibility” to “right” in the third sentence.

Changed “right and the responsibility” to “right” in the second sentence.

Changes in Version 2007.07.07

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Chapter 4, *The Sovereign Story of Moral Science*, third paragraph

Added the following footnote to the end of the last sentence:

“The sovereign story of moral science is similar to but more refined than the sovereign story of the Declaration of Independence. Both are based on the belief that we ought to pursue what is truly good for us. However, they differ as to what this is. The Declaration, as interpreted by philosopher Mortimer Adler, calls for us to pursue happiness *justly*. Moral science calls on us to pursue happiness *ever more justly* by living (ever more) wisely. For more on Adler’s interpretation of the Declaration of Independence, see his book, *We Hold These Truths* (New York, Macmillan Publishing Company, 1987).”

Chapter 4, *Promote Moral Science*, first paragraph

Deleted “best” from the fifth sentence.

Afterword, first paragraph

Changed “eight” to “nine” in the first sentence.

Deleted the second sentence: “This is how it ought to be.”

Afterword, second paragraph

Changed “Those” to “All” in the last sentence.

Afterword, third paragraph

Changed “Those” to “All” in the last sentence.

Afterword, last paragraph, end

Added the sentence:

“I am a member of the classical liberal party of life.”

Changes in Version 2007.07.10

Preface, first paragraph

Changed “eight” to “nine” in the first sentence.

Preface, eighth paragraph, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Judging our belief systems by determining the truth is an infinitely large problem.”

was replaced by the paragraph:

“I put forth a very different view of our common search for the truth, for which I owe a great debt to Albert Einstein and W. V. O. Quine. Intellectual disciplines provide us with a variety of useful ways of organizing our sensations of reality into beliefs. I contend that the ultimate end of science is to rectify all of our beliefs into an internally consistent whole that not only reflects our sensations of the world accurately, but also helps us to live wisely. This is an infinitely large problem.”

Preface, ninth paragraph

Changed “**judging**” to “**rectifying**” in the last sentence.

Preface, eleventh paragraph

Changed “**Albert** Einstein” to “Einstein” in the last sentence.

Preface, last paragraph

Changed “tool kit” to “toolkit” in all (3 occurrences).

Chapter 3, title

Changed “**Economic** Science” to “**Moral** Science.”

Chapter 3, Refining Everyday Thinking, fourth paragraph

Changed “explain” to “explain **parts of the world**” in the last sentence.

Chapter 3, Moral Science, title

Changed “**Moral Science**” to “**The Knowledge Revolution.**”

Chapter 3, Economic Science, second paragraph

Changed “logic” to “**economic** logic” in the last sentence.

Chapter 3, Economic Science, last paragraph

Changed “logic” to “**economic** logic” in the fourth sentence.

Changed “**truth**” to “**Truth**” and “**good**” to “**Good**” in the fifth sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2007.07.14

Preface, sixth paragraph, fourth through seventh sentences

“We can imagine using each of these three concepts in conflict with the **zealous and extra-reasonable pursuit of knowledge of the Divine**. We can imagine **people pursuing knowledge of the Divine who lack either** religious zeal **or** faith in the existence of the Divine. **We can imagine people putting their** faith in **either atheistic political movements or** the chance to win a week of Las Vegas debauchery. **We can imagine** atheists **either** putting their faith in the non-existence of the Divine **or** pursuing the transcendent values of truth, justice, and beauty with religious zeal.”

were changed to:

“We can **easily** imagine using each of these three concepts in conflict with the **other two**. We can imagine: (1) **theists without** religious zeal, (2) **theists without** faith in the existence of the Divine, (3) **theists with** faith in the chance to win a week of Las Vegas debauchery, (4) atheists **with** faith in the non-existence of the Divine, **and** (5) **atheists** pursuing the transcendent values of truth, justice, and beauty with religious zeal.”

Preface, seventh paragraph, last sentence

“**To make matters worse, this problem extends to our beliefs about testing our beliefs.**”

was deleted.

Preface, ninth paragraph

Changed “belief **systems by determining the truth**” to “beliefs” in the last sentence.

Preface, second to last paragraph

Changed “**decision-making** process” to “process” in the third sentence.

Chapter 1, Setting Words Aright, last paragraph

Changed “**think of**” to “**view**” in the last sentence.

Changed “**our knowledge**” to “**what we know**” in the last sentence.

Chapter 1, Excellence in Means, first paragraph

Changed “**worldviews**” to “**views of the world**” in the last sentence.

Chapter 1, Excellence in Means, second paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “People who seek to make the most of their knowledge” to “To make the most of what we know, we need to” in the second sentence.

Chapter 1, Excellence in Living, third paragraph, first sentence, footnote

“Living well is the timeless end of achieving happiness. This is not the happiness that comes from satisfying what we want, but rather the happiness that comes from satisfying what we need to live what Aristotle called living a good life and Abraham Maslow called living a fully human life. See Chapter 2 on the distinction between the temporal and timeless concepts of consumption.”

was changed to:

“Living well is the timeless end of living a fully human life. For more on what it is to live a fully human life, see Chapter 2 and Appendix B.”

Chapter 2, Introduction, first paragraph

Changed “people who live wisely plan their lives using timeless concepts and work their plans” to “we can make the most of what we know by planning our lives using timeless concepts and working our plans” in the first sentence.

Chapter 2, Consumption, first paragraph

Changed “Winning” to “Hence, winning” in the second sentence.

Changed “seek to make the most of their knowledge in order to live well” was changed to “make the best use of what they know” in the third sentence.

Changed “Winning” to “Hence, winning” in the fourth sentence.

Chapter 2, Pleasure and Joy, second paragraph, fifth and sixth sentences

“Eating junk food gives us pleasure-in-acting. Eating healthy food gives us pleasure-in-being.”

were changed to:

“Eating junk food yields pleasure-in-acting; eating healthy food yields pleasure-in-being.”

Chapter 2, Pleasure and Joy, sixth paragraph, last two sentences

“Finding pleasure in running calls for investing in the physical ability to run. Finding pleasure in playing chess calls for investing in knowledge of how to play chess.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

were changed to:

“Finding pleasure in playing chess calls for investing in knowledge of how to play chess. **Finding pleasure in running calls for training to run well.**”

Chapter 2, Practical Wisdom, first paragraph

Deleted “**(a good life)**” from the first sentence.

Chapter 2, Trade, first paragraph, end

Added the sentence:

“**The structure of commerce emerges from the complex interplay of trading costs.**”

Chapter 3, Refining Economic Stories, seventh paragraph

Changed “**seek to live wisely**” to “**make the best use of their knowledge**” in the last sentence.

Chapter 3, The Timeless Ideal, first paragraph

Changed “**living**” to “**deciding**” in the last sentence.

Chapter 3, The Timeless Ideal, second paragraph

Changed “**living**” to “**deciding**” in the last sentence.

Chapter 3, The Timeless Ideal, third paragraph

“People who **seek to live wisely adapt to stress by deciding wisely**. First, **they** try to find a better problem to solve. Finding a new problem **to solve usually** increases the stress that they pass on to others. **Second**, they relieve stress by acting efficiently. Acting efficiently lessens the stress that they pass on to others.”

was changed to:

“People who **make the best use of their knowledge** first try to find a better problem to solve. Finding a new problem **often** increases the stress that they pass on to others. **Having found what they believe to be the best problem**, they relieve stress by acting efficiently. Acting efficiently lessens the stress that they pass on to others.”

Chapter 3, Recursive Failures, last paragraph, last sentence, footnote

Changed “**See**” to “**For more on this, see**” in the last sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Chapter 3, Computer Models, second paragraph

Changed “seek to live wisely” to “make the best use of what they know” in the second sentence.

Chapter 4, *The Sovereign Story of Moral Science*, third paragraph, footnote

“Both are based on the belief that we ought to pursue what is truly good for us. However, they differ as to what this is.”

was changed to:

“Both are based on the belief that we ought to pursue happiness, that is, seek to satisfy what we need to live well. However, they differ in how we ought to pursue happiness.”

Changes in Version 2007.07.18

Entire Work, Internet references

Confirmed Internet references and updated confirmation dates. HTML version references: Chapter 3, footnote 10; Chapter 4, footnotes 2, 5, & 10; Appendix A, footnote 1; and Appendix C, footnote 1. Word version will differ due to the difference in referencing chapter headings.

Preface, third paragraph, second through fourth sentences

“All theories contain ignorance in the form of untestable beliefs. A good strategy for living contains a means of testing these beliefs. Hence, I ought to have wished for a method of weeding out members of the set of theories that we use to explain how to live.”

was changed to:

“I ought to have wished for a method of weeding out members of the set of theories that we use to explain how to live.”

Preface, thirteenth paragraph

Changed “this process of breaking down things” to “the process” in the third sentence.

Chapter 2, Wealth, first paragraph

Changed “get what we want” to “satisfy our wants” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, Pleasure and Joy, third paragraph

Changed “**best** defines” to “defines” in the first sentence (2 occurrences).

Changes in Version 2007.07.20

Chapter 1, Excellence in Means, first paragraph

Changed “modern concept” to “modern (**economic**) concept” in the second sentence.

Changed “**“efficiency”**” to “efficiency” in the second sentence.

Chapter 1, Excellence in Means, second paragraph

Changed “**“efficiency”**” to “efficiency” in the fourth sentence.

Chapter 2, Practical Wisdom, last paragraph

“There are three basic means of deciding. These are deliberation (**deciding formally**), decision rules (**rules of thumb / heuristics**), and discipline (**consciously formed habits**). **Deliberation** is thorough but costly. **It** consists of (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) carrying out the chosen alternative; and (6) learning from the experience. Decision rules are less thorough but also less costly. Discipline is the least thorough, least costly, and least susceptible to deprivation. Acting wisely is often a matter of knowing which of these three means to use.”

was changed to:

“There are three basic means of deciding. These are deliberation, decision rules, and discipline. **In its most complete form, deliberation** consists of (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) carrying out the chosen alternative; and (6) learning from the experience. **This formal process** is thorough but costly. Decision rules (**rules of thumb / heuristic methods**) are less thorough but also less costly. Discipline (**using consciously formed habits**) is the least thorough, least costly, and least susceptible to deprivation. Acting wisely is often a matter of knowing which of these three means to use.”

Chapter 4, Sovereignty, fourth paragraph

“There are three basic means of securing ~~the beliefs that secure~~ sovereign rights. ~~The first is to tell stories that appeal to what people currently believe is good. We may call this the pragmatic approach. The second is to tell stories that attempt to change what~~

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

people believe is good. We may call this the propaganda approach. The third is to tell stories that appeal to what people believe is the ideal good. We may call this the idealistic approach.”

was reduced to a footnote to the last sentence in the third paragraph.

Changes in Version 2007.07.24

Chapter 1, Excellence in Living, second paragraph, second sentence

Changed “To make the most of what we know, we need to” back to “The wise” in the second sentence.

Chapter 4, title

Changed “Governing Wisely” to “Government.”

Chapter 4, The Explicit Experiment, second paragraph

Changed “to an explicit proposition to be tested” to “from a moral argument to an explicit proposition to be tested” in the fourth sentence.

Chapter 4, The Explicit Experiment, second paragraph, footnote

“A self-evident truth is a belief that is not only true but one that no one can imagine not being true. It is true beyond all doubt. Franklin knew that the following claims of sovereignty were not self-evident. In effect, he was stating, “We hold these claims to be true beyond all doubt. We will act as if these claims are true beyond all doubt. In doing so, we seek to prove these claims to be true beyond all doubt.””

was promoted to body text. Added the following footnote to the third sentence above:

“For example, Franklin knew of the divine right of kings to rule over their subjects, which was the basis of the French monarchy.”

Chapter 4, The Explicit Experiment, fourth paragraph

Changed “first amendment” to “First Amendment” in the fourth sentence.

Chapter 4, The Sovereign Story of Moral Science, first paragraph

Changed “government” to “governance” in the first sentence.

Chapter 4, The Sovereign Story of Moral Science, third paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “beliefs to be true beyond all doubt” to “truths to be self-evident” in the second sentence.

Chapter 4, Promote Savings for Welfare, first paragraph

Changed “live” to “to live” in the third sentence.

Chapter 4, Promote Savings for Welfare, first paragraph

Changed “altruistic” to “wise” in the last sentence.

Appendix B, Practical Benefits of Magical Mysticism, title

Changed “Magical Mysticism” to “Mystical Oneness.”

Added the paragraph:

“Schweitzer embraced the practical benefit of ethical mysticism, which is the Kantian categorical imperative of revering life. Following the Confucian model of familial obligation, the debt that we owe to those who helped us, including those who provided us with the useful knowledge that we use at no cost, we pay to others by revering life.”

Appendix B, Synthesis, end

Added the sentences:

“From the view of the research program of, by, and for intelligent life, we accept the timeless end of revering life as a proposition to be proven true beyond all doubt. We hold it to be true beyond all doubt. We act as if it were true beyond all doubt. In doing so, we seek to prove it true beyond all doubt. Following the logic of Benjamin Franklin, we hold it to be self-evident.¹⁶”

“¹⁶ Followers of philosopher of science Karl Popper are fond of reminding us that science is about proving things false. From the temporal view, they are right. However, from the timeless view, they are wrong. The ultimate end of science is seeking what is true, not discarding what is false.”

Changes in Version 2007.07.26

Preface, sixth paragraph

Deleted “the concepts of” in the last sentence.

Preface, second to last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “tool” to “tools” in the last sentence.

Chapter 1, A Timeless Model for Living Well, title

Changed “Well” back to “Wisely.”

Chapter 1, A Timeless Model for Living Wisely, first paragraph, first sentence

“We seek to live well by living wisely, that is, by seeking to make the best use of all of our knowledge.”

was changed to:

“We seek to live wisely by seeking to make the best use of our knowledge in our quest to live well.”

Afterword, first paragraph

Changed “learning to decide” to “living” in the third sentence.

Changed “deciding” to “living” in the last sentence.

Appendix B, Practical Benefits of Magical Mysticism, first paragraph

Changed “which is the Kantian” to “which is its ability to promote the Kantian” in the first sentence.

Appendix B, Practical Benefits of Magical Mysticism, last paragraph

Changed “A small event” to “In this way, a small event” in the fifth sentence.

Changes in Version 2007.07.28

Chapter 1, A Timeless Model for Living Wisely, last paragraph

Changed “the” to “our” in the last sentence.

Chapter 3, Economics, title

Changed title to “Living Wisely.”

Chapter 4, Introduction, second paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**summarize**” to “**explain**” in the second sentence.

Chapter 4, Introduction, last paragraph

“**We govern wisely by managing rights and responsibilities well. A right is the authority to decide a matter. A responsibility is the obligation to exercise a right well.**”

was moved to the beginning of the Sovereignty section.

Chapter 4, Sovereignty, new fourth paragraph

Deleted “**for a sovereign right to be secure,**” from the first sentence.

Changed “**just**” to “**good**” and “**justly**” to “**well**” in the last sentence.

Combined paragraph with the previous paragraph.

Chapter 4, The Explicit Experiment, second paragraph

Corrected omission of ‘and undeniable’ from Jefferson’s original draft. Added doubt to authorship of edit. Changed footnote from divine right of kings issue to authorship of edit issue.

Chapter 4, The Explicit Experiment, fifth paragraph

Changed “**One**” to “**The first**” in the first sentence.

Changed “**Another**” to “**The second**” in the fourth sentence.

Chapter 4, The Explicit Experiment, sixth paragraph

“**These two groups of true believers share several beliefs. First, both believe that what they believe to be good is superior to what others believe to be good. Second, both believe that the government ought to protect their superior beliefs in the marketplace of ideas. Third, both believe that the government ought to use its power to persuade to promote their beliefs. In short, both believe that the government ought to insure the success of their beliefs of the good in the marketplace of ideas.**”

was changed to:

“**Both of these groups of true believers want the government to promote their beliefs about the good rather than allow these beliefs to succeed or fail in the marketplace of ideas, which is to say that both want their beliefs about the good to be held as self-evident truths. True believers in socialism want the government to administer social justice; true believers in theism want government to administer theistic justice. In**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

effect, both groups of true believers want their means of linking or relinking with something greater than ourselves to be the state religion.”

Chapter 4, The Explicit Experiment, last paragraph

“Both groups of true believers have seen past political success put the government at risk. The social justice inspired Smoot Hawley Tariff Act of 1930 and National Recovery Act (NRA) of 1933 extended and deepened the Great Depression. Had the Supreme Court not struck down Title I of the NRA in 1935, the United States might have followed Italy and Germany into national socialism or the Soviet Union into international socialism. The Christianity inspired Amendment XVIII to the Constitution, which outlawed the manufacture, sale, and transportation of intoxicating liquors in late 1917, led to widespread government corruption. Had this amendment not been repealed in late 1933, it might have so undermined the legitimacy of the government as to have made the government unable to cope with the crises of the late thirties and early forties.”

was reduced to a footnote to the last sentence of the sixth paragraph.

Chapter 4, Control the Money Supply Passively, first paragraph

Changed “**ever more** wisely” to “wisely” in the first and fifth sentences.

Chapter 4, Choosing Governments, first paragraph

Changed “**decide ever more**” to “live” in the first sentence.

Appendix B, Practical Benefits of Magical Mysticism, first paragraph

Added the sentence:

“This rule for living well should aid the research program of, by, and for intelligent life better than any other.”

Appendix B, Practical Benefits of Magical Mysticism, second paragraph

Deleted “(conceptual frameworks, belief systems, and world-views)” from the last sentence.

Changes in Version 2007.07.31

Chapter 3, Deciding Wisely, last paragraph

Changed “decision **failures**” to “decisions” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Sovereign Rights, third paragraph

“For a sovereign right to be secure, those charged with securing **it** must believe that they ought to secure **it**. **The belief that they ought to secure a sovereign right** arises from the beliefs that **its** basis is good and that **it** will be exercised well. Further, those charged with securing **it** must have the coercive power needed to secure **it**. The need for coercive power **to secure a sovereign right** falls with the moral authority of the sovereign **right**. **The moral authority of a sovereign right arises from** the beliefs that **its** basis is good and that **it** will be exercised well.”

was changed to:

“For a **collection of** sovereign rights to be secure, those charged with securing **the rights** must believe that they ought to secure **them**. **This** belief arises from the beliefs that the basis **for the rights** is good and that the rights will be exercised well. Further, those charged with securing **the rights** must have the coercive power needed to secure **them**. The need for **this** coercive power falls with the moral authority of the sovereign, **that is, with** the **general** beliefs that **the** basis **for the rights** is good and that **the rights** will be exercised well.”

Chapter 4, The Sovereign Story of Moral Science, third paragraph

“The sovereign story of moral science is **similar to but more refined than** the sovereign story of the Declaration of Independence. Both are based on the belief that we ought to pursue **the timeless concept of** happiness, which is the timeless result of the process of satisfying what we need to live well. **However, they differ in how we ought to pursue happiness**. The Declaration, as interpreted by philosopher Mortimer Adler, calls for us to pursue happiness *justly*. Moral science calls on us to pursue happiness *ever more justly by living (ever more)* wisely. For more on Adler’s interpretation of the Declaration of Independence, see his book, *We Hold These Truths* (New York, Macmillan Publishing Company, 1987).”

was changed to:

“**Arguably**, the sovereign story of moral science is **simply a refinement of** the sovereign story of the Declaration of Independence. Both are based on the belief that we ought to pursue happiness, which is the timeless result of the process of satisfying what we need to live well. The Declaration, as interpreted by philosopher Mortimer Adler, calls for us to pursue happiness **justly**. Moral science calls on us to pursue happiness wisely, **which is to say, ever more justly**. For more on Adler’s interpretation of the Declaration of Independence, see his book, *We Hold These Truths* (New York, Macmillan Publishing Company, 1987).”

Chapter 4, Promote Savings for Welfare, last paragraph, last sentence

Added footnote:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“¹⁶ Here again, we see the difference between living wisely and allocating efficiently. From the timeless view of living wisely, we owe a debt to those who created the knowledge that we use at no cost. Albert Schweitzer’s categorical imperative calls on us to pay this debt by revering life. In theory, this universal rule for living promotes the research program of, by, and for intelligent life better than any other universal rule for living. From the temporal view of allocating efficiently, our interest in how others choose to live is external to the problem of how best to allocate scarce resources. The modern economic solution to this externality problem involves making all information about how we choose to live our lives freely available to everyone else. Better a bit of government intervention than the loss of all privacy. Compared to the loss of all privacy, a universal welfare savings plan and progressive taxation does not look so onerous.”

Appendix B, Practical Benefits of Magical Mysticism, first paragraph

Changed “This” to “In theory, this” in the last sentence.

Changes in Version 2007.08.08

Preface, third paragraph

Appended third paragraph to second paragraph.

Preface, new sixth paragraph

Changed “produce” to “predict” in the last sentence.

Chapter 2, Pleasure and Pain, sixth paragraph

Changed “running” to “swimming” and “run” to “swim” in the last sentence.

Chapter 4, Sovereign Story of Moral Science, third paragraph, footnote

Changed “wisely, which is to say,” to “(ever more) wisely, hence” in the fourth sentence.

Appendix B, Practical Benefits of Magical Mysticism, first paragraph

“Schweitzer embraced the practical benefit of ethical mysticism, which is its ability to promote the Kantian categorical imperative of revering life. Following the Confucian model of familial obligation, the debt that we owe to those who helped us, including those who provided us with the useful knowledge that we use at no cost, we pay to others by revering life. In theory, this rule for living well should aid the research program of, by, and for intelligent life better than any other.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Schweitzer embraced the practical benefit of ethical mysticism, which is its ability to promote the **universal moral rule** (Kantian categorical imperative) of revering life. **Unlike modern economics, this rule addresses the problem of what we owe to the people who created the knowledge that we use freely. According to this rule,** the debt that we owe to those who helped us, including those who provided us with the useful knowledge that we use freely, we pay by revering life. In theory, this **universal moral rule** should aid the research program of, by, and for intelligent life better than any other.”

Changes in Version 2007.08.31

Preface, sixth paragraph, third sentence

Changed “**we can never verify completely**” to “**are not definite**” in the second sentence.

Changed “**swans** are **either white or black**” to “**crows** are black” in the third sentence.

Chapter 4, third paragraph, third sentence

Inserted the following sentence:

“**Roman Emperor Tiberius had to maintain the good will of the Praetorian Guard; pirate Henry Morgan had to maintain the good will of his crew; and the leaders of modern democracies need to maintain the good will of their military and police forces.**”

Chapter 4, The Explicit Experiment, fourth paragraph

Changed “**story of sovereignty**” to “sovereign **story**” in the first sentence (2 occurrences).

Chapter 4, The Sovereign Story of Moral Science, third paragraph

Changed “**story of sovereignty**” to “sovereign **story**” in the first sentence.

Appendix B, Practical Benefits of Mystical Oneness, first paragraph

Changed “pay” to “pay **to others**” in the third sentence.

Changed “other” to “other **universal moral rule**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Appendix B, Practical Benefits of Mystical Oneness, last paragraph

Appended the last paragraph to the second to last paragraph. Added the following sentence to the end of the paragraph:

“Mystics of many religions have learned that breaking this stream of words by embracing magical mysticism can help us to change our mental worlds for the better.”

Appendix B, Synthesis, first paragraph, last three sentences

“From the view of the research program of, by, and for intelligent life, we accept the timeless end of revering life to be the best universal as a proposition to be proven true beyond all doubt. We hold it to be true beyond all doubt. We act as if it were true beyond all doubt. In doing so, we seek to prove it true beyond all doubt. Following the logic of Benjamin Franklin, we hold it to be self-evident.¹⁶”

“¹⁶ Followers of philosopher of science Karl Popper are fond of reminding us that science is about proving things false. From the temporal view, they are right. However, from the timeless view, they are wrong. The ultimate end of science is seeking what is true, not discarding what is false.”

were deleted.

Changes in Version 2007.09.10

Chapter 3, Refining Everyday Thinking, last paragraph, fourth sentence

Added the footnote:

“Followers of philosopher of science Karl Popper are fond of reminding us that science is about proving things false. From the temporal view, they are right. However, from the timeless view, they are wrong. The ultimate end of science ought to be seeking the whole truth, not discarding what is false.”

Changes in Version 2007.09.31

Preface, third paragraph

Italicized “is” in the first sentence and “is the pursuit of” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changes in Version 2007.12.22

Preface, eleventh paragraph, last two sentences

“To students of complexity science, there is some beauty in unpacking this argument. There was a time when lovers of wisdom distinguished between the timeless and the temporal by capitalizing the timeless. In military terms, they distinguished between the strategic and the tactical by capitalizing the strategic. Using this bygone convention, knowing the truth is believing well based on what we currently know; knowing the Truth is believing well based on all that can be known. The good is what we need to live well based on what we currently know; the Good is what we need to live well based on all that can be known. We need the truth to pursue the Good. We also need the good to pursue the Truth. Hence, the pursuit of the Good and the pursuit of the Truth are intertwined - pursuing one calls for pursuing the other. In as much as we are born with the need to live well, we are born with the need to pursue both the Truth and the Good. To believe that we can break down the timeless pursuit of the Truth and the Good, which are intertwined, into the temporal search for the truth and the temporal search for the good is to confuse the complex with the merely complicated.”

was deleted.

Preface, second to last paragraph, last two sentences

Changed “both the Truth and the Good” to “practical wisdom” in the second sentence.

Preface, last paragraph

Changed “The” to “My” in the first sentence.

Preface, last paragraph, last two sentences

“In the third, I apply this toolkit to the problem of pursuing the Truth and the Good. In the last chapter, I apply this toolkit to the problem of governance.”

were changed to:

“In the third, I apply this toolkit to the problem of believing well. In the last chapter, I apply it to the problem of governing well.”

Chapter 2, Pleasure and Pain, third paragraph, first two sentences

“In Western ethics, Aristotle defines pleasure and Spinoza defines joy. Aristotle defined pleasure as losing ourselves in activity.”

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“In Western ethics, Aristotle defined pleasure as losing ourselves in activity.”

Chapter 2, Pleasure and Pain, last paragraph

Changed “Spinoza” to “Seventeenth century Dutch philosopher Baruch Spinoza” in the first sentence.

Chapter 2, Pleasure and Pain, last paragraph

Changed “using consciously formed habits” to “consciously formed habits” in the fifth sentence.

Chapter 3, title

Changed title from “Moral Science” to “Science.”

Afterword, last paragraph, last sentence

“I am a member of the classical liberal party of life.”

was deleted.

Appendix B, Synthesis

Changed title from “Synthesis” to “Conclusion.”

“Materialists and dualists ought to share the timeless end of revering life.¹⁵ Accepting it turns postmodern cacophony into improvisational jazz.”

¹⁵ We use intellectual tools to help us to choose what to do. These tools come in two types. The first helps us to choose “good” temporal ends. The second helps us to choose “right” rules for living wisely. When we use these tools to make major decisions, we ought to compare the results of more than one tool. The less the tools that we use have in common, the less the risk that results contain a common error. Hence, we ought to use both tools that aim at “good” temporal ends and tools that aim at “right” rules for living wisely. We also ought to use only those tools that aim at the highest form of justice that we can imagine. *We ought to use only those tools that aim at the timeless end of revering life.*”

was changed to:

“We use intellectual tools to help us to choose what to do. These tools come in two types. The first helps us to choose “good” temporal ends. The second helps us to choose “right” rules for living wisely. When we use these tools to make major decisions, we ought to compare the results of more than one tool. The less the tools that we use have in common, the less the risk that results contain a common error.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Hence, we ought to use both tools that aim at “good” temporal ends and tools that aim at “right” rules for living wisely. We also ought to use only those tools that aim at the highest form of justice that we can imagine. *We ought to use only those tools that aim at the timeless end of revering life.*”

Changes in Version 2007.12.31

Chapter 2, Practical Wisdom, second paragraph

Changed “satisfy **wisely**” to “satisfy” in the third sentence.

Chapter 2, Two Means of Living Wisely, first paragraph, first sentence

“Aristotle and Spinoza provide us with different means of living **wisely**.”

was changed to:

“**Again, we seek to live wisely by seeking to make the best use of our knowledge in our quest to live well.** Aristotle and Spinoza provide us with different means of **seeking to live** wisely.”

Chapter 4, Introduction, first paragraph

Changed “**moral** science” to “**timeless** science” in the first and second sentences.

Chapter 4, Sovereignty, first paragraph, first sentence

“**We govern wisely** by managing rights and responsibilities **well**.”

was changed to:

“**Governing any group living and working together is a matter of** managing rights and responsibilities.”

Chapter 4, The Explicit Experiment, second paragraph, last seven sentences

“**A self-evident truth is a belief that is not only true but one that no one can imagine not being true. It is true beyond all doubt. The authors knew that the following claims of sovereignty were not self-evident. For example, they knew of the divine right of kings.** In effect, **they were** stating, “We hold these claims to be true beyond all doubt. We will act as if these claims are true beyond all doubt. In doing so, we seek to prove these claims to be true beyond all doubt.””

were changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“In effect, **Franklin was** stating, “We hold these claims to be true beyond all doubt. We will act as if these claims are true beyond all doubt. In doing so, we seek to prove these claims to be true beyond all doubt.””

Chapter 4, The Sovereign Story of Moral Science, title

Changed “**Moral Science**” to “**Timeless Science**.”

Chapter 4, The Sovereign Story of Timeless Science, second paragraph

Changed “**moral science**” to “**timeless science**” in the first and second sentences.

Chapter 4, The Sovereign Story of Timeless Science, third paragraph

Changed “**moral science**” to “**timeless science**” in the first sentence.

Chapter 4, Economic Policy, first paragraph

Changed “**moral science**” to “**timeless science**” in the first sentence.

Chapter 4, Promote Moral Science, title

Changed “**Moral Science**” to “**Timeless Science**.”

Chapter 4, Promote Timeless Science, first paragraph

Changed “**moral science**” to “**timeless science**” in the last sentence.

Changes in Version 2008.01.24

Preface, seventh paragraph

Deleted the second sentence: “**Intellectual disciplines provide us with a variety of useful ways of organizing our sensations of reality into beliefs.**”

Changed “**live wisely**” to “**decide wisely**” in the second to last sentence.

Preface, ninth paragraph

“**In general, we move ever closer to determining the truth by means of a recursive process that begins with finding a problem to solve and ends with learning from the experience of implementing the chosen solution to this problem. I refer to this process as decision-making. Given this expansive definition of decision-making, we move ever closer to determining the truth by deciding ever more wisely. We can decide ever more**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

wisely by improving the factors of deciding wisely. These factors include practical wisdom, trust, liberty, **capital, and time.**”

was changed to:

“**We** move ever closer to determining the truth by **deciding wisely, where deciding wisely is the** recursive process that begins with finding a problem to solve **based on the timeless end of determining the truth.** We can improve the process of deciding wisely by improving the factors of deciding wisely. These factors include practical wisdom, trust, and liberty.”

Preface, twelfth paragraph

Changed “deciding **more wisely**” to “deciding **ever better**” in the second sentence.

Preface, thirteenth (last full) paragraph

Changed “**living** wisely” to “**deciding** wisely” in the second sentence.

Changed “**following** this strategy” to “**applying** this strategy **to the problem of living well**” in the fourth sentence.

Chapter 1, Practical Wisdom, title

Changed title to “**Deciding Wisely.**”

Chapter 1, Excellence in Living, first paragraph

Changed “**wise** in satisfying their wants but **are**” to “**efficient** in satisfying their wants but” in the first sentence.

Chapter 1, Excellence in Living, second paragraph

Changed “**The** wise” to “**People who seek to live** wisely” in the second sentence.

Chapter 1, A Timeless Model for Living Wisely

Changed “**Wisely**” to “**Well**” in the title.

Chapter 1, A Timeless Model for Living Well, first paragraph

“We seek to live **wisely by seeking to make the best use of our knowledge in our quest to live well.** We **live wisely** by deciding **wisely.**⁸ We make mistakes. If we are wise, we learn from our mistakes. If we are wise, waste is a regrettable by-product of learning.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“**Decision-making is the process that begins with finding a problem to solve and ends with learning from experience.** Ideally, **it** includes (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) implementing the chosen alternative; and (6) learning from the experience. Practically, we balance the costs and benefits of decision-making. Most of our decisions are too small to justify all of these steps.

was changed to:

“We seek to live **well** by deciding well. Ideally, **deciding** includes (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) implementing the chosen alternative; and (6) learning from the experience. Practically, we balance the costs and benefits of deciding. Most of our decisions are too small to justify all of these steps.

“**From the timeless view, we find problems to solve using tools based on determining the truth about living well. This prevents us from being blinded to the possibility of learning, that is, the possibility of replacing knowledge for non-knowledge resources in living well. This is the essence of deciding *wisely* as opposed to deciding *rationally*.**

“**Deciding wisely as defined here does not mean that the process of deciding was perfect. It only means that we use timeless tools to help us to find problems to solve and temporal tools to help us solve chosen problems. We make mistakes. If we are wise, we learn from our mistakes. If we are wise, waste is a regrettable by-product of learning by doing.**”

Chapter 1, A Timeless Model for Living Well, new fourth paragraph

Changed “**We embed**” to “**When we fail to decide perfectly, we embed**” in the first sentence.

Chapter 1, A Timeless Model for Living Well, last paragraph

Changed “**Four**” to “**Three**” in the second sentence.

Deleted the second to last sentence: “**The fourth is capital, which we need to carry out our choices.**”

Changed “**freedom, and capital**” to “**and freedom**” in the last sentence.

Changed “**live well**” to “**decide wisely**” in the last sentence.

Chapter 2, Production, first paragraph, last sentence

“**To produce well is to produce (ever more) wisely.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Producing well calls for deciding wisely.”

Chapter 2, Profit, first paragraph, first sentence, footnote

Changed “deciding wisely” to “deciding well” in the first and second sentences.

Changed “deciding wisely” to “deciding well” in the first and second sentences.

Changed “foolishly” to “poorly” in the fourth sentence.

Chapter 2, Profit, first paragraph

Changed “is to decide (ever more)” to “calls for deciding” in the second sentence.

Deleted the last sentence: “We owe it to ourselves to learn to thrive in winds and survive in gales of creative destruction.”

Chapter 3, title

Changed the title from “Science” to “Believing Well.”

Chapter 3, Introduction

Inserted the following into a new section:

“Introduction

In the first chapter, we saw how the distinction between the timeless and the temporal can help us to live well. In this chapter, we will see how this distinction can help us to believe well.

“Eighteenth century Scottish Enlightenment philosopher David Hume explains why believing well is timeless end. We can never be completely certain that the way that we generalize our experiences is true until we experience all that can be experienced. For example, we cannot be certain that all of the marbles in an urn are white until we examine all of the marbles in the urn. Until we examine the last marble, there is always the chance that the next marble we examine will not be white. Philosophers call this the problem of induction.

“Nineteenth century British philosopher John Stewart Mill provides us with a famous real world example of Hume’s problem of induction. Prior to the European discovery and exploration of Australia, Europeans believed that all swans are white. The European discovery of a new Australian bird species led Europeans to change this belief to the belief that all swans are either white or black.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Mill intended his “black swan” example to show how established empirical facts may be overturned by a single unexpected event. The complete history of the discovery of this new species also shows us how such an event may change our system of concepts. The Europeans originally classified the new species of bird in a new genus, *chenopis*, rather than the “swan” genus, *atratus*. Under the genus *chenopis*, the new birds were as distant from swans as cheetahs are from domestic cats. Under this genus, the Europeans did not need to change their belief that all swans are white. It was only after the new birds were reclassified into the genus *atratus* did the Europeans need to change their belief about the color of swans. The problem of induction is more complex than Mill’s black swan example leads us to believe it to be.¹

“Philosopher of science Thomas Kuhn provides us with concepts for describing the two basic ways that we respond to unexpected events. Kuhn saw testing beliefs within a given system of concepts to be normal science and testing beliefs across belief systems to be extraordinary science.² Following Kuhn’s lead, an unexpected event that leads us to change our beliefs within a given system of concepts is ordinary; an unexpected event that leads us to change our system of concepts is extraordinary. The decision to discard the belief that all swans are white rather than to create a new genus was ordinary. The original decision to create the new genus of *chenopis* was (a bit) extraordinary.

“From the temporal view, this expanded view of the problem of induction raises sociological questions about how we collectively choose to reduce our sensations to words. These questions include who chooses, why they choose as they do, and why the rest of us accept what they choose. Answering these questions usually involves personally held values that transcend the problem at hand. These values include such things as the good, the truth, and justice.

“The great danger with thinking in terms of values is confusing the temporal with the timeless. If we are not careful, we can confuse values based on what we currently know with values based on all that can be known. We can avoid this confusion by capitalizing timeless values.³ Using this convention, (1) to seek to live well is to pursue the Good; (2) to seek to believe well is to pursue the Truth; and (3) to seek to live and work with others well is to pursue Justice.

“From the timeless view, this expanded view of the problem of induction raises a single question, which is what system of concepts best helps us to believe well. Answering this question calls for considering the ultimate end of believing well. Is it a means of pursuing the Good? Is it a means of pursuing the Truth, which is to say an end in itself? Is it a means of pursuing Justice? Is it all of these things? Is it all of these and more?

“From the modern liberal view, there is no right or wrong answer to this question. This is because there is no disputing what end or ends that we should value most highly. There is only the practical problem of maintaining the freedom to choose what matters most to us, which we do by maintaining a good society, a society in which the least well-off members have what they need to live decent lives.⁴

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The modern liberal belief system is temporal. Like other temporal belief systems, it tends to blind us to the best problems to solve. A kind assessment is that it is a reasonable, but incomplete response to the schism between Plato and Aristotle at the core of Western thought. A less kind assessment is that it is little more than childish nihilism – the temper tantrum of people who are unwilling to accept believing well as a timeless end. A second less kind assessment that it is nothing more than a useful vehicle for special interests to maintain their special favors. The most enlightening of these three assessments is the kind one.

“Plato would have us know the Truth, Justice, and Beauty by breaking free from the everyday concepts that cause us to see only the shadows of things, fighting our way out of the cave of ignorance, and stepping into the light of the Good. Once we are used to the light of the Good, we will be able to see the ideal forms – the unchanging elements and relations – that underlie all sensations of reality. In other words, Plato would have us break the stream of words that binds our minds to our personal mental worlds in order to embrace a stream of words that binds our minds to a universal mental world. This is not a rational process. It is a religious one. It is the mystical process of linking or relinking to something infinitely greater than ourselves.⁵ In sharp contrast, Aristotle called on us to refine our beliefs using his tool kit for refining beliefs, which we call Aristotelian logic. His approach is rational and ordinary, not religious and extraordinary.

“We can bridge Aristotle’s temporal world of everyday thinking and Plato’s timeless world of ideal forms by using Plato’s ideal forms as the basis for the timeless tools we use to find problems to solve. The first step is to create the concept of a transcendent factor of deciding wisely. A transcendent factor is any factor that we cannot have in excess. Consider the three factors listed at the end of the first chapter. Of these, only practical wisdom is a transcendent factor. We can never have too much knowledge of how to decide wisely. Freedom and trust are not transcendent factors. We can have too much freedom, as is the case when a slave owner claims the freedom to own a slave. We can have too much trust, as is the case when a mark trusts a swindler.

“The second step is accepting the proposition that the process of deciding wisely is the same for all timeless ends that are transcendent factors of deciding wisely. This curious property arises from the self-similar nature of the process of deciding wisely.

“The third step is to recognize that the timeless pursuits of all of the transcendent factors of deciding wisely intertwine to form a single timeless pursuit. Consider the relation between the pursuit of the Good and the pursuit of the Truth. The Good and the Truth are transcendent factors of deciding wisely. We need the Good to avoid deprivation, which hinders deciding wisely. We need the Truth to avoid ignorance, which also hinders deciding wisely. We pursue the Good by deciding wisely, which calls on us to pursue the Truth. We pursue the Truth by deciding wisely, which calls on us to pursue the Good. Hence, the pursuit of the Good and the pursuit of the Truth intertwine into a single pursuit.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Justice is also a transcendent factor of deciding wisely. We cannot work too well or live too well with others. In theory, we can learn more about Justice by considering how treating others well helps us to pursue the Good and the Truth. In thinking through theory, when we try to learn more about Justice by considering how treating others well helps us to pursue the Good and the Truth, we find ourselves continuously returning to the timeless pursuits of the Good and the Truth. If we are intelligent and honest, Hume’s problem of induction thwarts all efforts to reduce the infinitely large problem of determining the truth about Justice to a finite problem. Further, the inexhaustibility of knowledge and our need to become part of something infinitely greater than ourselves thwart all efforts to reduce the infinitely large problem of determining the good about Justice to a finite problem.

“Twentieth century American moral philosopher John Rawls provides us with a way of putting our inescapable ignorance about Justice to good use. Rawls asks us to imagine what we should⁶ choose if we were ignorant of the circumstances of our birth.⁷ For this imagined original position of ignorance to produce a *completely just* timeless end, we must consider what timeless end we should want to guide intelligent life if we were *completely ignorant* of the circumstances of our birth, which includes ignorance of what species we will be and into what era we will be born. Under these conditions, we should want all intelligent life to make the best use of knowledge in the pursuit of a good life for all. In other words, we should want all intelligent life to revere life well.⁸ We pursue this timeless end of a good life for all by deciding wisely.

“The inexhaustibility of knowledge makes it as easy, if not easier, to cooperate across time as to cooperate across space. The ancient Chinese provide us a simple model for cooperating across time, “The debt that we owe to our ancestors, we pay to our descendents.” Following this model, we can promote cooperation in revering life across both time and space with the moral imperative, “The debt that we owe to those from whom we have learned, we pay to others by deciding wisely.”

“The scope of cooperation in deciding wisely is boundless. To perfect this cooperation, we need to reduce our sensations of reality to a form that is useful to all intelligent life. The gold standard of knowledge is the mathematical representation of the unchanging elements and relations (ideal forms) that underlie all sensations.

“The Ring of Truth

Pursuing one transcendent factor of deciding wisely calls for pursuing all transcendent factors of deciding wisely. This is a blessing, not a burden. It provides us with a more certain way of testing problems to solve before we attempt to solve them. Only if a problem is consistent with our current beliefs about all transcendent factors can we be reasonably certain that it is the best problem to solve. Only then can we say that the beliefs supporting our choice have the ring of Truth.

“There is an ancient belief that equates truth with beauty. Nineteenth century English romantic John Keats expressed this belief in the closing lines of his poem, *Ode on a Grecian Urn*:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Beauty is truth, truth beauty, — that is all ye know on earth, and all ye need to know.”⁹

“This ancient belief is not consistent with the modern belief that beauty is the quality of objects whose contemplation yields pleasure, much less with the modern belief that beauty is in the eye of the beholder. However, it is consistent with the timeless definitions of pleasure (pleasure-in-acting) and joy (pleasure-in-being) put forth in the second chapter. From the timeless view, *beauty is the defining quality of objects whose contemplation yields not only pleasure but also the joy that comes from improving our belief system.*

“To give us pleasure, an activity must not be too easy or too hard. An activity that is too easy bores us; an activity that is too hard overwhelms us. When the activity is contemplation, the object of contemplation must not be too simple or too hard to contemplate. Contemplating an object that is too simple bores us; contemplating an object that is too hard overwhelms us. Between these two extremes is a level of difficulty that allows us to lose ourselves in contemplation.

“What we find too easy or too hard depends on our knowledge of what we are contemplating. Knowledge may make objects easier to contemplate. This may make objects either more or less capable of yielding pleasure in contemplation. For example, knowledge of the structure of classical music may turn Beethoven’s symphonies from being overwhelming to being beautiful. It may also turn grunge rock from being beautiful to being boring. At times, knowledge may also make objects harder to contemplate. This may make objects either more or less beautiful. For example, knowledge of the patterns of nature may turn Edo period architecture from being boring to being beautiful. It may also turn Rococo architecture from being beautiful to being overwhelming.

“To give us joy, an activity must improve our state of being. When the activity is contemplation, the object of contemplation must be novel enough for us to learn from it. If the object is not novel, we will not learn from it. If it is too novel, we will not be able to learn from it. As we learn more, objects that once gave us joy become mundane and objects that were once too novel become beautiful. This is especially true of scientific theories. Before we learn calculus, Newton’s theory of gravity is too novel to give us joy. After we learn calculus, it has the potential to give us joy. With use, it becomes just another tool.

“The interplay of beauty and belief is complex. Out of this complexity emerges art that engages us on many levels. A great work of art, such as a story that we can understand on more than one level, can change from being beautiful to being mundane to being once again beautiful. For example, as a child we may find Lewis Carroll’s *Alice Through the Looking Glass* to be an enchanting bedtime story; as a teenager we may find it to be childish; and as an adult we may find in it to be an insightful look into the way that language governs the way that we perceive the world.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“This timeless definition of beauty helps us to explain why modern educators do not value music and the other fine arts as highly as Plato did. Plato saw music and the other arts as a means of transcending everyday life in order to find the Good. Modern educators do not value music and other fine arts as means of transcending everyday life in order to decide wisely. From the modern view, there is no difference between seeking beauty and seeking Beauty. There is no disputing taste.¹⁰ From the timeless view, there is a difference between seeking beauty and seeking Beauty. Art ought to do more than to shock us or speak to us. It ought to help us to decide wisely.

“The Elephant in the Room

There is yet another “ring of Truth” story here. It concerns the relation between the transcendent factors of deciding wisely and the values that people claim to seek when they seek to link or relink with something infinitely greater than themselves.

“The essential theological explanation of this coincidence is simple and straightforward. The Creator created us with the need to seek the Creator. We seek the Creator by deciding wisely. In doing so, we deify the Truth and demonize the ignorance that hinders us. The devil lies in the temporal details.

“The essential evolutionary explanation of this coincidence is nearly as simple and straightforward. We evolved to have the need to seek to become a part of something infinitely greater than ourselves, which is useful in securing the best chances of survival for ourselves and our offspring. From this religious impulse and our intellect emerged crude means of deciding wisely. Over time, we refine our means of deciding wisely by deciding wisely. We learn by doing.

“Although these two essential explanations of this coincidence differ in their assumptions about the creation of the Universe, our instincts, and our abilities, they share the same means. Regardless of what set of assumptions that we choose to help us to find the best problem to solve, the process of deciding wisely, which includes the process of believing well, is the same for all of us. We are all as blind men seeking to know an infinitely large elephant.”

¹ W. V. O. Quine formally explained the difficulties the blurring of the distinction between statements within a system of concepts and changes to a system of concepts creates in his 1951 paper, *Two Dogma's of Empiricism*. What follows in the first section of this chapter confirms Quine's prescription for a holistic approach to meaning. With one major caveat, it also confirms Quine's statement that “Philosophy of science is philosophy enough.” This caveat is that we define science as the timeless process of refining everyday thinking rather than the temporal result of refining everyday thinking.”

² Kuhn, Thomas, *The Structure of Scientific Revolutions*, (Chicago: University of Chicago Press, 1962), chap X.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“³ To modern thinkers, who confuse the religious with the theistic, this convention appears to have theistic overtones. Properly conceived, it has religious overtones that may or may not be theistic.”

“⁴ The primary source of this essential description of modern liberalism is John Dewey, who partially reconciled the pragmatic philosophies of Charles S. Pierce and William James with the idealistic philosophy of George Hegel.”

“⁵ Note the similarity of Plato’s ultimate end of believing well to the Vedanta school of Indian philosophy, which culminates in the individual soul (Atma) relinking with the soul of the universe (Brahman), and to Albert Einstein’s desire to understand God’s thoughts.”

“⁶ Rawls uses a first person conditional statement to determine moral obligation. The grammatically correct term for expressing a first person conditional statement is ‘should.’ To American ears, ‘should’ implies a moral obligation rather than a hypothetical circumstance. Americans may choose to replace the grammatically correct ‘should’ with the idiomatic ‘would.’”

“⁷ Rawls, John, *A Theory of Justice*, (Cambridge, MA: The Belknap Press of Harvard University, 1971), chapter III.”

“⁸ This expansive concept of justice does more than help us to satisfy our need to link or relink with something greater than ourselves. It is also useful to us in ways that are less directly bound to our nature. For example, we need countless forms of microorganisms to sustain not only our environment but also our bodies. Further, we can learn about life from virtually every other form of life. For more on the subject of revering life, see Appendix B.

“⁹ Keats, John “Ode on a Grecian Urn” in *The Oxford Book of English Verse 1250-1900*, A. T. Quiller-Couch, ed. (Oxford: Clarendon, 1919), reprinted in Bartelby.com, <<http://www.bartelby.com/101/625.html>> 31 Dec 2007.”

“¹⁰ In Latin, *De gustibus non est disputandum*. At issue is not the belief that that tastes tend to remain stable over time, which is useful in making predictions about how people will act, but rather the belief that tastes ought to remain stable over time. From the temporal view of logical positivism, this distinction is the difference between a positive statement and a normative one. From the timeless view of deciding wisely, this distinction concerns the difference between the temporal and the timeless views of living well.”

Chapter 3, Refining Everyday Thinking, last two paragraphs

“One of the most valuable results of this ongoing research program was the division of labor, which has given us expert producers of goods and services.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Most expert producers base their concept of quality on both technical excellence and usefulness. They recognize that a technically perfect brass watermelon is still a brass watermelon, something that customers neither need nor want. In contrast, most experts in science base their concept of quality solely on technical excellence. We can correct this by defining science to be the process of refining everyday thinking. This timeless concept of science provides us with a vision of how best to improve the process of refining everyday thinking.¹⁵ It also reminds us that the temporal results of this timeless process are the truth rather than the Truth.¹⁶”

were changed to:

“This timeless concept of science provides us with a vision of how best to improve the process of refining everyday thinking.¹⁵ It also reminds us that the temporal results of this timeless process are the truth rather than the Truth.¹⁶ Less obvious, it strongly suggests that the way that modern academics have divided human inquiry into disciplines is flawed. This is especially true in the temporal way that they have grouped disciplines into the natural sciences, social sciences, and humanities.

“The first step towards fixing this modern, temporal scheme would be to change the name of the social sciences to the *intelligent life sciences*. The *intelligent life sciences* would include all of the disciplines that directly concern the research program of, by, and for intelligent life. The next step would be to subdivide this new group into the *ethical sciences*, *political sciences*, and *practical sciences*. The *ethical sciences* would refine our beliefs about the Good; the *political sciences* would refine our beliefs about Justice; and the *practical sciences* would refine our beliefs about Practical Wisdom. The final step would be to change the name of the natural sciences to the *true sciences*. The *true sciences* would refine our beliefs about the Truth without concern for the Good, Justice, or Practical Wisdom. The humanities would continue to include all disciplines that concern the ring of Truth rather than the Truth per se. Arguably, this new means of grouping academic disciplines comes closer than the modern scheme to carving nature at its joints.”

Chapter 3, Living Wisely, title

Changed title to “Refining Practical Wisdom.”

Chapter 3, Refining Economic Stories, title

Changed title to “Refining Practical Stories.”

Chapter 3, Refining Practical Stories, second paragraph

Changed “owe to ourselves” to “ought” in the last sentence.

Chapter 3, Refining Practical Stories, third paragraph, last two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“As intelligent beings, we owe it to ourselves to use our intellect to **pursue the timeless end** of living well. In short, we owe it to ourselves to live wisely.”

was changed to:

“As intelligent beings, we owe it to ourselves to use our intellect to **seek to improve the endless process** of living well, **to live wisely. We live wisely by deciding wisely.**”

Chapter 3, *Refining Practical Stories*, fourth paragraph

Changed “**live**” to “**decide**” in the first sentence.

Changed “Worse, it” to “Worse, it **often**” in the second sentence.

Chapter 3, *Refining Practical Stories*, fifth paragraph

Changed “**should**” to “**would**” in the fourth sentence.

Chapter 3, *Refining Practical Stories*, seventh paragraph

Deleted “**that we use to define what we need to live wisely**” from the first sentence.

Added “, **that is, to pursue the Good**” in the second sentence.

Changed “**make the most of their knowledge**” to “**pursue the Good**” in the last sentence.

Chapter 3, *Refining Practical Stories*, last two paragraphs

“We also owe it to ourselves to weed out stories that **fall short of our ideals. Moral philosopher John Rawls provides a means of judging stories. Rawls asks us to imagine what we should²⁵ choose if we were ignorant of the circumstances of our birth.²⁶ For this imagined original position of ignorance to produce a *completely just* timeless end, we must consider what timeless end we should want to guide intelligent life if we were *completely ignorant* of the circumstances of our birth, which includes ignorance of what species we will be and into what era we will be born. Under these conditions, we should want intelligent beings to live wisely and to devote themselves to helping others to live well. In short, we should want intelligent life to revere life. If we can agree that to live wisely is to revere life, then we can develop rules for weeding out stories. For example, we can weed out those that define who “we” are too narrowly.²⁷**”

“Over time, we will agree on ever more rules for weeding out **both stories that we use to define what we need to live wisely and stories that we use to explain how to satisfy these needs.** In our time, the stories that remain deserve our tolerance. We base this tolerance on our ignorance of how to live wisely rather than on the right to do as we please.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“²⁵ Rawls uses a first person conditional statement to determine moral obligation. The grammatically correct term for expressing a first person conditional statement is ‘should.’ To American ears, ‘should’ implies a moral obligation rather than a hypothetical circumstance. Americans may choose to replace the grammatically correct ‘should’ with the idiomatic ‘would.’”

“²⁶ Rawls, John, *A Theory of Justice*, (Cambridge, MA: The Belknap Press of Harvard University, 1971), chapter III.”

“²⁷ For more on the subject of revering life, see Appendix B.”

were changed to:

“We also owe it to ourselves to weed out members of the set of stories that fail to help us find what we need to pursue Justice. We pursue Justice by deciding wisely. As we saw in the EOQ/RTS example, deciding wisely is not the same thing as acting efficiently. Deciding wisely calls for us to progress towards the timeless ideal of a good life for all rather than the temporal ideal of a state of the world in which no one can be made better off without making someone else worse off.

“We can see the difference between deciding wisely and acting efficiently in the modern economic general equilibrium model. This model describes the conditions that yield the ideal temporal state of the world in which no one can be made better off without making someone else worse off. In modern economic terms, it describes the conditions for allocating scarce resources efficiently. The major condition is that the marginal benefits just equal the marginal costs of acting everywhere in the economy. This equilibrium condition determines what each factor of production receives. What is missing from this model is what we owe the people who created the knowledge that we use at no charge. As previously argued, *the debt that we owe to those from whom we have learned, we pay to others by deciding wisely.*

“At first glance, this argument does nothing more than to return us back to our starting point of pursuing Justice by deciding wisely. It does much more than this. It tells us to weed out any story about Justice that is based on the concept of efficiency. Less obvious, it tells us to weed out any story about Justice based on any temporal concept. This includes any story based on sustaining a good society. Deciding wisely, which is to say revering life, is much more than sustaining a good society. Consider what our lives would be like today if all previous generations of humans aspired to nothing more than a good society in an unchanging environment. We are morally obliged to leave the caves of our ancestors.

“Over time, we will agree on ever more rules for weeding out foolish stories. In our time, the stories that remain deserve our tolerance. We base this tolerance on our ignorance of how to decide wisely rather than on the right to do as we please.”

Chapter 3, *The Timeless Ideal*, entire section

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The research program of, by, and for intelligent life aims at the timeless ideal of the best of all possible futures for the whole of life. We progress toward this ideal by deciding wisely.

“Deciding wisely is often a matter of converting new information into new applications of knowledge in our quest to live well. Each new application of knowledge creates the need to change other parts of the economy. In short, progress creates stress.

“People who make the best use of their knowledge first try to find a better problem to solve. Finding a new problem often increases the stress that they pass on to others. Having found what they believe to be the best problem, they relieve stress by acting efficiently. Acting efficiently lessens the stress that they pass on to others.

“In contrast, modern economics would have us adapt to stress by acting efficiently. Ripples of stress caused by shocks of progress would die out as we replace stress with knowledge of how to act efficiently. The system would tend toward a state of the world in which none of us can be made better off without making at least one of us worse off. This is the ideal state of Pareto optimal general equilibrium.

“The path toward the temporal ideal of Pareto optimal general equilibrium is not the path toward the timeless ideal of the best of all possible futures for the whole of life. To achieve the temporal ideal, we need to act efficiently. To achieve the timeless ideal, we need to decide wisely. As we saw in the EOQ/RTS example, acting efficiently is not the same as deciding wisely.”

was deleted.

Chapter 3, *A Crude Look at the Whole*, first paragraph

“Imagine free people seeking to **live** ever more wisely. **Living** more wisely creates economic stress, the need to reallocate resources. As the amount of stress rises, people will spend resources responding to it, which will leave them fewer resources for experimenting with new ways of **living** more wisely. Stress will tend toward a “natural” level.”

was changed to:

“Imagine free people seeking to decide ever more wisely. **Deciding** more wisely creates economic stress, the need to reallocate resources. As the amount of stress rises, people will spend resources responding to it, which will leave them fewer resources for experimenting with new ways of **deciding** more wisely. Stress will tend toward a “natural” level. **People learn to thrive in winds and survive in gales of creative destruction.**”

Chapter 3, *A Crude Look at the Whole*, last paragraph, end

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Added the footnote:

“³¹ This unrelenting pressure to progress suggests the metaphor of a near freezing river filled with blocks of ice of various shapes and sizes, which represent our stocks of useful knowledge. In complexity science terms, these stocks of knowledge are “frozen accidents.” *The best way to avoid debacles is to prevent embacles, the piling up of stress. We prevent embacles by deciding well.*”

Chapter 3, Recursive Failures, third paragraph

Changed “**mystically** link or relink with something greater than ourselves” to “link or relink with something **infinitely** greater than ourselves” in the third sentence.

Chapter 3, Computer Models, last paragraph

Changed “**make the best use of what they know**” to “**seek to decide wisely**” in the second sentence.

Chapter 3, The Knowledge Revolution, title

Changed the title to “**A Tale of Two Revolutions**” and demoted it one level.

Chapter 3, A Tale of Two Revolutions, second paragraph

Changed “**moral** science” to “**a timeless concept of science**” in the first sentence.

Changed “**live** wisely” to “**decide** wisely” in the last sentence.

Chapter 3, A Tale of Two Revolutions, last paragraph, last two sentences

“To do so well, we need to define economic science to be **the study of the pursuit of the Truth and the Good, which is to say the study of the research program of, by, and for intelligent life. We need to define economic science to be the premier moral science.**”

were changed to:

“To do so well, we need to define economic science to be **the science of practical wisdom.**”

Chapter 4, title

Changed the title from “**Government**” to “**Governing Well.**”

Chapter 4, Introduction, first two paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Timeless science is the process of determining what is truly good. The convention of distinguishing between temporal and timeless ends by capitalizing timeless ends helps us to explain timeless science. Following this convention, the truth is correspondence to reality based on what we currently know; the Truth is correspondence to reality based on all that can be known. The good is what we need to live well based on what we currently know; the Good is what we need to live well based on all that can be known. We need the truth to pursue the Good. We also need the good to pursue the Truth. Hence, the pursuit of the Good and the pursuit of the Truth are intertwined - pursuing one calls for pursuing the other. In as much as we are born with the need to live well, we are born with the need to pursue both the Truth and the Good. We are born to be researchers and research subjects in the research program of, by, and for intelligent life.

“We are not all knowing and all good: our truth is not the Truth; our good is not the Good. We are not even angels, beings without the worldly concerns that arise from physical bodies. Hence, we can benefit from intellectual tools for helping us to pursue the Good and the Truth, that is, for helping us to live wisely.”

were deleted.

Chapter 4, Introduction, last paragraph

“The first chapter of this work introduced a strategy for learning to **live** wisely. The second chapter introduced timeless concepts based on this strategy. The third chapter applied these intellectual tools to the problem of **how best to pursue the Truth and the Good**. This chapter applies these tools to the problem of **how best to govern the process of pursuing the Truth and the Good**.”

was changed to:

“The first chapter of this work introduced a strategy for learning to **decide** wisely. The second chapter introduced timeless concepts based on this strategy. The third chapter applied these intellectual tools to the problem of **believing well**. This chapter applies these tools to the problem of **governing well**.”

Chapter 4, *The Explicit Experiment*, fourth paragraph

Changed “**often** been interpreted” to “**recently** been interpreted” in the fourth sentence.

Chapter 4, *The Sovereign Story of Timeless Science*, third paragraph

Changed “**live** wisely” to “**decide** wisely” in the second sentence.

Changed “**living** wisely” to “**deciding** wisely” in the second sentence.

Chapter 4, *The Sovereign Story of Timeless Science*, third paragraph, footnote

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “moral science” to “timeless science” and “refinement” to “timeless version” in the first sentence.

Changed “Moral science calls on” to “Timeless science calls for” in the fourth sentence.

Changed “(ever more) wisely, hence ever more justly” to “ever more justly” in the fourth sentence.

Deleted the third sentence: “Both are based on the belief that we ought to pursue happiness, which is the timeless result of the process of satisfying what we need to live well.”

Chapter 4, *Lower Trade Barriers*, footnote

Changed “live more wisely” to “live better” in the last two sentences.

Chapter 4, *Promote Timeless Science*, title

Changed “Timeless” to “Practical.”

Chapter 4, *Promote Practical Science*, first paragraph

Changed “timeless science” to “the science of practical wisdom” in the last sentence.

Chapter 4, *Promote Savings For Welfare*, last paragraph, last footnote

“¹⁶ Here again, we see the difference between living wisely and allocating efficiently. From the timeless view of living wisely, we owe a debt to those who created the knowledge that we use at no cost. Albert Schweitzer’s categorical imperative calls on us to pay this debt by revering life. In theory, this universal rule for living promotes the research program of, by, and for intelligent life better than any other universal rule for living. From the temporal view of allocating efficiently, our interest in how others choose to live is external to the problem of how best to allocate scarce resources. The modern economic solution to this externality problem involves making all information about how we choose to live our lives freely available to everyone else. Compared to the loss of all privacy, a universal welfare savings plan and progressive taxation does not look so onerous.”

was deleted.

Chapter 4, *Choosing Governments*, first paragraph

Changed “live wisely” to “decide wisely” in the second sentence.

Afterword, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**living** wisely” to “**deciding** wisely” in the third and fourth sentences.

Appendix B, Timeless Logic, title

Changed title to “**Introduction.**”

Appendix B, Introduction, first paragraph

Changed “**unethical theories**” to “**unjust stories**” in the first sentence.

Appendix B, *Practical Benefits of Mystical Oneness*, last paragraph

Changed “**mental worlds**” to “**concepts**” in the third sentence.

Changed “**mental worlds**” to “**belief systems**” in the sixth and seventh sentences.

Changes in Version 2008.01.25

Chapter 1, Excellence in Living, second paragraph

Deleted the first sentence: “**Choosing the right problem to solve is as important as choosing the right solution to a given problem.**”

Changed “**live** wisely” to “**decide** wisely” in the new first sentence.

Chapter 2, *Two Means of Living Wisely*, title

Changed “**Wisely**” to “**Well**” in the title.

Chapter 2, *Two Means of Living Well*, first paragraph, first two sentences

“**Again, we seek to live wisely by seeking to make the best use of our knowledge in our quest to live well. Aristotle and Spinoza provide us with different means of seeking to live wisely.**”

was changed to:

“Aristotle and Spinoza provide us with different means of **living well.**”

Chapter 2, *Two Means of Living Well*, second paragraph

Changed “**living** wisely” to “**deciding** wisely” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, *Alternatives to Living Wisely*, title

Changed “*Wisely*” to “*Well*” in the title.

Chapter 2, Recursive Failures, third paragraph

Changed “*reality*” to “*timeless elements*” in the first sentence.

Deleted the second sentence: “*Reality includes timeless elements.*”

Deleted the new third sentence: “*Including these timeless elements in the stories that we use to guide our actions makes these stories timeless.*”

Chapter 4, Sovereignty, first paragraph

Changed “living *and* working together” to “living *or* working together” in the first sentence.

Chapter 4, Sovereignty, second paragraph

Changed “living *and* working together” to “living *or* working together” in the first sentence.

Chapter 4, Economic Policy, first paragraph

Changed “*living* wisely” to “*deciding* wisely” in the first and second sentences.

Chapter 4, *Control the Money Supply Passively*, first paragraph

Changed “*live* wisely” to “*decide* wisely” in the first and fifth sentences.

Chapter 4, *Promote Practical Science*, first paragraph, second and third sentences

“The *wiser* we *live*, the harder it is to know *what we need* to live more wisely. Further, the *wiser* we all *live*, the faster things change. The faster things change, the harder it is to know how to *live wisely*.”

were changed to:

“The *better* we *decide*, the harder it is to know *how* to *decide* better. Further, the *better* we all *decide*, the faster things change. The faster things change, the harder it is to know how to *decide well*.”

Chapter 4, *Promote Savings for Welfare*, first paragraph

Changed “*live*” to “*decide*” in the first and third sentences.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, *Promote Savings for Welfare*, second paragraph

Changed “live more” to “decide” in all (4 occurrences).

Chapter 4, *Promote Savings for Welfare*, third paragraph

Changed “live more” to “decide” in all (4 occurrences).

Chapter 4, *Promote Savings for Welfare*, last paragraph

Changed “live more” to “decide” in the last sentence.

Chapter 4, *Choosing Governments*, first paragraph

Changed “Governing wisely” to “Governing well” in the first sentence.

Changed “live” to “decide” in the first sentence.

Changed “how wisely they govern” to “how well they govern” in the last sentence.

Changes in Version 2008.01.30

Preface, seventh paragraph

Changed “rectify all of” to “refine” and “wisely” to “well” in the second sentence.

Preface, eighth paragraph

Changed “rectifying beliefs” to “refining our beliefs” in the last sentence.

Preface, ninth paragraph

Changed “wisely” to “well” in all (4 occurrences).

Preface, thirteenth paragraph

Changed “wisely” to “well” in the fourth sentence.

Preface, second to last paragraph

“My target audience for this book is people who are looking for tools for solving given problems. In the first chapter, I seek to convince these people that all of the problems they face in life are part of the timeless problem of deciding how best to improve the

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

process of deciding wisely. I go on to describe a strategy for improving this process. In the second chapter, I provide them with a conceptual framework — a toolkit — for applying this strategy to the problem of living well. In the third, I apply this toolkit to the problem of believing well. In the last chapter, I apply this toolkit to the problem of governing well.”

was changed to:

“My target audience for this book is people who are looking for tools for solving given problems. In the first chapter, I seek to convince these people of the need to distinguish between the temporal concept of deciding well and the timeless concept of deciding well. I go on to describe a strategy for improving the timeless process of deciding well. In the second chapter, I apply the timeless concept of deciding well to the problem of living well. In the third, I apply this timeless concept to the problem of believing well. In the last chapter, I apply it to the problem of governing well.”

Chapter 1, title

Changed the title from “Deciding Wisely” to “Deciding Well.”

Chapter 1, Excellence in Means, first paragraph

Changed “modern (economic)” to “modern economic” in the second sentence.

Chapter 1, Excellence in Means, last paragraph

“This lesson about the great value of learning-by-doing deserves a second example. In 1991, the Japanese began broadcasting analog high definition television. The same year, the Americans chose digital over analog for their standard. Although digital was much more costly, the Americans saw that the cost of digital was falling much faster. By considering what they were likely to learn, the Americans found a better problem to solve.⁴”

⁴ For more on the subject of a learning worldview, see Appendix A.”

was changed to the following footnote appended to the end of the second to last paragraph:

⁴ This lesson about the great value of learning-by-doing deserves a second example. In 1991, the Japanese began broadcasting analog high definition television. The same year, the Americans chose digital over analog for their standard. Although digital was much more costly, the Americans saw that the cost of digital was falling much faster. By considering what they were likely to learn, the Americans found a better problem to solve. For more on the subject of learning, see Appendix A.”

Chapter 1, Excellence in Living, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Excellence in Living

Economists commonly use the term ‘rational’ to describe people who satisfy their wants efficiently. In contrast, we commonly use the term ‘wise’ to describe people who are not only efficient in satisfying their wants but also wise in choosing them. Choosing an analog television standard in 1991 was “rational.” Choosing a digital standard was wise.

“Choosing the right problem to solve is as important as choosing the right solution to a given problem. People who seek to live wisely divide the concept of *excellence in means* into two parts. The first is *effectiveness*, which they define as excellence in choosing subordinate ends. The second is *efficiency*, which they define as excellence in choosing means to subordinate ends. This pair of concepts helps them to divide the problem of how best to pursue their ultimate ends into easier to solve problems without losing sight of their ultimate ends.⁵

“We can apply this pair of concepts to the open-ended problem of how best to live well.⁶ This calls for distinguishing between timeless (normative) and temporal ends.⁷ Timeless ends are goals that concern processes. Temporal ends are goals that concern events. Playing basketball well is a timeless end. Winning a basketball game is a temporal end. The difference between a timeless end and a temporal end is the difference between heading in a direction and arriving at a destination.

“We can define *effectiveness in living* to be excellence in choosing temporal ends and *efficiency in living* to be excellence in choosing means to temporal ends. This pair of concepts helps us to divide the problem of how best to live well into temporal problems without losing sight of the timeless end of living well.

“We can use this insight to help us to live well. We do so by using timeless tools (concepts, models, etc.) to help us to identify what we are likely to need in our quest to live well and temporal tools to help us to make the most of what we have. We owe it to ourselves to plan our lives using timeless tools and work our plans using temporal ones. In military terms, timeless tools are strategic and temporal tools are tactical. We owe it to ourselves to plan our lives using strategic tools and work our plans using tactical ones.”

⁵ The distinction between managerial efficiency and effectiveness depends on the scale of the subordinate problem. What is a matter of efficiency at one problem scale is a matter of effectiveness at another. Imagine a hierarchical organization that defines the scale of subordinate problems in terms of each member’s freedom to decide. What would be a matter of efficiency at a high level in the organization would be a matter of effectiveness at a lower level. *Failure to define a problem scale can cause great confusion.*”

⁶ Living well is the timeless end of living a fully human life. For more on what it is to live a fully human life, see Chapter 2 and Appendix B.”

⁷ Adler, Mortimer, *Ten Philosophical Mistakes*, (New York, Macmillan, 1985), 137.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Understanding the difference between the RTS and EOQ concepts of excellence in means calls for understanding the difference between timeless (normative) and temporal ends.⁵ Timeless ends are goals that concern processes. Temporal ends are goals that concern events. Playing basketball well is a timeless end. Winning a basketball game is a temporal end. The difference between a timeless end and a temporal end is the difference between heading in a direction and arriving at a destination.

“The EOQ model aims at the temporal end is producing what we currently need to produce well. We base excellence in means on solely on what we currently know. Because we do not care about what happens in the future, we do not care about what we might learn by doing. This concept of excellence provides us with a finite problem that we can get our minds around, that is, a problem that is tractable, rational, and reasonable. Economists call people who act according to this concept of excellence “rational.”

“In contrast, the RTS model aims at the timeless end of producing well. We base excellence in means on both what we know and what we may learn. Because we care about what happens in the future, we care about what we might learn by doing. This concept of excellence opens our eyes to the possibility of replacing non-knowledge resources with knowledge resources in the pursuit of timeless ends. We commonly call people who act according to this concept of excellence “wise.”

“People who understand how best to act “wisely” divide the concept of *excellence in means* into two parts. The first is *effectiveness*, which they define as excellence in choosing temporal problems to solve. The second is *efficiency*, which they define as excellence in solving temporal problems. This pair of concepts helps them to divide infinitely large problems into finite problems well.⁶”

⁵ Adler, Mortimer, *Ten Philosophical Mistakes*, (New York, Macmillan, 1985), 137.”

⁶ The distinction between managerial efficiency and effectiveness depends on the scale of the subordinate problem. What is a matter of efficiency at one problem scale is a matter of effectiveness at another. Imagine a hierarchical organization that defines the scale of subordinate problems in terms of each member’s freedom to decide. What would be a matter of efficiency at a high level in the organization would be a matter of effectiveness at a lower level. *Failure to define a problem scale can cause great confusion.*”

Chapter 1, A Timeless Model for Living Well, title

Changed “Living” to “Deciding.”

Chapter 1, A Timeless Model for Deciding Well

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We seek to live well by deciding well. Ideally, deciding includes (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) implementing the chosen alternative; and (6) learning from the experience. Practically, we balance the costs and benefits of deciding. Most of our decisions are too small to justify all of these steps.

“From the timeless view, we find problems to solve using tools based on determining the truth about living well. This prevents us from being blinded to the possibility of learning, that is, the possibility of replacing knowledge for non-knowledge resources in living well. This is the essence of deciding wisely as opposed to deciding rationally.

“Deciding wisely as defined here does not mean that the process of deciding was perfect. It only means that we use timeless tools to help us to find problems to solve and temporal tools to help us solve chosen problems. We make mistakes. If we are wise, we learn from our mistakes. If we are wise, waste is a regrettable by-product of learning by doing.

“When we fail to decide perfectly, we embed mistakes into our markets, technologies, legal systems, languages, and cultures. The dot.com bubble, household lead paint, the Versailles Treaty, the concept of wealth as precious metal coins and bullion, and countless forms of conspicuous consumption spring to mind. We muddle through a tangle of past mistakes.

“We can escape many past mistakes and avoid many new ones by improving the factors of deciding wisely. Three of these factors are especially useful in knowledge economies. The first is the knowledge of how to decide wisely, which we commonly call practical wisdom. Practical wisdom includes both timeless tools to help us choose temporal ends and temporal tools to help us choose means to these ends. The second is trust, which includes trust in our predictions about what governments will do, hence the rule of law. The third is the freedom to decide wisely, which includes rights to property. In our quest to decide wisely, practical wisdom, trust, and freedom are strategic assets.”

was changed to:

“The formal process of deciding consists of (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) implementing the chosen alternative; and (6) learning from the experience. Deciding well is a matter of performing these steps well, which includes balancing the cost and benefits of each step. Few decisions justify all of these steps.

“From the timeless view, deciding well is a matter of finding a problem to solve based on a timeless end. Deciding well does not mean that the process of deciding is perfect. We make mistakes. If we are wise, we learn from our mistakes. If we are wise, waste is a regrettable by-product of learning-by-doing.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“When we fail to decide perfectly, we embed mistakes into our markets, technologies, legal systems, languages, and cultures. The dot.com bubble, household lead paint, the Versailles Treaty, the concept of wealth as precious metal coins and bullion, and countless forms of conspicuous consumption spring to mind. We muddle through a tangle of past mistakes.

“We can escape many past mistakes and avoid many new ones by improving the factors of deciding **well**. Three of these factors are especially useful in knowledge economies. The first is the knowledge of how to decide **well**, which we commonly call practical wisdom. Practical wisdom includes both timeless tools to help us choose temporal ends and temporal tools to help us choose means to these ends. The second is trust, which includes trust in our predictions about what governments will do, hence the rule of law. The third is the freedom to decide **well**, which includes rights to property. In **the timeless pursuit of deciding well**, practical wisdom, trust, and freedom are strategic assets.”

Chapter 2, title

Changed the title from “**Timeless Concepts**” to “**Living Well**.”

Chapter 2, Introduction, first paragraph

“The first chapter **explained how we can make the most of what we know by planning our lives using timeless concepts and working our plans using temporal ones. This chapter puts forth** timeless alternatives to the modern economic concepts of wealth, consumption, trade, production, and profit.”

was changed to:

“**In the first chapter, we distinguished between the temporal concept of deciding well and the timeless concept of deciding well. In this chapter, we apply the timeless concept of deciding well to the timeless problem of living well.**

“**Deciding to live well is a matter of using timeless tools (concepts, models, etc.) to help us to find temporal problems to solve and temporal tools to help us to solve these problems. We owe it to ourselves to plan our lives using timeless tools and work our plans using temporal ones. In military terms, we ought to plan our lives using strategic tools and work our plans using tactical ones.**

“**Modern economics provides us with the temporal tools we need to help us to solve given problems. The balance of this chapter provides us with** timeless alternatives to the modern economic concepts of wealth, consumption, trade, production, and profit.”

Chapter 2, *Practical Wisdom*, last paragraph

Changed “**Acting wisely**” to “**Deciding well**” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, *Two Means of Living Well*, second paragraph

Changed “**deciding wisely**” to “**living well**” in the first sentence.

Chapter 2, *Alternatives to Living Well*, third paragraph

Changed “**wisely**” to “**well**” in the fourth sentence.

Chapter 2, *Three Mistakes*, second paragraph

Changed “**wisely**” to “**well**” in the first sentence.

Chapter 2, *Production*, first paragraph

Changed “deciding wisely” to “**the timeless concept of deciding well**” in the last sentence.

Chapter 2, *Profit*, first paragraph

Changed “deciding wisely” to “**the timeless concept of deciding well**” in the second sentence.

Chapter 3, *Refining Practical Stories*, third paragraph, last two sentences

“As intelligent beings, we **owe it to ourselves to use our intellect to live well, to live wisely. We live wisely** by deciding **wisely**.”

were changed to:

“As intelligent beings, we live well by deciding **well**.”

Combined this with the fourth paragraph.

Chapter 3

Changed “deciding **wisely**” to “deciding **well**” in the entire chapter (31 occurrences).

Changed “decide **wisely**” to “decide **well**” in the entire chapter (10 occurrences).

Changed “live **wisely**” to “live **well**” in the entire chapter (3 occurrences).

Chapter 3, *Introduction*, first paragraph

“In the first chapter, we saw how the **distinction between the timeless and the temporal** can help us to **live** well. In this chapter, we will see how this **distinction** can help us to **believe** well.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“In the first **two** chapters, we saw how the **concept of a timeless end** can help us to **pursue the timeless ends of deciding well and living well**. In this chapter, we will see how this **concept** can help us to **pursue the timeless end of believing well**.”

Chapter 3, Introduction, twelfth paragraph

Changed “deciding well” to “**the timeless end of deciding well**” in the second sentence.

Chapter 3, Introduction, thirteenth paragraph

Changed “deciding well” to “**timeless end** of deciding well” in the last sentence.

Chapter 3, Refining Practical Wisdom, second paragraph

Changed “**acted wisely**” to “**decided well**” in the first sentence.

Changed “**act wisely**” to “**decide well**” in the last sentence.

Chapter 3, Refining Practical Wisdom, third paragraph

Changed “**live**” to “**decide**” in the first sentence.

Chapter 3, *Refining Practical Stories*, new fifth paragraph

Changed “**If we accept the timeless concept of science as a process**” to “**From the timeless view**” in the first sentence.

Chapter 3, *Refining Practical Stories*, new fifth paragraph, first sentence, footnote

Changed “**wisely**” to “**well**” in all (3 occurrences).

Added “**For more on the subject of human needs, see Appendix B.**” at the end of the footnote.

Chapter 3, *Refining Practical Stories*, new sixth paragraph

Changed “**owe it to ourselves**” to “**ought**” in the first sentence.

Chapter 3, *Refining Practical Stories*, new seventh paragraph

Changed “**owe it to ourselves**” to “**ought**” in the first sentence.

Changed “**deciding well** is not the same thing as **acting efficiently**” to “**acting efficiently** is not the same thing as **deciding well**” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Moved the last sentence to the end of the new eighth paragraph. Moved its footnote to the end of the second sentence in the new eighth paragraph.

Chapter 3, *Refining Practical Stories*, new eighth paragraph

Changed “deciding well and acting efficiently” to “acting efficiently and deciding well” in the first sentence.

Chapter 3, *Refining Practical Stories*, new ninth paragraph

“At first glance, this argument does nothing more than to return us back to our starting point of pursuing Justice by deciding wisely. It does much more than this. It tells us to weed out any story about Justice that is based on the concept of efficiency. Less obvious, it tells us to weed out any story about Justice based on any temporal concept. This includes any story based on sustaining a good society. Deciding well, which is to say revering life, is much more than sustaining a good society. Consider what our lives would be like today if all previous generations of humans aspired to nothing more than sustaining a good society. We are morally obliged to leave the caves of our ancestors.”

was changed to:

“We ought to weed out any story about Justice based on any temporal concept of excellence in means. Further, we ought to weed out all other temporal stories about Justice. This includes all stories based on the temporal concept of sustaining a good society. Consider what our lives would be like today if all previous generations of humans aspired to nothing more than sustaining a good society. Deciding well calls for us to leave the caves of our ancestors.”

Chapter 3, *Deciding Well*, title

Changed title to “*Understanding Our Failures*.”

Chapter 3, *Understanding Our Failures*, first paragraph

“Deciding well is an ideal that we almost never achieve. It calls for us to choose our temporal end well and then choose the means to this end well. In other words, it calls for us to find the best problem to solve and then to solve this problem using the least costly resources.”

was deleted.

Chapter 3, *A Crude Look at the Whole*, first paragraph

Changed “more wisely” to “better” in the first, second, and third sentences.

Chapter 4, Introduction, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The first chapter of this work introduced a strategy for learning to decide wisely. The second chapter introduced timeless concepts based on this strategy. The third chapter applied these intellectual tools to the problem of believing well. This chapter applies these tools to the problem of governing well.”

was changed to:

“In the first three chapters, we saw how the concept of a timeless end can help us to pursue the timeless ends of deciding well, living well, and believing well. In this chapter, we will see how this concept can help us to pursue the timeless end of governing well.”

Chapter 4, *The Sovereign Story of Timeless Science*, title

Changed the title to “*The Timeless Sovereign Story*.”

Chapter 4, *The Timeless Sovereign Story*, second paragraph

“Timeless science provides us with a simple and straightforward answer to this question. Government ought to conform to timeless science. Government of, by, and for intelligent life ought to be based on the research program of, by, and for intelligent life.”

was changed to:

“From the timeless view, the answer is simple and straightforward. Government of, by, and for intelligent life ought to be based on the research program of, by, and for intelligent life. The timeless end of governing well, which is to say the timeless end of pursuing Justice, is part of the timeless end of deciding well.”

Chapter 4, *The Timeless Sovereign Story*, third paragraph

Changed “timeless science” to “the timeless end of deciding well” in the first sentence.

Changed “wisely” to “well” in the second and last sentences.

Chapter 4, *The Timeless Sovereign Story*, third paragraph, footnote

Changed “sovereign story of timeless science is simply a” to “timeless sovereign story is simply the” in the first sentence.

Changed “Timeless science” to “The timeless sovereign story” in the third sentence.

Chapter 4, *The Timeless Sovereign Story*, fourth paragraph

Changed “timeless ideal” to “timeless end of a good life for all” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Economic Policy, first paragraph

Changed “**decision-oriented view of timeless science**” to “**timeless view**” and “**deciding wisely**” to “**deciding well**” in the first sentence.

Changed **deciding wisely**” to “**deciding well**” in the second sentence.

Changed “**governing free people wisely**” to “**governing free people well**” in the last sentence.

Chapter 4, *Control the Money Supply Passively*, third paragraph

Changed “**wisely**” to “**well**” in the first and fifth sentences.

Chapter 4, *Promote Practical Wisdom*, third paragraph

Changed “**wisely**” to “**well**” in the first sentence.

Changed “**wisely**” to “**even better**” in the third sentence.

Chapter 4, *Promote Savings for Welfare*, first paragraph

Changed “**wisely**” to “**well**” in the first sentence.

Chapter 4, *Promote Savings for Welfare*, second paragraph

Changed “**wisely**” to “**well**” in the first, second, and fourth sentences.

Changed “**wisely**” to “**better**” in the last sentence.

Chapter 4, *Promote Savings for Welfare*, third paragraph

Changed “**wisely**” to “**well**” in all (4 occurrences).

Chapter 4, *Promote Savings for Welfare*, last paragraph

Changed “**wisely**” to “**better**” in the last sentence.

Chapter 4, Choosing Governments, first paragraph

Changed “**Governing**” to “**From the timeless view, governing**” and “**deciding wisely**” to “**deciding well**” in the first sentence.

Afterword, first paragraph

Changed “**wisely**” to “**well**” in the third and fourth sentences.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Afterword, second paragraph

Changed “wisely” to “well” in the first sentence.

Appendix A, title

Changed the title from “A Learning Worldview” to “Learning Well.”

Appendix A, first paragraph

Changed “a learning worldview” to “a timeless view of learning” in the last sentence.

Appendix A, second paragraph

Changed “a learning worldview” to “a timeless view of learning” in the first sentence.

Changed “learning point of view” to “timeless view” and “non-learning one” to “temporal one” in the second sentence.

Appendix B, title

Changed the title from “Reverence for Life” to “Revering Life Well.”

Appendix B, Human Needs, last paragraph

Changed “wisely” to “rightly” in the last sentence.

Appendix B, Schweitzer’s Universal Spiritual Need, fourth paragraph, second sentence, footnote

Changed “living wisely” to “deciding well” in the last sentence.

Appendix B, Heroic Death, second paragraph

Changed “wisely” to “well” in the first sentence.

Appendix B, Conclusion, first paragraph

Changed “living wisely” to “deciding well” in the fourth and seventh sentences.

Appendix B, Conclusion, first paragraph

Changed “revering life” to “revering life well” in the last sentence.

Appendix C, title

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed the title from “**Ever Leaner Production**” to “**Producing Well.**”

Appendix C, A Finer Timeless Model, first paragraph

Changed “Producing **wisely**” to “**The timeless process of producing well**” in the first sentence.

Appendix C, *Smoothing Flows*, third paragraph

Changed “Satisfying customers **ever more wisely**” to “Satisfying customer **needs ever better**” in the first sentence.

Appendix C, Temporal Details, first paragraph

Changed “produce **wisely**” to “**producing well, which is to say ever more leanly,**” in the first sentence.

Appendix C, *Machine Tools*, second paragraph

Changed “**timeless end** is **efficient** production” to “**goal is efficient** production” in the second sentence.

Changed “**timeless end** is **wise** production” to “**goal is wise (efficient and effective)** production” in the fourth sentence.

Appendix C, Summary, first paragraph, first two sentences

“**Traditional** production systems aim at producing **efficiently**. The Toyota system aims at producing **ever more wisely.**”

was changed to:

“**Modern** production systems aim at **the temporal end of** producing well. The Toyota system aims at **the timeless end of** producing well.”

Changed “**ever more wisely**” to “**wisely, which is to say ever more leanly**” in the second sentence.

Appendix D, title

Changed the title from “**National Income Accounting**” to “**Accounting Well.**”

Appendix D, second paragraph

Changed “living **wisely**” to “living **well**” in the first and third sentences.

Changes in Version 2008.01.31

Chapter 1, A Timeless Model for Deciding Well, third paragraph

Changed “embed mistakes” to “embed mistakes **into our stocks of knowledge in use, that is,**” in the first sentence.

Chapter 2, Introduction, first paragraph

Changed “timeless **problem**” to “timeless **end**” in the last sentence.

Chapter 2, Consumption, first paragraph

Changed “**people who make the best use of what they know**” to “**deciding well**” in the third sentence.

Chapter 2, Production, first paragraph

“As the RTS example showed, **p**roduction processes produce both products for sale and knowledge of how to build products for sale. **Producing well calls for the timeless concept of deciding well.**”

was changed to:

“As the RTS example showed, **producing well calls for learning-by-doing.** Production processes **ought to** produce both products for sale and knowledge of how **better** to build products for sale.”

Chapter 2, Profit, first paragraph

“**Profit** is the expected return on knowledge of how to decide well.⁵ **Deciding well calls for the timeless concept of deciding well.** We **owe it to ourselves** to be entrepreneurs in the business of life.”

was changed to:

“**Timeless profit** is the expected return on **practical wisdom**, the knowledge of how to decide well.⁵ **From the timeless view, the business of life is living well. We live well by deciding well. Deciding well calls for learning-by-doing.** We **ought** to be entrepreneurs in the business of life.”

Chapter 2, Profit, first paragraph, footnote

Changed “timeless concept” to “timeless concept **of profit**” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, Introduction, all

Changed “transcendent” to “unbounded” in all (11 occurrences). Changed “a” to “an” where appropriate.

Chapter 3, Introduction, fourth paragraph, footnote

Changed “statement” to “belief” in the third sentence.

Chapter 3, Introduction, ninth paragraph

Changed “practical problem” to “temporal problem” in the first sentence.

Chapter 3, Introduction, sixteenth paragraph

Changed “this timeless end of a good life for all” to “this timeless end” in the last sentence.

Chapter 3, Introduction, last paragraph

Changed “knowledge” to “useful knowledge” in the last sentence.

Chapter 3, *The Elephant in the Room*, first paragraph, end

Added the sentence:

“In philosophical terms, it concerns the relation between transcendent factors and transcendental values.”

Chapter 3, Refining Everyday Thinking, seventh paragraph, first footnote

Added the phrase “at helping us to find problems to solve” to the end of the last sentence.

Chapter 3, Refining Practical Wisdom, first paragraph

“The need for this timeless concept of science is especially pressing in the field of economics. We predict what happens in economies based on the knowledge that economic agents use. If we explain what happens in economies based on the knowledge that economic agents use, we will tend to blind ourselves to the possibility of learning. To avoid this, we need to explain what happens in economies based on how we should act if we had greater knowledge of what it is that we ought to do.”

was deleted

Chapter 3, Refining Practical Wisdom, new first paragraph, end

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Added the sentence: “Failing to do so will tend to blind us to the possibility of learning.”

Chapter 3, *Refining Practical Stories*, second paragraph, last sentence

Changed “owe it to ourselves” to “ought” in the first sentence.

Chapter 3, *Refining Practical Stories*, second paragraph

Changed “owe it to ourselves” to “ought” in the first sentence.

Changed the last sentence from italics to normal.

Chapter 3, *Refining Practical Stories*, sixth paragraph

Changed “pursue the Good” to “decide well” in the last sentence.

Chapter 3, *Refining Practical Stories*, eighth paragraph, footnote

Changed “state of affairs” to “state of the world” in the first sentence.

Chapter 3, Recursive Failures, first paragraph, footnote

Changed “both the truth and the good” to “the unbounded factors of deciding well” in the first sentence.

Chapter 3, *A Tale of Two Revolutions*, last paragraph

Changed “economic science” to “economics” in the last sentence.

Chapter 4, Sovereignty, last paragraph

Changed “claims of goodness” to “claims” in the first, second, and last sentences.

Chapter 4, *The Explicit Experiment*, second paragraph

Changed “In effect, Franklin was stating,” to “From the timeless view, this sovereign rights story reads,” in the last sentence.

Chapter 4, *The Timeless Sovereign Story*, second paragraph

Changed “If not” to “If it is not wise to protect these beliefs” in the second sentence.

Chapter 4, *The Timeless Sovereign Story*, third paragraph

“From the timeless view, the answer is simple and straightforward. Government of, by, and for intelligent life ought to be based on the research program of, by, and for

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

intelligent life. The timeless end of governing well, which is to say the timeless end of pursuing Justice, is part of the timeless end of deciding well.”

was deleted.

Chapter 4, *The Timeless Sovereign Story*, new third paragraph

Changed “simple” to “simple and straightforward” in the second sentence.

Chapter 4, *Judge Interventions*, second paragraph

Changed “producers” to “local farmers” in the sixth sentence.

Chapter 4, *Promote Savings for Welfare*, first paragraph

“If we were perfectly wise, there would be no need for governments to force us to decide well. Regrettably, we are not perfectly wise. Some of us earn our incomes helping others to decide foolishly. All of us spend at least some of our incomes foolishly. None of us is perfectly wise.”

was deleted.

Chapter 4, *Promote Savings for Welfare*

Changed “to learn to decide well” to “decide well” in all (7 occurrences).

Chapter 4, *Promote Savings for Welfare*, last paragraph

Changed “progressive” to “highly progressive” in the first sentence.

Changed “acquire practical wisdom” to “decide well” in the second sentence.

Changed “learn to decide better” to “decide well” in the last sentence.

Added the following footnote to the end of the last sentence:

“¹⁶ From the timeless view of deciding well, we owe a debt to those who created the knowledge that we use at no cost. From the temporal view of modern economics, our interest in how others choose to live is external to the problem of how best to allocate scarce resources. The modern economic solution to this externality problem involves making all information about how we choose to live our lives freely available to everyone else. Compared to the loss of all privacy, a universal welfare savings plan and highly progressive taxation does not look so onerous.”

Appendix A, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “learning” to “deciding well” in the last sentence.

Appendix A, second paragraph

Changed “learning” to “deciding well” in the first sentence.

Changes in Version 2008.02.02

Preface, first paragraph

Changed “twenty-nine” to “thirty” in the first sentence.

Preface, second paragraph

Changed “just as the economic order quantity (EOQ) model would later lead me astray by blinding me to the possibility of learning” to “by boxing me in assumptions” in the fourth sentence.

Preface, third paragraph

Changed “a means of defining practical wisdom” to “such a means” in the last sentence.

Preface, fifth paragraph

Changed “all three concepts are synonyms for” to “these three concepts mean the same thing, which is” in the second sentence.

Changed “greater” to “infinitely greater” in the third sentence.

Changed “fully human lives” to “well” in the last sentence.

Added the sentence: “We ought to distinguish between theology, religion, and faith.”

Preface, sixth paragraph

Deleted “, including scientific ones,” in the second sentence.

Preface, eighth paragraph

“We solve infinitely large problems by finding processes that, when applied recursively (repeatedly with the output of one cycle becoming the input of the next cycle), move us ever closer to the solution. To solve the problem of determining the number pi, we find processes that, when applied recursively, move us ever closer to determining pi. To

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

solve the infinitely large problem of refining our beliefs, we find processes that, when applied recursively, move us ever closer to determining the truth.”

was changed to:

“We can solve infinitely large problems by finding recursive processes that move us ever closer to the solution. A recursive process is a finite process that we apply repeatedly so that the results of one cycle become the conditions for the next. To solve the problem of determining the transcendental number pi, we find a recursive process that moves us ever closer to determining pi. Similarly, to solve the infinitely large problem of refining our beliefs, we find a recursive processes that moves us ever closer to determining the truth.”

Preface, ninth paragraph

Changed “move” to “can move” in the first sentence.

Changed “process” to “recursive process” in the second sentence.

Preface, tenth paragraph, second sentence

“In making this claim, they confuse the tactical problem of seeking the truth given what we currently know and the tactical problem of seeking the good given what we currently know with the strategic problem of seeking both the truth and the good.”

was changed to:

“In making this claim, they confuse the temporal problem of seeking the truth and the temporal problem of seeking the good with the timeless problem of seeking both the truth and the good.”

Preface, last paragraph

Deleted “concept of deciding well” in the second sentence (2 occurrences).

Changed “the temporal and the timeless” to “temporal and timeless tools” in the second sentence.

Chapter 1, Excellence in Means, third paragraph, first two sentences

“Whether those who use the EOQ model recognize it or not, they assume that we do not learn through experience. This assumption tends to be self-fulfilling.”

was changed to:

“The assumption that we do not learn through experience tends to be self-fulfilling.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Excellence in Means, fourth paragraph

Changed “an expected learning curve, a mathematical function” to “a mathematical function” in the first sentence.

Added the following footnote to the fourth sentence:

“⁴ Engineers and economists call this mathematical function an expected learning curve. They typically assume that doubling experience drops the cost per unit by some fixed percentage. The greater a team’s ability to learn, the greater this percentage ought to be.”

Chapter 1, Excellence in Means, fifth paragraph

Changed “short setup times call for much smaller investments” to “short setups yield savings” in the third sentence.

Changed “short setup times” to “short setups” in the fourth sentence.

Chapter 1, Excellence in Means, eighth paragraph

Changed “This” to “The Toyota” and “processes” to “production processes” in the first sentence.

Chapter 1, Excellence in Means, last paragraph

“People who understand how best to act “wisely” divide the concept of *excellence in means* into two parts. The first is *effectiveness*, which they define as excellence in choosing temporal problems to solve. The second is *efficiency*, which they define as excellence in solving temporal problems. This pair of concepts helps the “wise” to divide infinitely large problems into finite problems well.”

was moved to the third paragraph of the next section and changed to:

“We decide well by dividing the concept of *excellence in means* into two parts. The first is *effectiveness*, which we define as excellence in choosing temporal problems to solve. The second is *efficiency*, which we define as excellence in solving temporal problems. This pair of concepts helps us to find and solve problems well.”

Chapter 1, A Timeless Model of Deciding Well, title

Changed title to “Two Views of Deciding Well.”

Chapter 1, Two Views of Deciding Well, first two paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The formal process of deciding consists of (1) finding a problem to solve; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) implementing the chosen alternative; and (6) learning from the experience. Deciding well is a matter of performing these steps well, which includes balancing the cost and benefits of each step. Few decisions justify all of these steps.

“From the timeless view, deciding well is a matter of finding a problem to solve based on a timeless end. Deciding well does not mean that the process of deciding is perfect. We make mistakes. If we are wise, we learn from our mistakes. If we are wise, waste is a regrettable by-product of learning-by-doing.”

were changed to:

“From the temporal view, the formal process of deciding consists of (1) formulating alternatives; (2) evaluating alternatives; (3) choosing an alternative; and (4) implementing the chosen alternative. The process of deciding well is a matter of performing these formal steps well, which includes balancing the cost and benefits of each step. Few decisions justify all of these formal steps.

“From the timeless view, the formal process of deciding is ever-repeating cycle of (1) finding a problem to solve based on the timeless end; (2) formulating alternatives; (3) evaluating alternatives; (4) choosing an alternative; (5) implementing the chosen alternative; and (6) learning from the experience. The process of deciding well is a matter of performing these formal steps well, which includes balancing the cost and benefits of each step. Few decisions justify all of these formal steps. To decide well is not to decide perfectly. We make mistakes. We learn from our mistakes. Waste is a regrettable by-product of learning-by-doing.”

Chapter 2, Introduction, first paragraph

“In the first chapter, we distinguished between the temporal concept of deciding well and the timeless concept of deciding well. In this chapter, we apply the timeless concept of deciding well to the timeless end of living well.”

was changed to:

“In the first chapter, we saw how the timeless concept of deciding well can help us to pursue the timeless end of deciding well. In this chapter, we will see how this concept can help us to pursue the timeless end of living well.”

Chapter 2, *Human Capital, Work, and Leisure*, second paragraph

Changed “timeless view” to “timeless view of living well” in the first sentence.

Chapter 3, Introduction, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “concept of a timeless end” to “timeless concept of deciding well” in the first sentence.

Chapter 3, Introduction, third paragraph

Changed “established empirical facts may be overturned by a single unexpected event” to “unexpected events may overturn established empirical facts” in the first sentence.

Changed “new birds were reclassified into the genus *atratus* did the Europeans need” to “the Europeans reclassified the new birds into the genus *atratus* that they needed” in the first sentence.

Chapter 3, Introduction, eighth paragraph

Changed “timeless view” to “timeless view of deciding well” in the first sentence.

Chapter 3, *Refining Practical Stories*, fifth paragraph

Changed “timeless view” to “timeless view of deciding well” in the first sentence.

Chapter 4, Introduction, first paragraph

Changed “concept of a timeless end” to “timeless concept of deciding well” in the first sentence.

Chapter 4, Sovereignty, third paragraph

Deleted the second sentence: “This belief arises from the beliefs that the basis for the rights is good and that the rights will be exercised well.”

Changed “sovereign, that is, with the general beliefs that the basis for the rights is good and that the rights will be exercised well” was changed to: “holder of the sovereign rights” in the last sentence.

Chapter 4, *The Timeless Sovereign Story*, title

Changed the title to “*The Sovereign Story of Deciding Well*.”

Chapter 4, *The Timeless Sovereign Story*, second paragraph, footnote

Changed “timeless sovereign story” to “sovereign story of deciding well” in the first and second sentences.

Chapter 4, *The Explicit Experiment*, second paragraph

Changed “timeless view” to “timeless view of deciding well” in the fifth sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Economic Policy, first paragraph

Changed “timeless view” to “timeless view of deciding well” in the first sentence.

Chapter 4, *Control the Money Supply Passively*, first paragraph

Changed “learn how to decide” to “decide” in the first sentence.

Changed “learning how to deciding” to “deciding” in the fifth sentence.

Chapter 4, *Promote Practical Wisdom*, first paragraph

Changed “even better” back to “better” in the third sentence.

Chapter 4, Choosing Governments, first paragraph

Changed “unfair” back to “unjust” in the third sentence.

Afterword, second paragraph

Deleted “(“a God’s eye view of the Universe”)” from the last sentence.

Afterword, third paragraph

“I also believe that progress creates stress. A government that seeks to protect its people from stress by retarding progress is unfair to its people, other societies, future generations, and other species. All who seek to limit freedom in order to reduce stress ought to remember Benjamin Franklin’s rebuke that those who would give up essential liberty to purchase a little temporary safety deserve neither liberty nor safety.”

was changed to:

“I also believe that progress creates stress. A government that seeks to protect its people from stress by retarding progress is unjust. It robs its people, other people, and other species of a better future. All who seek to limit freedom in order to reduce stress ought to remember Benjamin Franklin’s rebuke to those who would give up essential liberty to purchase a little temporary safety — they deserve neither liberty nor safety.”

Appendix A, second paragraph

Changed “a timeless view” to “the timeless view of deciding well” in the third sentence.

Changed “a temporal one” to “the temporal view of modern economics” in the third sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2008.02.05

Entire document

Changed “**timeless** process” to “**endless** process” in all (4 occurrences).

Acknowledgments, last paragraph

Changed “**critiqued**” to “**reviewed**” in the first sentence.

Preface, fifth paragraph

Changed “**a fully human life**” to “**well**” in the third sentence.

Changed “transcendent” to “**transcendental**” in the fifth sentence.

Preface, sixth paragraph

Changed “**: what**” to “**. What**” in the first sentence.

Changed “transcendent” to “**transcendental**” in the fifth sentence.

Preface, twelfth paragraph, last sentence

“**They then use the right tools for the right job.**”

was deleted.

Preface, last paragraph

Changed “**problem**” to “**timeless end**” in the fourth, fifth, and last sentences.

Chapter 1, Excellence in Means, third paragraph, first sentence

“**The** assumption that we do not learn through experience tends to be self-fulfilling.”

was changed to:

“**The EOQ model contains the hidden** assumption that we do not learn through experience. This assumption **tends to be self-fulfilling.**”

Chapter 1, Excellence in Means, third paragraph

Changed “learning **how to set up tools ever more quickly**” to “learning” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Excellence in Means, fifth paragraph

Changed “the car industry” to “through industry” in the last sentence.

Chapter 1, Excellence in Means, eighth paragraph

Changed “Tightening” to “Slowly tightening” in the third sentence.

Chapter 1, Excellence in Means, second to last paragraph

Changed “get our minds around, that is, one that is tractable, rational, and reasonable” to “solve” in the fourth sentence.

Changed “according to this concept of excellence” to “in this way” in the last sentence.

Chapter 1, Excellence in Means, last paragraph

Changed “according to this concept of excellence” to “in this way” in the last sentence.

Chapter 3, Introduction, seventh paragraph, footnote

Changed “who confuse the religious with the theistic, this convention appears” to “this convention may appear” in the first sentence.

Chapter 3, Introduction, second to last paragraph

Changed “imperative” to “rule” and “debt that we owe to those from whom we have learned” to “debts we cannot pay to those due” in the first sentence.

Added the sentence “This includes the debts that we owe to those who provided us with the knowledge that we use freely.”

Chapter 3, *The Ring of Truth*, fourth paragraph, footnote, second two sentences

Changed “An activity that is too easy” to “Too easy an activity” and “an activity that is too hard” to “too hard an activity” in the second sentence.

Changed “an object that is too easy” to “too easy an object” and “an object that is too hard” to “too hard an object” in the second sentence.

Chapter 3, *The Ring of Truth*, last paragraph, footnote, second two sentences

“At issue is not the belief that that tastes tend to remain stable over time, which is useful in making predictions about how people will act, but rather the belief that tastes ought to remain stable over time. From the temporal view of logical positivism, this distinction is the difference between a positive statement and a normative one.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

were changed to:

“At issue is not the belief that that tastes tend to remain stable over time, but rather the belief that tastes ought to remain stable over time.”

Chapter 3, Refining Everyday Thinking, ninth paragraph

Changed “**the** caves **of our ancestors**” to “**our ancestral** caves” in the last sentence.

Chapter 3, Refining Everyday Thinking, last paragraph

Added the sentence “**Fixing this modern scheme of grouping disciplines takes three simple steps.**”

Changed “**step towards fixing this modern, temporal scheme would be**” to “**is**” in the new second sentence.

Changed “**would be**” to “**is**” in the new fourth sentence.

Changed “**would be**” to “**is**” in the new sixth sentence.

Changed “**academic** disciplines” to “disciplines” in the last sentence.

Chapter 3, Refining Practical Stories, seventh paragraph

Changed “**acting efficiently** is not the same thing as **deciding well**” to “**deciding well** is not the same thing as **acting efficiently**” in the last sentence.

Chapter 3, Refining Practical Stories, eighth paragraph

Changed “**the difference between acting efficiently and deciding wisely**” to “**this difference**” in the first sentence.

Changed “**ideal temporal** state of the world” to “state of the world” in the second sentence.

Changed “debt that we owe to those **from whom we have learned**” to “debts that we owe to those **who provided us with the knowledge that we use freely**” in the second sentence.

Chapter 3, Recursive Failures, second paragraph

Changed “**least costly**” to “**best**” in the fourth sentence.

Changed “ideal means **of living well**” to “ideal means” in the fifth sentence.

Changed “**ideal** means” to “means” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, *A Crude Look at the Whole*, last paragraph, footnote

Changed “**This**” to “**The**” in the first sentence.

Appended this footnote to the footnote at the end of the last paragraph of Computer Models.

Chapter 4, *The Explicit Experiment*, second paragraph

Changed “**it was Benjamin Franklin who**” to “Benjamin Franklin” in the third sentence.

Chapter 4, *The Explicit Experiment*, fourth paragraph

Changed passive voice to active voice in the fifth sentence.

Deleted the second sentence in the footnote: “**It is commonly known as the Gettysburg Address.**”

Chapter 4, *The Explicit Experiment*, last paragraph

“Both of these groups of true believers want the government to **promote** their beliefs about the good **rather than allow these beliefs to succeed or fail in the marketplace of ideas, which is to say that both want their beliefs about the good to be held as self-evident truths**. True believers in socialism want the government to administer social justice; true believers in theism want government to administer theistic justice. In effect, both groups **of true believers** want their means of linking or relinking with something greater than ourselves to be the state religion.”

was changed to:

“Both of these groups of true believers want the government to **act according to** their beliefs about the good. True believers in socialism want the government to administer social justice; true believers in theism want government to administer theistic justice. In effect, both groups want their means of linking or relinking with something greater than ourselves to be the state religion.”

Changed “**late 1917**” to “**1920**” in the fourth sentence of the footnote. (Passage in Senate versus effective date issue.)

Changed “**this amendment not been** repealed in **late**” to “**the voters** not repealed **this amendment** in” in the last sentence of the footnote.

Chapter 4, *The Sovereign Story of Deciding Well*, first paragraph

Changed “can **be tested**” to “**we** can test” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Afterword, first paragraph

Changed “**nine**” to “**ten**” in the first sentence.

Appendix A, first paragraph

Changed “timeless view **of deciding well**” back to “timeless view” in the last sentence.

Appendix A, second paragraph

Changed “timeless view **of deciding well**” back to “timeless view” in the third sentence.

Changed “temporal **view of modern economics**” back to “temporal **one**” in the third sentence.

Appendix B, The Practical Benefits of Mystical Oneness, title

Changed “**Mystical Oneness**” to “**Magical Mysticism**” in the title.

Appendix B, The Practical Benefits of Magical Mysticism, first paragraph

“Schweitzer embraced the practical benefit of ethical mysticism, which is its ability to promote the **universal moral rule (Kantian categorical imperative) of revering life. Unlike modern economics, this rule addresses the problem of what we owe to the people who created the knowledge that we use freely. According to this rule, the debt that we owe to those who helped us, including those who provided us with the useful knowledge that we use freely, we pay to others by revering life. In theory, this universal moral rule should aid the research program of, by, and for intelligent life better than any other universal moral rule.**”

was changed to:

“Schweitzer embraced the practical benefit of ethical mysticism, which is its ability to promote **reverence for life. However, he ignored the practical benefits of magical mysticism.**”

Appendix B, The Practical Benefits of Magical Mysticism, second paragraph, first sentence

“**Schweitzer ignored the practical benefits of magical mysticism.**”

was deleted.

Appendix B, The Practical Benefits of Magical Mysticism, eighth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**produces the illusion of being magically transported**” to “**seems to transport us**” in the second to last sentence.

Changes in Version 2008.02.07

Chapter 1, Excellence in Means, eleventh paragraph

Changed “**Economists**” to “**Modern economists**” in the last sentence.

Chapter 3, Introduction, fifteenth paragraph

Changed “**In thinking through theory**” to “**However**” in the fourth sentence.

Chapter 3, The Ring of Truth, second paragraph, last three sentences

“This **ancient** belief is **not consistent with the modern belief that beauty is the quality of objects whose contemplation yields pleasure, much less with the modern belief that beauty is in the eye of the beholder. However, it is** consistent with the timeless definitions of pleasure (pleasure-in-acting) and joy (pleasure-in-being) put forth in the second chapter. **From the timeless view, beauty is the defining quality of objects whose contemplation yields not only pleasure but also the joy that comes from improving our belief system.**”

were changed to:

“This belief is consistent with the timeless definitions of pleasure (pleasure-in-acting) and joy (pleasure-in-being) put forth in the second chapter: *beauty is the defining quality of objects whose contemplation yields not only pleasure but also the joy that comes from improving our belief system.*”

Chapter 3, The Ring of Truth, second to last paragraph

Changed “**governs**” to “**colors**” in the last sentence.

Chapter 3, The Ring of Truth, last paragraph

Changed “**find the Good**” to “**perceive the Truth**” in the second sentence.

Changed “**help us to decide well**” to “**enlighten us**” in the last sentence.

Chapter 3, A Tale of Two Revolutions, last paragraph

Changed “**science of practical wisdom**” to “**premier practical science**” in the last sentence.

Changes in Version 2008.02.12

Preface, third paragraph

Changed “*is the pursuit of*” to “*is the pursuit of*” in the third sentence.

Preface, eighth paragraph

Changed “timeless view of **deciding** well” and “timeless view of **believing** well” in the first sentence.

Preface, tenth paragraph

Deleted “(**philosophy and science**)” and “(**ethics, politics, and economics**)” in the first sentence.

Changed “**They**” and “**In failing to take the infinitely long view, they**” in the last sentence.

Preface, twelve paragraph

Changed “practical wisdom” and “practical wisdom **well**” in the second sentence.

Chapter 1, Excellence in Means, ninth paragraph, footnote, end

Added the sentence: “**For more on the Toyota production system, see Appendix C.**”

Chapter 2, Production, first paragraph

Changed “products **for sale**” to “products” in the last sentence (two occurrences).

Chapter 3, Introduction, third paragraph

Changed “**Hume’s**” to “**the**” in the first sentence.

Chapter 3, Introduction, fourth paragraph

Changed “**Under this genus**” to “**Hence**” in the fifth sentence.

Chapter 3, Introduction, fifth paragraph

Changed “**extraordinary**” to “**revolutionary**” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, Introduction, fifteenth paragraph

Changed “Hume’s” to “the” in the fifth sentence.

Chapter 3, Introduction, second to last paragraph

Changed “revering life” to “deciding well” in the third sentence.

Chapter 3, *The Ring of Truth*, last paragraph

Changed “It” to “Art” in the last sentence.

Chapter 3, *The Elephant in the Room*, second paragraph

Changed “is” to “is even more” in the first sentence.

Deleted the last two sentences: “In doing so, we deify the Truth and demonize the ignorance that hinders us. The devil lies in the temporal details.”

Moved paragraph to the third paragraph.

Chapter 3, *The Elephant in the Room*, new second paragraph

Changed “is nearly as” to “is” in the first sentence.

Added the sentence: “Deciding well and our understanding of deciding well co-evolve.”

Chapter 4, *The Explicit Experiment*, second paragraph

Changed “simple substitution” to “small edit” in the fourth sentence.

Changed “deciding well” to “timeless science” in the fifth sentence.

Chapter 4, *The Explicit Experiment*, fourth paragraph

Changed “free speech during the First World War” to “free speech” in the last sentence.

Chapter 4, *Lower Trade Barriers*, first paragraph

Changed “a wise vision of what we owe it to ourselves to do” to “the timeless concept of deciding well” in the third sentence.

Changed “wisdom” to “practical wisdom” in the third and fourth sentences.

Appendix A, first two paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Merged first two paragraphs.

Appendix B, Balanced Excellence, first paragraph

Changed “**Mystics of many faiths believe**” to “**Many dualistic religions claim**” in the first sentence.

Changed “**They believe that** a good life must include **the temporal end of**” to “**In short, a good life must include**” in the last sentence.

Appendix B, Balanced Excellence, second paragraph

Changed “**reverence for** life” to “**revering** life **well**” in the first sentence.

Changed “**one another**” to “**each** other” in the second sentence.

Appendix B, Balanced Excellence, last paragraph

Changed “**of pursuing**” to “**to**” in the first sentence.

Changed “to **economize on**” to “**in order to conserve**” in the first sentence.

Changed “**that serve** to check” to “to check” in the second sentence.

Appendix B, Atheism, first paragraph

Changed “**whole truth**” to “**Truth**” in the last sentence.

Appendix B, Atheism, last paragraph

Changed “**owe it to themselves**” to “**ought**” in the first sentence.

Appendix B, Atheism, last paragraph

Changed “**owe it to themselves**” to “**ought**” in the first sentence.

Changes in Version 2008.02.14

Preface, second to last paragraph, end

Added the sentence: “**To change the way that people decide is to change the way that they choose to live, choose to believe, and choose to govern and be governed.**”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Chapter 3, *The Ring of Truth*, last paragraph, last sentence

“Art ought to enlighten us.”

was changed back to:

“It ought to help us to decide well.”

Changes in Version 2008.02.16

Preface, third paragraph

Changed “scientists” to “we” in the second sentence.

Deleted the last sentence: “Because it is possible to define such a means, there can be a science of practical wisdom.”

Chapter 1, Excellence in Means, fifth paragraph

Changed “wise” to “best” in the first sentence.

Chapter 1, Two Views of Deciding Well, fourth paragraph

Added “scientific theories,” to the first sentence.

Added “the Ptolemaic theory of the solar system,” to the second sentence.

Chapter 2, *Practical Wisdom*, first paragraph

Changed “a good life” to “well” in the last sentence.

Chapter 3, Introduction, fifteen paragraph

Changed “wisely” to “well” in the first sentence.

Chapter 3, Refining Everyday Thinking, seventh paragraph, second sentence, footnote

“¹⁶ To confuse a scientific theory with the whole truth is to make the philosophical mistake of confirming the consequent. Formally, (1) if A is true, B is true; (2) B is true; therefore (3) A is true. For example, (1) if it rains, the ground is wet; (2) the ground is wet; therefore, (3) it rained. This bit of foolishness ignores dew, sprinkler systems, melting snow, and countless other things that make the ground wet. Testing the consequences of a theory does not test its assumptions.”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

was deleted.

Chapter 3, *Refining Practical Stories*, ninth paragraph

Changed “our ancestral caves” to “caves of our ancestors” in the last sentence.

Chapter 3, *Understanding Our Failures*, first paragraph

Changed “wise decision-making” to “deciding well” in the fifth sentence.

Afterword, first paragraph, last sentence

“I oppose people who (1) seek to use the power of the state to impose their plans on others; (2) seek to gain government favors that retard progress; (3) seek to maintain the current state of the world for its own sake; and (4) consider freedom to be an end in itself rather than a key factor in deciding well.”

was deleted.

Afterword, second paragraph

Changed “wiser” to “better” in the fifth sentence.

Appendix B, Introduction, first paragraph

Changed “a good life” to “well” in the last sentence.

Appendix B, Human Needs, first paragraph

Changed “a good life” to “well” in the second and third sentences.

Appendix B, Human Needs, second paragraph

Changed “a good life is a life spent” to “living well is living” in the second and third sentences.

Appendix B, Balanced Excellence, first paragraph

Changed “good life” to “life lived well” in the last sentence.

Appendix D, first paragraph

Changed “wiser” to “decide better” in the first sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2008.02.18

Entire Document

Checked and updated dates on Internet references (6 occurrences).

Preface, twelfth paragraph

“Most people decide based on what they know. In contrast, people who pursue practical wisdom well decide not only based on what they know but also on what they need to learn in order to decide ever better. They embrace their ignorance. To embrace their ignorance well, they distinguish between the intellectual tools that they use to find problems to solve and the intellectual tools that they use to solve given problems. In philosophical terms, they distinguish between the timeless and the temporal. In military terms, they distinguish between the strategic and the tactical. In scientific terms, they distinguish between explanations and predictions. In economic terms, they distinguish between effectiveness and efficiency.”

was deleted.

Preface, new twelfth paragraph

Changed “tools” to “ends” in the second sentence.

Changed “describe a strategy for improving the endless process of” to “apply this distinction to” in the third sentence.

Chapter 1, Excellence in Means, fifth paragraph

Changed “scrap far fewer” to “need to scrap fewer” in the fifth sentence.

Chapter 1, Two Views of Deciding Well, last paragraph

“We can escape many past mistakes and avoid many new ones by improving the factors of deciding well. Three of these factors are especially useful in knowledge economies. The first is the knowledge of how to decide well, which we commonly call practical wisdom. Practical wisdom includes both timeless tools to help us choose temporal ends and temporal tools to help us choose means to these ends. The second is trust, which includes trust in our predictions about what governments will do, hence the rule of law. The third is the freedom to decide well, which includes rights to property. In the endless pursuit of deciding well, practical wisdom, trust, and freedom are strategic assets.”

was deleted.

Chapter 2, Profit, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “Timeless profit” to “Profit” and “wisdom, the knowledge of how to decide well” to “wisdom” in the first sentence.

Deleted the second sentence “From the timeless view, the business of life is living well.”

Deleted the new third sentence “Deciding well calls for learning-by-doing.”

Chapter 3, Introduction, twelfth paragraph

“Consider the three factors listed at the end of the first chapter. Of these, only practical wisdom is an unbounded factor. We can never have too much knowledge of how to decide well. Freedom and trust are not unbounded factors.”

were changed to:

“The Good, the Truth, and Practical Wisdom are unbounded factors of deciding well. We need the Good to avoid deprivation, which hinders deciding well. We need the Truth to avoid ignorance, which also hinders deciding well. Practical Wisdom is knowledge of how to decide well. We can never have too much knowledge of how to decide well. In contrast, freedom and trust are bounded factors.”

Chapter 3, Introduction, thirteen and fourteenth paragraphs

“The second step is accepting the proposition that the process of deciding well is the same for all timeless ends that are unbounded factors of deciding well. This curious property arises from the self-similar nature of the timeless end of deciding well.

“The third step is to recognize that the endless pursuits of all of the unbounded factors of deciding well intertwine to form a single endless pursuit. Consider the relation between the pursuit of the Good and the pursuit of the Truth. The Good and the Truth are unbounded factors of deciding well. We need the Good to avoid deprivation, which hinders deciding well. We need the Truth to avoid ignorance, which also hinders deciding well. We pursue the Good by deciding well, which calls on us to pursue the Truth. We pursue the Truth by deciding well, which calls on us to pursue the Good. Hence, the pursuit of the Good and the pursuit of the Truth intertwine into a single pursuit.”

were changed to:

“The next step is to recognize that the process of deciding well is the same for all timeless ends that are unbounded factors of deciding well. Hence, the endless pursuits of all of the unbounded factors of deciding well intertwine to form a single endless pursuit. Consider the relation between the pursuit of the Good and the pursuit of the Truth. We pursue the Good by deciding well, which calls on us to pursue the Truth. We pursue the Truth by deciding well, which calls on us to pursue the Good. Thus, the pursuit of the Good and the pursuit of the Truth intertwine into a single pursuit”

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Chapter 3, Introduction, new fourteenth paragraph

Changed “a transcendent” to “an unbounded” in the first sentence.

Chapter 3, *The Ring of Truth*, thirteen paragraph

Changed “*defining quality*” to “*quality*” in the last sentence.

Chapter 3, *Refining Practical Stories*, fourth paragraph

Changed “timeless view of **this work**” to “timeless view of **deciding well**” in the third sentence.

Chapter 3, *Refining Practical Stories*, eighth paragraph, last sentence

“Deciding well calls for us to **progress towards the timeless ideal of a good life for all rather than the temporal ideal of a state of the world in which no one can be made better off without making someone else worse off.**”

was changed to:

“Deciding well calls for us to **learn by doing, not to act efficiently.**”

Chapter 3, *Refining Practical Stories*, ninth paragraph, last sentence

“**D**eciding well calls for us to leave the caves of our ancestors.”

was changed to:

“**A**gain, deciding well calls for us to **learn by doing. It calls for us** to leave the caves of our ancestors.”

Changes in Version 2008.02.20

Chapter 1, Two Means of Deciding Wisely, second paragraph

Changed “**decide well by dividing**” to “**divide**” in the first sentence.

Added the following sentence to the end of the footnote:

“**As we shall see in the third chapter, this self-similar property of the timeless concept of excellence in means gives rise to a surprising relation between the boundless factors of the timeless end of deciding well.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Moved paragraph to the second sentence of the last paragraph of the preceding section.

Inserted the following paragraph:

“When it is possible to do so, we use timeless tools to choose problems and temporal tools to solve these problems. We also use timeless tools to help us to identify the things we are likely to need in order to solve unexpected problems. In the endless pursuit of deciding well, these are strategic assets.”

Chapter 2, Trade, first paragraph, last sentence, footnote

Changed “The City, Wall Street, and the Chicago pits are slowly moving” to “This tends to happen as sectors move” in the last sentence.

Chapter 2, Trust, first paragraph

Changed “perform” to “act” in the last sentence.

Chapter 3

Changed “an unbounded” to “a boundless” in all (3 occurrences).

Changed “unbounded” to “boundless” in all (8 occurrences).

Chapter 3, Introduction, tenth paragraph, fourth and fifth sentences

“A less kind assessment is that it is little more than childish nihilism – the temper tantrum of people who are unwilling to accept believing well as a timeless end. A second less kind assessment that it is nothing more than a useful vehicle for special interests to maintain their special favors.”

were changed to:

“A less kind assessment is that it is childish nihilism, which is to say the temper tantrum of people who are unwilling to accept believing well as a timeless end. A second less kind assessment is that it is little more than a means for special interests to gain favors.”

Changed “nothing” to “little” in the fifth sentence.

Chapter 3, Introduction, twelfth paragraph, last three sentences

“In contrast, freedom and trust are bounded factors. We can have too much freedom, as is the case when a slave owner claims the freedom to own a slave. We can have too much trust, as is the case when a mark trusts a swindler.”

were deleted.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, Introduction, thirteenth paragraph

Changed “process” to “endless process” in the first sentence.

Chapter 3, A Crude Look at the Whole, second paragraph

Inserted the following paragraph:

“When it is possible, people will use timeless tools to choose problems and temporal tools to solve these problems. People also use timeless tools to help them to identify the things they are likely to need in order to solve unexpected problems. Chief among these are practical wisdom, trust, and freedom. Practical wisdom includes knowledge of both timeless and temporal tools. Trust includes the belief that governments will act as expected, hence the rule of law. Freedom includes rights to property. In the endless pursuit of deciding well, practical wisdom, trust, and freedom are strategic assets.”

Chapter 3, *A Tale of Two Revolutions*, title

Changed “*A Tale of Two Revolutions*” to “*A Tale of Revolutions.*”

Changes in Version 2008.02.22

Chapter 1, Excellence in Means, tenth paragraph, last five sentences

“Timeless ends are goals that concern processes. Temporal ends are goals that concern events. Playing basketball well is a timeless end. Winning a basketball game is a temporal end. The difference between a timeless end and a temporal end is the difference between heading in a direction and arriving at a destination.”

were changed back to:

“Temporal ends are goals that concern events. Timeless ends are goals that concern processes. Winning a basketball game is a temporal end. Playing basketball well is a timeless end. The difference between a temporal end and a timeless end is the difference between arriving at a destination and heading in a direction.”

Chapter 1, Excellence in Means, eleventh paragraph

Changed “is” to “of” in the first sentence.

Chapter 1, Two Means of Deciding Wisely, second paragraph, footnote, last sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“As we shall see in the third chapter, this self-similar **property of the timeless concept of excellence in means** gives rise to a surprising relation **between** the boundless factors of **the timeless end** of deciding well.”

was changed to:

“**In the language of mathematician Benoît Mandelbrot, the endless process of deciding well is fractal.** As we shall see in the third chapter, this self-similarity gives rise to a surprising relation **among** the boundless factors of deciding well.”

Chapter 1, Two Means of Deciding Wisely, third paragraph

Changed “**possible**” to “**practical**” in the first sentence.

Chapter 3, Introduction, fourteenth paragraph

Changed “**and our need to become part of something infinitely greater than ourselves thwart**” to “**thwarts**” in the last sentence.

Chapter 3, *The Elephant in the Room*, second paragraph, second and third sentences

“We evolved to have the need to seek to become a part of something infinitely greater than ourselves, which is useful in securing the best chances of survival for **ourselves and our offspring. From this religious impulse and our intellect emerged** crude means of deciding well.”

were changed to:

“We evolved to have the need to seek to become a part of something infinitely greater than ourselves, which is useful in securing the best chances of survival for our offspring **and ourselves. Crude means of deciding well emerged from this religious impulse.**”

Chapter 3, *The Elephant in the Room*, last paragraph

Changed “**process**” to “**timeless end**” in the second sentence (2 occurrences).

Chapter 3, Refining Practical Wisdom, last paragraph, second footnote

Added the following sentences:

“**Foolish actions embed mistakes into our stocks of useful knowledge. These frozen mistakes pile up. If not released, the pent up stress in these “economic embacles” results in catastrophic debacles. Our beliefs about the world are part of the world that we need to explain if we are to find the best problems to solve and the best assets for solving the unexpected problems that life throws at us.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, *Refining Practical Stories*, fourth paragraph, last two sentences

“However, *it is not the best concept*. We would progress much more readily if policymakers sought *what we need to live well* rather than *what we currently want to consume*.”

was changed to:

“However, we would progress much more readily if policymakers sought *the timeless concept of wealth*.”

Chapter 3, Recursive Failures, first paragraph, footnote

Changed “truth” to “*temporal* truth” in the first sentence.

Deleted the last two sentences: “‘*Reflexive*’ describes our mental hall of mirrors. ‘*Recursive*’ describes the process of moving forward through this hall of mirrors.”

Chapter 3, Recursive Failures, last paragraph

“Chief among these are the inexhaustibility of knowledge and our *insatiable* need to *link or relink with* something infinitely *greater than ourselves*.”

was changed to:

“Chief among these are (1) *the problem of induction*, (2) the inexhaustibility of knowledge, and (3) our *religious* need to *become part of* something infinite.”

Chapter 3, Computer Models, first paragraph, second footnote

Changed “high level” to “high-level” in the second sentence.

Added the following sentences:

“*The better the decision that created the block is, the more fluid its shape. Over time, other decisions may make these blocks more or less fluid.*”

Removed italics from the last two sentences. Promoted the footnote to a paragraph in the body of the text.

Chapter 3, A Crude Look at the Whole, first paragraph

Changed “*ever better*” to “*well*” in the first sentence.

Changed “*better*” to “*well*” in the second and third sentences.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 3, A Crude Look at the Whole, second paragraph

Changed “possible” to “practical to do so” in the first sentence.

Chapter 3, A Crude Look at the Whole, last paragraph

Changed “catastrophe” to “large debacles” in the last sentence.

Chapter 4, *Judge Interventions*, last paragraph

Changed “landlords” to “owners” in the last sentence.

Appendix D, second paragraph, second

“Most modern economists recognize problems in measuring the value of services and changes in product quality. However, they deny that all goods and services are means to living well. The problem of measuring services is universal. Worse, the problem of measuring quality is much harder than most modern economists believe it to be.”

was changed to:

“The problem here is one of measuring what we need to live well, which calls for knowing the Truth about the Good. Plato only aspired to such knowledge. Only a fool would claim to have it. From a technical view, the problem of measuring services is universal and the problem of measuring quality is impossibly hard.”

Changes in Version 2008.02.26

Preface, third paragraph

Removed italics on “is” in the first sentence and “*is the pursuit of*” in the last sentence.

Preface, seventh paragraph

Changed “a great debt” to “debts” in the first sentence.

Chapter 1, Excellence in Means, last paragraph

Changed “ “wise.”” to “ “wise,” because they wisely embrace what they want to know.” in the last sentence.

Chapter 1, Two Views of Deciding Well, second paragraph

Changed “the timeless end” to “a timeless end” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Two Views of Deciding Well, last paragraph

Changed “stocks” to “our networks” in the first sentence.

Chapter 3, Introduction, last paragraph

Changed “reduce our sensations of reality to” to “express our knowledge in” in the second sentence.

Chapter 3, *The Ring of Truth*, first paragraph, end

Added the sentence: “Only then can we say that we have found a beautiful problem to solve.”

Chapter 3, *The Ring of Truth*, second paragraph

Changed “our belief system” to “how well our beliefs fit together into a coherent whole” in the last sentence.

Chapter 3, *The Ring of Truth*, last paragraph

Changed “decide well” to “decide well by helping us to improve the coherence of our belief system” in the last sentence.

Chapter 3, Refining Everyday Thinking, fifth paragraph

Changed “stocks” to “networks” in the last sentence.

Chapter 3, Refining Practical Wisdom, last paragraph, last footnote

“Foolish actions embed mistakes into our stocks of useful knowledge. These frozen mistakes pile up. If not released, the pent up stress in these “economic embacles” results in catastrophic debacles. Our beliefs about the world are part of the world that we need to explain if we are to find the best problems to solve and the best assets for solving the unexpected problems that life throws at us.”

were deleted.

Chapter 3, *Refining Practical Stories*, third paragraph

Changed “stocks” to “networks” in the third sentence.

Chapter 3, Computer Models, second paragraph

Changed “our stocks” to “parts of our networks” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Deleted the fifth and sixth sentences: “**The better the decision that created the block is, the more fluid its shape. Over time, other decisions may make these blocks more or less fluid.**”

Chapter 3, *A Crude Look at the Whole*, last paragraph, last sentence

“It focuses on **progress and poor** decision-making rather than on their effects, unemployment and inflation.”

was changed to:

“It focuses on **deciding well** rather than on the effects **of deciding poorly, which include** unemployment and inflation.”

Chapter 3, *A Crude Look at the Whole*, last paragraph, last sentence

“**In as much as the rest of the world continues to progress, they lead to large debacles.**”

was changed to:

“**Retarding** progress **robs the whole of life of a better future.**”

Changes in Version 2008.02.28

Preface, seventh paragraph

Deleted “**not only reflects our sensations of the world accurately, but also**” from the second sentence.

Preface, last paragraph

Changed “**people**” and “**they**” to “**we**” in the last sentence.

Chapter 1, *Two Views of Deciding Well*, second paragraph

Changed “the **ever-repeating** cycle” to “**endlessly repeating** the cycle” in the first sentence.

Chapter 2, *Three Mistakes*, second paragraph

Changed “**information**” to “**knowledge**” in the first sentence.

Chapter 3, *Introduction*, tenth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “reasonable, but incomplete” to “rational” in the last sentence.

Chapter 3, *The Ring of Truth*, last paragraph

Changed “improve the coherence of” to “improve” in the last sentence.

Chapter 3, Trading Failures, first paragraph

Changed “information” to “knowledge” in the fourth sentence.

Changes in Version 2008.03.01

Preface, seventh paragraph

Changed “and W. V. O. Quine” to “, W. V. O. Quine, and Morton White” in the first sentence.

Changed “the ultimate end of science is to refine” to “science is the process of refining” in the second sentence.

Preface, eleventh paragraph

Changed “this process” to “breaking things down” in the third sentence.

Chapter 3, Introduction, fourth paragraph, footnote

Deleted “rather than the temporal result of refining everyday thinking” from the last sentence.

Added the sentence: “We might call this approach to believing well either “boundless” or “idealistic” pragmatism.”

Chapter 3, *Refining Practical Stories*, third paragraph

Added “— wealth —” to the last sentence.

Chapter 3, *Refining Practical Stories*, fourth paragraph

“In his most famous work, *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith provided the world with a better concept of what policymakers ought to seek. Smith defined what they ought to seek to be the things that we want to consume.¹⁹ This temporal concept of wealth was a great advance over the mercantilist concept. However, we would progress much more readily if policymakers sought the timeless concept of wealth.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

was changed to:

“Our modern concept of wealth¹⁹ is much better than this concept. However, it still tends to blind us to better problems to solve. We would do even better with the timeless concept of wealth.”

and appended to the end of the third paragraph.

Changed “Smith” to “Adam Smith” in the first sentence of the footnote.

Chapter 3, *Refining Practical Stories*, new fourth paragraph, first sentence

“From the timeless view of deciding well, we can envision a science based on the concept of what we ought to seek as those things that we need to live well.”

was changed to:

“We can envision a practical science based on pursuing the timeless concept of wealth.”

Chapter 3, *Refining Practical Stories*, new fifth paragraph

Deleted the first sentence:

“We ought to weed out members of the set of stories that fail to help us find what we need to live well, that is, to pursue the Good.”

Appended the remaining two sentences to the new fourth paragraph

Chapter 3, *Refining Practical Stories*, newest fifth paragraph, first two sentences

“We also ought to weed out members of the set of stories that fail to help us find what we need to pursue Justice. One way that we can think about how best to decide to pursue Justice is by thinking about how best to decide well.”

was changed to:

“We also ought to weed out members of the set of stories that fail to help us find what we need to treat others well. For example, we can weed out all stories that fall short of the timeless end of Justice. Foremost of these are stories that concern efficiency. We pursue Justice by deciding well.”

Chapter 3, *Refining Practical Stories*, newest sixth paragraph

“We can see this difference in the modern economic general equilibrium model. This model describes the conditions that yield the state of the world in which no one can be made better off without making someone else worse off.²⁴ In modern economic terms, it

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

describes the conditions for allocating scarce resources efficiently. The major condition is that the marginal benefits of acting just equal the marginal costs of acting everywhere in the economy. This equilibrium condition determines what each factor of production receives. What is missing from this model is what we owe the people who created the knowledge that we use at no charge. As previously argued, the debts that we owe to those who provided us with the knowledge that we use freely, we pay to others by deciding well. Deciding well calls for us to learn by doing, not to act efficiently.”

“²⁴ The technical term for this ideal state of the world is Pareto optimality.”

was changed to:

“We can see this difference in the modern economic general equilibrium model, which describes what each factor of production receives under conditions of perfect efficiency. What is missing from this model is what we owe to the people who created the knowledge that we use at no charge. As previously argued, the debts that we owe to these people we pay to others by deciding well. Deciding well calls for us to learn by doing, not to act efficiently.

Appended the the fifth paragraph.

Chapter 3, *Refining Practical Stories*, second to last paragraph, first three sentences

“We ought to weed out any story about Justice based on the temporal concept of efficiency. Further, we ought to weed out all other temporal stories about Justice. This includes all stories based on the temporal concept of sustaining a good society.”

were changed to:

“Similarly, we ought to weed out all stories that aim at sustaining a good society.”

Chapter 3, *Refining Practical Stories*, last paragraph

Changed “foolish stories” to “stories” in the first sentence.

Changes in Version 2008.03.03

Chapter 1, *Two Views of Deciding Well*, first paragraph

Changed “justify” to “deserve” in the last sentence.

Chapter 1, *Two Views of Deciding Well*, second paragraph

Changed “justify” to “deserve” in the third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 2, *Pleasure and Pain*, last paragraph

Deleted “**Dutch**” in the first sentence.

Chapter 3, Introduction, second paragraph

Deleted “**Scottish Enlightenment**” in the first sentence.

Chapter 3, Introduction, third paragraph

Deleted “**British**” in the first sentence.

Chapter 3, Introduction, fifth paragraph

Changed “**Philosopher**” to “**Twentieth century philosopher**” in the first sentence.

Chapter 3, Introduction, fifteenth paragraph

Deleted “**American moral**” in the first sentence.

Chapter 3, *The Ring of Truth*, second paragraph

Changed “**English romantic**” to “**poet**” in the first sentence.

Chapter 3, *The Ring of Truth*, last paragraph, last sentence

“It ought to **help us to decide well by helping us to improve our belief system.**”

was changed to:

“It ought to **enlighten** us.”

Changes in Version 2008.03.05

Chapter 2, Profit, first paragraph, footnote

Changed “**Profits**” to “**Temporal profits**” in the second sentence.

Removed italics from the last sentence.

Chapter 3, Introduction, seventh paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “seek to live well” to “pursue the timeless end of living well” in the last sentence.

Changed “seek to believe well” to “pursue the timeless end of believing well” in the last sentence.

Changed “seek to live and work” to “pursue the timeless end of living and working” in the last sentence.

Chapter 3, Introduction, tenth paragraph, last three sentences

“A less kind assessment is that it is childish nihilism, which is to say the temper tantrum of people who are unwilling to accept believing well as a timeless end. A second less kind assessment is that it is little more than a means for special interests to gain favors. The most enlightening of these three assessments is the kind one.”

were deleted.

Merged paragraph with next paragraph

Chapter 3, Introduction, new eleventh paragraph

Changed “bridge” to “build a bridge between” and “we use” to “that we use” in the first sentence.

Changed “first step” to “first step in building this bridge” in the second sentence.

Chapter 3, Introduction, new fourteenth paragraph

Changed “work too well or live too well” to “live or work too well” in the second sentence.

Chapter 4, *The Explicit Experiment*, first paragraph (HTML version)

Changed “--” to “—” in all (2 occurrences).

Chapter 4, *The Explicit Experiment*, third paragraph (HTML version)

Changed “--” to “—” in all (7 occurrences).

Chapter 4, *The Explicit Experiment*, second to last paragraph

“There are at least two ways of reconciling these conflicting sovereign stories. The first is to claim that the Declaration of Independence story concerns justice and the Constitution story concerns legality. This claim of a source of justice above and beyond the general will of society conflicts with the political agenda of true believers in

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

socialism who want to enshrine what they believe to be good in law. The second is to dismiss the Creator statement in the Declaration of **Independence** as a **nominally religious** statement that has become ritual and non-**religious** through long customary usage. This claim of “ceremonial deism” **conflicts with the political agenda of true believers in theism** who want to enshrine what they believe to be good in law.”

was changed to:

“There are at least two ways of **settling** this conflict **between** sovereign stories. The first is to claim that the Declaration story concerns justice and the Constitution story concerns legality. This claim of a source of justice **higher than** the general will of society **favors theists** who want to enshrine what they believe about the good in law. The second is to dismiss the Creator statement in the Declaration as a **theistic** statement that has become ritual and non-**theistic** through long customary usage. This claim of “ceremonial deism” **favors socialists** who want to enshrine what they believe about the good in law.”

Chapter 4, *The Explicit Experiment*, last paragraph

Changed “**the good**” to “**what is true**” in the first sentence.

Changed “**socialists**” to “**theists**” and “**social**” to “**theistic**” in the first half of the second sentence.

Changed “**theists**” to “**socialists**” and “**theistic**” to “**social**” in the second half of the second sentence.

Changed “**effect**” to “**short**” and “**means of linking or relinking with something greater than ourselves**” to “**religion**” in the last sentence.

Appended this paragraph to the end of the preceding paragraph.

Chapter 4, *The Sovereign Story of Deciding Well*, title

Changed “*Deciding Well*” to “*Practical Science*” in the title sentence.

Chapter 4, *The Sovereign Story of Practical Science*, second paragraph

“Using the **American Declaration of Independence** as a model, the **timeless end of deciding well** yields a **simple and straightforward sovereign** story: We hold these **truths** to be **self-evident**, **that** all intelligent life has the sovereign right to **seek to** decide well.-- **That** to secure this right, governments **are instituted** that derive their powers from the consent of the governed.--**That** whenever a government **becomes an obstacle to this end**, it is the right of the governed to alter or to abolish it, and to institute a new government, **laying its foundation on such principles and organizing its powers in such form, as to them shall seem** most likely to **effect** deciding well.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“ Arguably, the sovereign story of deciding well is simply **the timeless version** of the sovereign story of the Declaration of Independence. The Declaration, as interpreted by philosopher Mortimer Adler, calls for us to pursue happiness justly. The sovereign story of deciding well calls for us to pursue happiness **ever more** justly. For more on Adler’s interpretation of the Declaration of Independence, see his book, *We Hold These Truths* (New York, Macmillan Publishing Company, 1987).

was changed to:

“Using the **Franklin’s sovereign story of moral science** as a model, the **science of practical wisdom** yields the **following** story:

We hold these beliefs to be **true beyond all doubt**. All intelligent life has the sovereign right to **pursue the timeless end of** deciding well. To secure this right, **individuals form** governments that derive their powers from the consent of the governed. Whenever a government **hinders deciding well**, it is the right of the governed to alter or to abolish it, and to form a new government **based on what they believe most likely** to **help them to** decide well.”

“ Arguably, the sovereign story of deciding well is simply **a refinement** of the sovereign story of the Declaration of Independence. The Declaration, as interpreted by philosopher Mortimer Adler, calls for us to pursue happiness justly, **where happiness is the timeless end of living well**. The sovereign story of deciding well calls for us to pursue happiness justly, **where happiness is the timeless end of living well and justly concerns the timeless end of living and working with others well**. For more on Adler’s interpretation of the Declaration of Independence, see his book, *We Hold These Truths* (New York, Macmillan Publishing Company, 1987).

Chapter 4, *The Sovereign Story of Deciding Well*, last paragraph

Changed “**designed**” to “**built**” in the last sentence.

Changes in Version 2008.03.07

Preface, ninth paragraph

Changed “**the** recursive process **of deciding well**” to “**this** recursive process” in the second sentence.

Chapter 1, Excellence in Means, last paragraph, footnote, last two sentences

“**In the language of mathematician Benoît Mandelbrot, the endless process of deciding well is fractal. As we shall see in the third chapter, this self-similarity gives rise to a surprising relation among the boundless factors of deciding well.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

were deleted.

Chapter 3, *The Ring of Truth*, first paragraph, first sentence

“Pursuing **one boundless factor of deciding well** calls for pursuing all boundless factors of deciding well.”

was changed to:

“Pursuing **the timeless end of believing well** calls for pursuing all boundless factors of deciding well.”

Chapter 3, *The Ring of Truth*, last paragraph

Changed “**It**” to “**Art**” in the last sentence.

Chapter 4, *Free Trade*, first paragraph, footnote, end

Added the sentence: “**The benefits of free trade go far beyond promoting efficiency in production.**”

Changes in Version 2008.03.08

Chapter 3, Computer Models, first paragraph, end

Added the footnote:

“²⁷ Note that the endless process of deciding well is a recursive process that involves learning by doing. Hence, we should expect a power law rather than Gaussian (“bell curve”) probability distribution in most resulting phenomena. For a clear and concise explanation of why this is important, see the March 23, 2006 *Financial Times* article by Benoit Mandelbrot and Nassim Taleb titled “*A Focus on Exceptions that Prove the Rule*,” reprinted online at <http://www.ft.com/cms/s/2/5372968a-ba82-11da-980d-0000779e2340,dwp_uuid=77a9a0e8-b442-11da-bd61-0000779e2340.html> (8 March 2008).”

Chapter 3, end

Added the section:

Conclusion

This chapter put forth a timeless plan for refining our beliefs. Following this timeless plan calls for us to test it against experience. Benjamin Franklin has shown us how to do so.”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Afterword, first and last paragraphs

Changed “people of the United States” to “**most** people of the United States” in all (2 occurrences).

Changes in Version 2008.03.10

Chapter 3, Conclusion, first paragraph

“This chapter put forth a timeless plan for refining our beliefs. Following this timeless plan calls for us to test it against experience. Benjamin Franklin has shown us how to do so.”

was changed to:

“This chapter applied the timeless concept of deciding well to the timeless end of believing well. We pursue the timeless end of believing well by deciding well. In theory, deciding well calls for us to consider these boundless factors in even our smallest decisions - it calls for us to see the world in a grain of sand. It also calls for us to judge not only footholds and handholds but also paths leading to the Good, the Truth, Wisdom, Justice, and Beauty.

“The timeless end of believing well gives rise to the timeless concept of science as the research program of, by, and for intelligent life. Timeless science reminds us that not everything that counts can be counted, and not everything that can be counted counts. It also reminds us that applying the tools of the true sciences to the intelligent life sciences foolishly ignores the two-way relation between our beliefs and reality. Our theories about how ants behave do not change the way that ants behave, but our theories about how we behave tend to change the way that we behave. Sociobiology may be a good tool for studying ants, but it is a poor tool for studying intelligent life.

“Timeless science calls for testing all beliefs against experience, including the beliefs that support it. The next chapter explains how we may test timeless science and the belief system that supports it.”

Chapter 4, *The Sovereign Story of Practical Science*, title

Changed “*Practical Science*” to “*Timeless Science*” in the title.

Chapter 4, The Sovereign Story of Deciding Well, second paragraph

Changed “science of practical wisdom” to “timeless science” in the first sentence.

Chapter 4, The Sovereign Story of Deciding Well, second paragraph, footnote

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“**Arguably**, the sovereign story of timeless science is simply a refinement of **the** sovereign story of **the Declaration of Independence**. The Declaration, as interpreted by philosopher Mortimer Adler, calls for us to pursue happiness justly, where happiness is the timeless end of living well. The sovereign story of **deciding well** calls for us to pursue happiness **ever more** justly, **where happiness is the timeless end of living well and justly concerns the timeless end of living and working with others well**. For more on Adler’s interpretation of the Declaration **of Independence**, see his book, *We Hold These Truths* (New York, Macmillan Publishing Company, 1987).”

was changed to:

“**The** sovereign story of timeless science is simply a refinement of **Franklin’s** sovereign story of **moral science**. The Declaration **of Independence**, as interpreted by philosopher Mortimer Adler, calls for us to pursue happiness justly, where happiness is the timeless end of living well. The sovereign story of timeless science calls for us to pursue happiness **ever more** justly. For more on Adler’s interpretation of the Declaration, see his book, *We Hold These Truths* (New York, Macmillan Publishing Company, 1987).”

Changes in Version 2008.03.15

Acknowledgments, second paragraph

Changed “**book**” to “**work**” in the first sentence.

Preface, first paragraph

Changed “**book**” to “**essay**” in the first sentence.

Preface, seventh paragraph

Changed “**common** search for **the truth**” to “search for **knowledge**” in the first sentence.

Changed “process” to “**endless** process” in the second sentence.

“**This is an infinitely large problem.**”

was changed to:

“**I call this approach to science *boundless pragmatism*. Because one of the boundless factors of deciding well is knowledge of the unchanging elements and relations (ideal forms) that underlie all sensations, the oxymoronic *idealistic pragmatism* works as well.**”

Preface, eighth and ninth paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We can solve infinitely large problems by finding recursive processes that move us ever closer to the solution. A recursive process is a finite process that we apply repeatedly so that the results of one cycle become the conditions for the next. To solve the problem of determining the transcendental number pi, we find a recursive process that moves us ever closer to determining pi. Similarly, to solve the infinitely large problem of refining our beliefs, we find a recursive process that moves us ever closer to determining the truth.

“We can move ever closer to determining the truth by deciding well, where deciding well is the recursive process that begins with finding a problem to solve based on the timeless end of determining the truth. We can improve this recursive process by improving the factors of deciding well. These factors include practical wisdom, trust, and liberty.”

were deleted.

Preface, new ninth paragraph, last sentence

“Despite the fact that definite knowledge of how we fit into the whole, like definite knowledge of pi, will remain forever beyond our grasp, we should not pass over it in silence.

was changed to:

“Despite the fact that this knowledge, like definite knowledge of the transcendental number pi, will remain forever beyond our grasp, we should not pass over it in silence. Beliefs about how we fit into the whole help us to decide how to live well.

Preface, new tenth paragraph

Changed “book” to “work” in the first sentence.

Changed “chapter” to “section” in the second, fourth, and sixth sentences.

Changed “this timeless concept” to “the timeless concept of deciding well” in the first sentence.

Preface, last paragraph

Deleted: “Enjoy.”

Chapter 1, Excellence in Means, tenth paragraph

Switched positions of the third and fourth sentences.

Chapter 2, Introduction, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “chapter” to “section” in the first and last sentences.

Chapter 2, Introduction, last paragraph

Changed “chapter” to “section” in the last sentence.

Chapter 3, Introduction, first paragraph

Changed “chapters” to “sections” in the first sentence.

Changed “chapter” to “section” in the last sentence.

Chapter 3, Introduction, fourth paragraph, footnote

Changed “the first section of this chapter” to “this section” in the first sentence.

Chapter 3, *The Ring of Truth*, third paragraph

Changed “chapter” to “section” in the first sentence.

Deleted the last sentence: “We might call this approach to believing well either “boundless” or “idealistic” pragmatism.”

Chapter 3, *Refining Practical Stories*, fifth paragraph

Changed “pay” to “ought to pay” in the second to last sentence.

Added the footnote:

“²⁴ Governments promote learning by doing by assigning property rights to some types of newly created knowledge. This is a crude solution to the problem of promoting the ideal amount of learning by doing.”

Chapter 3, *Refining Practical Stories*, sixth paragraph

Changed “sustaining” to “to sustain” in the second sentence.

Chapter 3, Conclusion, first paragraph

Changed “chapter” to “section” in the first sentence.

Chapter 3, Conclusion, last paragraph

Changed “chapter” to “section” in the last sentence.

Chapter 4, Introduction, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**chapters**” to “**sections**” in the first sentence.

Changed “**chapter**” to “**section**” in the last sentence.

Chapter 4, *Promote Savings for Welfare*, first paragraph

Changed “**encourage**” to “**help**” in the second sentence.

Chapter 4, *Promote Savings for Welfare*, second paragraph

Changed “**encouraging**” to “**helping**” in the last sentence.

Chapter 4, *Choosing Governments*, paragraph

Changed “**encourage**” to “**foster**” in the last sentence.

Appendix A

Changed “**at no additional** cost, doing so is less **expensive**” to “**for the same** cost, doing so is less **costly**” in the first, second, and third bullet points.

Appendix B, *Balanced Excellence*, last paragraph

Changed “**Dionysian** (emotional) and **Apollonian** (reasonable)” to “emotional (**Dionysian**) and reasonable (**Apollonian**)” in the first sentence.

Changes in Version 2008.03.20

Preface, fifth paragraph

Changed “know**ledge of** the Divine” to “know**ing** the Divine” in the second sentence.

Preface, seventh paragraph

Changed “**is**” to “**ought to be**” and “**endless**” to “**endless**” in the second sentence.

Preface, seventh paragraph

Changed “**is**” to “**ought to be**” and “**endless**” to “**endless**” in the second sentence.

Chapter 1, *Excellence in Means*, third to last paragraph, first sentence

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Understanding the difference between the RTS and EOQ concepts of excellence in means calls for understanding the difference between timeless (normative) and temporal ends.”

was changed to:

“The major difference between the EOQ and RTS models concerns their ends. The EOQ model has the temporal end. In contrast, the RTS model has a timeless (normative) end.”

Chapter 1, Two Views of Deciding Well, first paragraph, end

Added the following sentence: “Our actions reveal our preferences, which is to say that to decide well is to decide perfectly.”

Chapter 1, Two Views of Deciding Well, last two paragraphs

Reversed the order of the last two paragraphs.

Chapter 2, *Practical Wisdom*, first paragraph

Changed “best means to them” to “best means to them well” in the fourth sentence.

Chapter 3, Introduction, tenth paragraph

Inserted paragraph break after second sentence.

Chapter 3, Introduction, new twelfth paragraph, first sentence

“We can build a bridge between Aristotle’s temporal world of everyday thinking and Plato’s timeless world of ideal forms by using Plato’s ideal forms as the basis for the timeless tools that we use to find problems to solve.”

was made into its own paragraph and changed to:

“The wise response to this schism at the core of Western thought is to set a course from the temporal world of everyday thinking to the timeless world of ideal forms. This course is the timeless end of knowing the ideal forms. We pursue this timeless end by deciding well.”

Chapter 3, Introduction, new thirteenth paragraph, first sentence

Changed “building this bridge” to “setting this course” in the first sentence.

Chapter 3, Introduction, fourth from last paragraph, first two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Justice is also a boundless factor of deciding well. We cannot live or work too well with others.”

were changed to:

“We need others to pursue the Good and the Truth. We cannot live or work too well with others. Hence, Justice is also a boundless factor in deciding well.”

Chapter 3, Introduction, third to last paragraph

Changed “inescapable ignorance” to “ignorance” in the first sentence.

Changed “greater” to “infinitely greater” in the second sentence of the second footnote.

Chapter 3, Introduction, second to last paragraph

Changed “, we pay to” to “ we pay to” in the second and third sentences.

Chapter 3, *The Ring of Truth*, last paragraph, footnote

“In Latin, *De gustibus non est disputandum*. At issue is not the belief that that tastes tend to remain stable over time, but rather the belief that tastes ought to remain stable over time. From the timeless view of deciding well, this distinction concerns the difference between the temporal and the timeless views of living well.”

was changed to:

“In Latin, *de gustibus non est disputandum*. From the temporal view of marginalist economics, the issue is whether tastes remain stable during the period under consideration. From the timeless view of recursionist economics, the issue is whether tastes ought to remain stable.”

Chapter 3, *The Elephant in the Room*, first paragraph

Changed “yet another” to “another” in the first sentence.

Chapter 3, Refining Practical Stories, fourth paragraph, first footnote, last sentence

“For more on the subject of human needs, see Appendix B.”

was deleted.

Chapter 3, Recursive Failures, last paragraph

Changed “infinite” to “infinitely greater than ourselves” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Sovereignty, third paragraph, footnote

“There are three basic means of securing sovereign rights. The first is to tell stories that appeal to what people currently believe is good. We may call this the pragmatic approach. The second is to tell stories that attempt to change what people believe is good. We may call this the propaganda approach. The third is to tell stories that appeal to what people believe is the ideal good. We may call this the idealistic approach.”

was deleted.

Chapter 4, *The Sovereign Story of Timeless Science*, first paragraph

Added the sentence: “What civil faith best promotes deciding well?”

Changed “wise to protect” to “wise for the state to protect” in the third sentence.

Chapter 4, *Judge Interventions*, last paragraph

Changed “owners, who” to “owners who” in the last sentence.

Afterword, second paragraph

Changed “tradition” to “timeless tradition” in the fifth sentence.

Appendix B, Introduction, first paragraph

Changed “not,” to “not separate and distinct,” in the third sentence.

Changed “are,” to “are separate and distinct,” in the fourth sentence.

Appendix B, *Heroic Death*, last paragraph

Appended last paragraph into second to last paragraph.

Appendix B, *Atheism*, title

Changed title to “*Einstein’s Twin Warnings*.” Appended last paragraph into second to last paragraph.

Appendix B, *Theism*, title

Deleted title. Merged section in with previous section. Appended last paragraph into second to last paragraph.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2008.03.24

Acknowledgements, fourth paragraph, fourth sentence

“My mind could not get around the boundless problem of how a theory could be both useful (in predicting what happens in education markets) and foolish (as a guide for making career decisions).”

was deleted.

Preface, seventh paragraph

Changed “this approach to science” to “this approach” in the third sentence.

Chapter 1, Setting Words Aright, first paragraph, last sentence

“Concepts are *knowledge resources*.”

was changed to:

“Concepts are *resources for helping us to achieve our ends*.”

Chapter 1, Setting Words Aright, second paragraph, beginning

Added the sentence: “*Concepts are a type of knowledge resource*.”

Chapter 1, Setting Words Aright, last paragraph

Changed “do so” to “view it” in the second sentence.

Chapter 1, Excellence in Means, second paragraph

“Suppose our factory needs *two hundred widgets five days a week for fifty weeks*. At one extreme, we *could choose to produce fifty thousand once*. At the other, we could choose to produce one unit two hundred times each working day. Between these two extremes lies the most efficient *order quantity*. The EOQ model yields the *quantity* at which the marginal cost and marginal benefit of *setting up* just equal one another. This *quantity* maximizes the net benefit of setting up *for our current knowledge of how to set up tools*.”

was changed to:

“Suppose our factory *expects to sell one hundred thousand new model cars*. Each of these cars needs a hood. The stamping machine that makes these hoods also makes other parts. Each time we set up this machine tool uses resources. Storing hoods and other parts also uses resources. How many hoods should we make at once? At one extreme,

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

we might **make one batch of one hundred thousand hoods**. At the other extreme, we **might make one hundred thousand batches of one hood**. Between these two extremes lies the most efficient **number to make at once**. The EOQ model yields the **number** at which the marginal cost and marginal benefit of **ordering one more hood per batch** just equal one another. This **number** maximizes the net benefit of setting up the tool **for our current knowledge of how to set up tools.**”

Chapter 1, Excellence in Means, third paragraph

Changed “, **much less improve the environment for learning**” to “**how to set up ever more efficiently**” in the third sentence.

Changed “**look for better ways of setting up tools**” to “**learn how to set up ever more efficiently**” in the fifth sentence.

Changed “**invest in learning-by-doing**” to “**promote such learning**” in the last sentence.

Chapter 1, Excellence in Means, fourth paragraph

Changed “**evaluating**” to “**pricing**” in the fourth sentence.

Changed “**cannot measure the value of**” to “**price**” and “the value of resources” to “the value of **the** resources” in the fifth sentence.

Chapter 1, Excellence in Means, sixth paragraph

“We cannot judge the full value of RTS without understanding the part it played in Toyota’s **history**. In the early postwar years, Japan’s small market for trucks and lack of capital forced Toyota to produce trucks in small batches. **Production** supervisor Taiichi Ohno knew that his firm **could never catch up to Western firms by using Western means of making trucks**. Instead, he envisioned **factories making large numbers of similar parts rather than large numbers of identical parts**. **Batches of similar parts would flow like the mass production of identical parts.**”

was changed to:

“We cannot judge the full value of RTS without understanding the part it played in the **rise of** Toyota. In the early postwar years, Japan’s small market for trucks and lack of capital forced Toyota to produce trucks in small batches. **In contrast, American firms were making cars and trucks in huge batches. A Toyota supervisor named** Taiichi Ohno knew that his firm **would never be able to compete by making cars and trucks the same way that American firms did**. Instead, he envisioned making similar parts **as smoothly as** identical parts.”

Chapter 1, Excellence in Means, seventh paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**Ohno’s**” to “**This**” in the first sentence. Merged paragraph into the preceding paragraph.

Chapter 1, Excellence in Means, new seventh paragraph

Changed “**production** processes” to “processes” in the first sentence.

Changed “elasticity of **kanban** links allows the **production** control system” to “elastic links allow the control system” in the second sentence.

Changed “**kanban** links” to “links” in the third sentence.

Chapter 1, Two Views of Deciding Well, last paragraph

Changed “timeless **models**” to “timeless **tools**” in the second sentence.

Changed “these” to “these **resources**” in the last sentence.

Chapter 2, Introduction, second paragraph

Changed “**military** terms” to “**planning** terms” in the last sentence.

Chapter 2, Trade, first paragraph, footnote

Changed “**more than names on a map**” to “**more firm than the firms they contain**” in the seventh sentence.

Deleted the last sentence: “**This tends to happen as firms enter cyberspace.**”

Chapter 3, Introduction, fourth from last paragraph, last two sentences

“**If we are intelligent and honest, the problem of induction thwarts all efforts to reduce the infinitely large problem of determining the truth about Justice to a finite problem. Further, the inexhaustibility of knowledge thwarts all efforts to reduce the infinitely large problem of determining the good about Justice to a finite problem.**”

were deleted.

Chapter 3, Introduction, second from last paragraph

Changed “cooperating” to “cooperating **in living well**” in the second sentence.

Changed “**promote** cooperation” to “cooperate” in the third sentence.

Chapter 3, Introduction, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “cooperation in” to “the timeless end of” in the first sentence.

Changed “this cooperation” to “cooperating in deciding well” in the first sentence.

Chapter 4, *Judge Interventions*, end

Added the subsection:

“Tax Well

The power to tax is not only the power to raise funds but also the power to change decisions. Policymakers ought to give as much attention to how they tax as how they spend. The people who pay taxes are often not the people who bear the burden of them. A tax on practical wisdom is never wise.”

Chapter 4, *Lower Trade Barriers*, all

Promoted subsection to third position.

Appendix C, *Folding in Processes*, eighth paragraph

Changed “(job shop)” to “(job shop) production” in the first sentence.

Changes in Version 2008.03.28

Chapter 3, Introduction, twelfth paragraph

“The *wise* response to this schism at the core of Western thought is to set a course from the temporal world of everyday thinking to the timeless world of ideal forms. This course is the timeless end of knowing the ideal forms. We pursue this timeless end by deciding well.”

was changed to:

“The *wise* response to this schism at the core of Western thought is to pursue the timeless end of knowing the unchanging elements and forms that underlie all sensations of reality. We pursue this timeless end by deciding well.”

Chapter 3, *The Ring of Truth*, fifth paragraph

Changed “grunge rock” to “rock music” in the fifth sentence.

Chapter 3, *Refining Practical Stories*, fifth paragraph, first two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“We also ought to weed out members of the set of stories that fail to help us find what we need to treat others well. For example, we can weed out all stories that fall short of the timeless end of Justice.”

was changed to:

“We also ought to weed out all stories that fall short of the timeless end of Justice.”

Deleted the footnote: “²⁴ Governments promote learning by doing by assigning property rights to some types of newly created knowledge. This is a crude solution to the problem of promoting the ideal amount of learning by doing.”

Chapter 4, *The Explicit Experiment*, last paragraph

Changed “In short, both groups want their religion to be” to “Both groups want their religion to become” in the last sentence.

Changes in Version 2008.03.31

Chapter 1, Excellence in Means, second to last paragraph

Changed “We” to “From this temporal view, we” in the second sentence.

Moved the last sentence:

“Modern economists call people who act in this way “rational.””

to the end of the first paragraph in the **Two Views of Deciding Well** section.

Chapter 1, Excellence in Means, last paragraph

Changed “We” to “From this timeless view, we” in the second sentence.

Moved the last sentence:

“We commonly call people who act in this way “wise.””

to the end of the first paragraph in the **Two Views of Deciding Well** section.

Chapter 3, Introduction, eleventh paragraph, last sentence

Inserted the sentence:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Further, he split the study of nature and motion, which he called physics, from the study of first causes and principles, which he called wisdom, first philosophy, and theology.”

Chapter 3, Introduction, fifteenth paragraph, first two sentences

“We need others to pursue the Good and the Truth. We cannot live or work too well with others.”

were changed to:

“The last step is to recognize that we need the help of others in this endless pursuit. Further, we cannot live and work too well with others.”

Chapter 3, Introduction, fifteenth paragraph

Inserted a paragraph break at the end of the second sentence.

Added the sentence: “We find ourselves in a mental hall of mirrors.”

Chapter 3, The Ring of Truth, third paragraph

Changed “definitions” to “concepts” in the first sentence.

Chapter 3, The Ring of Truth, last two paragraphs

“The interplay of beauty and belief is complex. Out of this complexity emerges art that engages us on many levels. A great work of art, such as a story that we can understand on more than one level, can change from being beautiful to being mundane to being once again beautiful. For example, as a child we may find Lewis Carroll’s *Alice Through the Looking Glass* to be an enchanting bedtime story; as a teenager we may find it to be childish; and as an adult we may find in it to be an insightful look into the way that language colors the way that we perceive the world.

“This timeless definition of beauty helps us to explain why modern educators do not value music and the other fine arts as highly as Plato did. Plato saw music and the other arts as a means of transcending everyday life in order to perceive the Truth. Modern educators do not value music and other fine arts as means of transcending everyday life in order to decide well. From the modern view, there is no difference between seeking beauty and seeking Beauty. There is no disputing taste.¹⁰ From the timeless view, there is a difference between seeking beauty and seeking Beauty. Art ought to do more than to shock us or speak to us. Art ought to enlighten us.”

¹⁰In Latin, *de gustibus non est disputandum*. From the temporal view of marginalist economics, the issue is whether tastes remain stable during the period under

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

consideration. From the timeless view of recursionist economics, the issue is whether tastes ought to remain stable.”

were changed to:

“This timeless **concept** of beauty helps to explain why modern educators do not value the fine arts highly. From the modern view, **the fine arts do not help us to decide well.** There is no difference between seeking beauty and seeking Beauty. There is no disputing taste. From the timeless view, **the fine arts help us to decide wisely.** There is a difference between seeking beauty and seeking Beauty. Art ought to do more than to shock us or speak to us. Art ought to enlighten us.”

(Note that “*Alice Through the Looking Glass*” ought to have been “*Through the Looking-Glass, and What Alice Found There.*”)

Chapter 3, Refining Everyday Thinking, last paragraph

Changed “**final**” to “**last**” in the sixth sentence.

Chapter 3, Recursive Failures, first paragraph, footnote

Changed “temporal truth” to “(temporal) truth” in the second sentence.

Changed “**philosopher of science** Thomas Kuhn’s” to “Thomas Kuhn’s” in the third sentence.

Added the sentence: “**By taking a longer view, the crowd shifted Kuhn’s paradigm paradigm.**”

Chapter 4, *The Sovereign Story of Timeless Science*, second paragraph, footnote

Changed “happiness **ever more** justly” to “happiness justly **ever better**” in the third sentence.

Chapter 4, Economic Policy, first paragraph

Changed “actions” to “**aphoristic** actions” in the last sentence.

Chapter 4, *Promote Free Trade*, first paragraph

Changed “**practical** wisdom” to “wisdom” in the last sentence.

Appendix B, Balanced Excellence, last paragraph, third sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Examples include the beliefs that (1) we have as many lifetimes as it takes to reach mystical union, (2) we can reach the ultimate end of existence in an existence after death, and (3) we can reach the ultimate end of existence through revering life.”

was changed to:

“Examples include the beliefs that we have as many lifetimes as it takes to reach mystical union and that we can reach the ultimate end of existence in an existence after death.”

Changes in Version 2008.04.06

Chapter 1, Excellence in Means, eighth paragraph, footnote, last sentence

“For more on the Toyota production system, see Appendix C.”

was deleted.

Chapter 3, Conclusion, first paragraph

“This section applied the timeless concept of deciding well to the timeless end of believing well. We pursue the timeless end of believing well by deciding well. In theory, deciding well calls for us to consider these boundless factors in even our smallest decisions — it calls for us to see the world in a grain of sand. It also calls for us to judge not only footholds and handholds but also paths leading to the Good, the Truth, Wisdom, Justice, and Beauty.”

was changed to:

“This section applied the timeless concept of deciding well to the timeless end of believing well. We pursue the timeless end of believing well by deciding well. Deciding well calls for us to judge not only footholds and handholds but also paths leading to the Good, the Truth, Wisdom, Justice, and Beauty. In theory, it also calls for us to consider these timeless ends in even our smallest decisions — it calls for us to see the world in a grain of sand.”

Chapter 4, Choosing Governments, all

“Choosing Governments

From the timeless view of deciding well, governing well is a matter of helping all of us to decide well. Until we choose our governments by how well they govern, we will not get governments that foster the better angels of our nature.”

was changed to:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Conclusion

From the timeless view of deciding well, governing well is a matter of helping all of us to decide well. Until we choose our governments by how well they govern, we will not get governments that foster knowledge useful in deciding well. We will not get governments that foster the better angels of our nature.

“In a larger sense, governing well is a matter of testing our beliefs about Justice. We ought to ensure that our experiment is properly run, which is to say that our sovereign rights story is clear and that our laws, habits, customs, and actions conform to it. Further, we ought to encourage rival experiments in revering life well. To do otherwise is to deny our role as researchers in the research program of, by, and for intelligent life. To do otherwise is to claim that we have found the Truth about Justice.”

Changes in Version 2008.04.12

Preface, fifth paragraph

Changed “philosophy” to “philosophy, which calls to mind the work of August Comte,” in the first sentence.

Changed “definite” to “certain” in the third sentence.

“We can imagine: (1) theists without religious zeal, (2) theists without faith in the existence of the Divine, (3) theists with faith in the chance to win a week of Las Vegas debauchery, (4) atheists with faith in the non-existence of the Divine, and (5) atheists pursuing the transcendental values of truth, justice, and beauty with religious zeal.”

was changed to:

“ We can imagine theists without religious zeal, without faith in the existence of the Divine, or with faith in the chance to win a trip to Las Vegas. We can also imagine atheists with faith in the non-existence of the Divine or pursuing justice with religious zeal.”

Preface, sixth paragraph

Changed “belief system” to “belief system as expressed in this quote” in the first sentence.

Chapter 1, Excellence in Means, second to last paragraph

Changed “that we can solve” to “to solve” in the last sentence.

Chapter 2, Three Mistakes, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “strategy for learning” to “means of creating techniques that involved paying workers not only for their skilled hands but also for their trained minds” in the last sentence.

Chapter 2, Profit, first paragraph, footnote

“⁵ We should never use this timeless concept of profit for the temporal task of assessing results. Temporal profits are not always the result of deciding well. Buying a ten-dollar lottery ticket that has a ten percent chance of winning twenty dollars is foolish regardless of the outcome. Conversely, losses are not always the result of deciding poorly. Buying a ten-dollar lottery ticket that has a ten percent chance of winning a million dollars is wise regardless of the outcome. To attribute success solely to good decision-making or failure solely to poor decision-making is foolish.”

was changed to:

“⁵ We should never use this timeless concept of profit for the temporal task of assessing the quality of decision-making. Investing ten dollars in a risky venture that has a certain expected value of a thousand dollars is wise regardless of the outcome. Conversely, investing a thousand dollars in a risky venture that has a certain expected value of ten dollars is foolish regardless of the outcome. Temporal profits are not always the result of deciding well and temporal losses are not always the result of deciding poorly. To attribute temporal profits solely to good decision-making or temporal losses solely to poor decision-making is foolish.”

Chapter 3, *The Ring of Truth*, first paragraph, fourth and fifth sentences

“Only if a problem is consistent with our current beliefs about all boundless factors can we be reasonably certain that it is the best problem to solve. Only then can we say that the beliefs supporting our choice have the ring of Truth.”

were changed to:

“Only if a problem is consistent with our current beliefs about all boundless factors can we be reasonably certain that it the beliefs supporting our choice have the ring of Truth.”

Chapter 3, Refining Everyday Thinking, last two paragraphs

“This timeless concept of science provides us with a vision of how best to improve the process of refining everyday thinking.¹⁴ It also reminds us that the temporal results of this endless process are the truth rather than the Truth. Less obvious, it strongly suggests that the way that modern academics have divided human inquiry into disciplines is flawed. This is especially true in the way that they have grouped disciplines into the natural sciences, social sciences, and humanities.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Fixing this modern scheme of grouping disciplines takes three simple steps. The first is to change the name of the social sciences to the *intelligent life sciences*. The *intelligent life sciences* would include all of the disciplines that directly concern the research program of, by, and for intelligent life. The next step is to subdivide this new group into the *ethical sciences*, *political sciences*, and *practical sciences*. The *ethical sciences* would refine our beliefs about the Good; the *political sciences* would refine our beliefs about Justice; and the *practical sciences* would refine our beliefs about Practical Wisdom. The last step is to change the name of the natural sciences to the *true sciences*. The *true sciences* would refine our beliefs about the Truth without concern for the Good, Justice, or Practical Wisdom. The humanities would continue to include all disciplines that concern the ring of Truth rather than the Truth per se. This new means of grouping disciplines comes closer than the modern scheme to carving nature at its joints.”

“¹⁴ The belief that science ought to concern the results of refining everyday thinking (theories) rather than processes for refining everyday thinking (strategies for learning) tends to blind us to the best problems to solve. It does not take a theory to beat a theory. It takes an intellectual tool to beat an intellectual tool. The RTS strategy for learning beat the EOQ model’s marginalist theory at helping us to find problems to solve.”

were changed to:

“This timeless concept of science as the process of refining everyday thinking combines Einstein’s insight into the everyday nature of science with the RTS/EOQ insight into deciding well. The universal research program of, by, and for intelligent life consists of both subordinate research programs and theories. Subordinate research programs help us to find problems to solve. Theories help us to solve given problems. For helping us to find problems to solve, it takes a research program to beat a research program. For helping us to solve given problems, it takes a theory to beat a theory. In general, it takes an intellectual tool to beat an intellectual tool. The RTS research program beat the EOQ theory at helping us to find problems to solve.

“This new concept of science provides us with a timeless means of organizing intellectual work into fields of study. Rather than grouping these fields into the *natural sciences*, the *social sciences*, and the *humanities*, it tells us that we ought to group them into the *true sciences*, the *intelligent life sciences*, and the *arts*. Like the natural sciences, the true sciences would include all fields that seek to refine our beliefs about the Truth without concern for the Good, Justice, or Practical Wisdom. Unlike the natural sciences, this group would not imply that the affairs of intelligent life are separate and distinct from nature.

“The intelligent life sciences would include all fields that seek to refine our beliefs about the Good, Justice, and Practical Wisdom. The *ethical sciences* refine our beliefs about the Good; the *political sciences* refine our beliefs about Justice; and the *practical sciences* refine our beliefs about Practical Wisdom. Unlike the social sciences, these sciences would embrace revering life well.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The arts would include all fields that aim at the ring of Truth rather than the Truth per se. Like the humanities, this group would concern all of the boundless factors of deciding well. Unlike the humanities, it would not imply that humans are separate and distinct from other forms of intelligent life.¹⁴”

“From the timeless view of believing well, this timeless way of grouping fields comes closer than the modern scheme to carving nature at its joints.”

“¹⁴ This is not to say that history is nothing more than literature. History is literature constrained by historical facts and by the fashions of historians.”

Chapter 4, *The Explicit Experiment*, second last paragraph

Changed “dissenting opinion of a decision” to “dissenting opinion in a decision” in the sixth sentence.

Chapter 4, Conclusion, last paragraph

Changed “Further, we ought” to “We also ought” in the third sentence.

“To do otherwise is to claim that we have found the Truth about Justice.”

was deleted.

Appendix B, Einstein’s Twin Warnings, last paragraph

Changed “Jesus as “the way, and the truth, and the life,”” to ““the way, and the truth, and the life” in terms of timeless science,” and “follow the way, pursue the truth, and revere life” to “decide well, believe well, and revere life well” in the third to the last sentence.

Changes in Version 2008.04.14

Preface, fifth paragraph

Changed “Divine” to “divine” in all (4 occurrences).

Chapter 4, *The Sovereign Story of Timeless Science*, second paragraph, footnote

Changed “ever better” to “ever more wisely” in the third sentence.

Added the sentence: “This timeless story echoes Franklin’s 1780 appeal to Joseph Priestley for a thousand year view of moral science.”

Changes in Version 2008.04.21

The following were the result of advice from the ISCE editor (Osborn).

Acknowledgments, second, third, and fourth paragraphs

“I should like to acknowledge **twelve** people who helped me find the problems that led to this work. **The first is Frederick Sontag, Pomona College’s much beloved philosopher and theologian. For a third of a century Fred has encouraged me to become more than I am. In doing so, he** has been extremely generous with his most precious resource, his time.

“**The second is James Likens, the most openly reflective member of the Pomona economics faculty.** Jim frequently told us that social scientists tell many stories about this or that complex phenomenon. He also told us that economists don’t do dynamics well.

“**The third is Gordon Douglass. My last semester at Pomona, I took an independent study course in human capital theory from Gordon. Understanding this material forced me to ponder methodology, an activity so dangerous to the emotional health of economists that George Stigler once joked that economists ought to leave it to the end of their careers. The more I ruminated, the more distraught I became. Despite the threat of failing to graduate, I could not produce the required term paper. I finally gave Gordon his paper, *Wealth in the Information Age, A Humanistic Approach to Economics*, seventeen years late.”**

were appended to the first paragraph and changed to:

“I should like to acknowledge **a dozen** people who helped me find the problems that led to this work.

“**The first three were Pomona College professors.** Frederick Sontag **pushed me never to stop becoming more than I am. For a third of a century Fred** has been extremely generous with his most precious resource, his time. James Likens often told us that social scientists tell many stories about this or that complex phenomenon. Jim also told us that economists don’t do dynamics well. **Gordon Douglass exposed me to methodology, an activity so dangerous to the emotional health of economists that George Stigler once joked that economists ought to leave it to the end of their careers. My last semester in college I took an independent study course in human capital theory from Gordon. I could not get my mind around how a theory could be both useful (in predicting what will happen in markets) and foolish (in explaining what to do).** The more I ruminated, the more distraught I became. Despite the threat of failing to graduate, I could not produce the required term paper. I finally gave Gordon his paper,

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Wealth in the Information Age, A Humanistic Approach to Economics,” seventeen years late.”

Acknowledgments, new third paragraph

“The fourth through seventh are Stanford business school professors who helped me to understand the practical limits of analytical tools.”

was changed to:

“The next four were professors at the Stanford business school.”

Acknowledgments, new fourth paragraph

“The eighth is Taiichi Ohno, the Toyota manager who first imagined lean production. In the summer of 1984, I was head of information systems and human resources at Star Forms, a closely held business forms manufacturing company that for the preceding dozen years had average annual sales growth and return on equity rates of over thirty percent. We achieved this remarkable record by acting and learning faster than our competitors did. A lecture by Ohno-san convinced me that we had much to learn about learning.”

was changed to:

“In the early 1980s, I was head of information systems and human resources at Star Forms, a closely held business forms manufacturing company. I believed that our firm owed its success to our ability to act and learn faster than others. A lecture by Taiichi Ohno in 1984 convinced me that we had much to learn about learning.”

Acknowledgments, new fifth and sixth paragraphs

“The ninth is Howard Sherman, the Santa Fe Institute’s “official unofficial philosopher” during the nineties. Howard weaned me from my belief in self-evident truth by introducing me to Albert Einstein’s theory of knowledge.

“The tenth is W. Brian Arthur, an economist who values his search for useful truth more than his professional reputation. Brian and I have been discussing practical wisdom since the early nineties. In the late nineties, he suggested that I write a book “from the heart” for the Harvard Business Review / Economist magazine audience.”

were changed to:

“In 1996, I joined the Santa Fe Institute’s business network. Howard Sherman, SFI’s “official unofficial philosopher of science,” introduced me to Albert Einstein’s theory of knowledge, thereby weaning me from my belief in self-evident truth. W. Brian Arthur, a scientist who values his search for useful truth more than his professional reputation,

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

suggested that I write a book “from the heart” for the *Harvard Business Review/Economist* magazine audience.”

Acknowledgments, new sixth paragraph

Deleted the first sentence: “**The eleventh is Friedrich Hayek.**”

Changed “Hayek” to “**Friedrich Hayek**” in the new first sentence.

Acknowledgments, new seventh paragraph

Changed “**The twelfth is** my father, John Huntington Harris, **who**” to “**Finally, there is** my father, John Huntington Harris,” in the first sentence.

Changed “**such strange terms as ‘paradigm’ and ‘recursionist economics.’**” to “**jargon.**” in the first sentence.

Preface, first paragraph

Changed “*Business, Government, and the Changing Environment*” to “**“Business, Government, and the Changing Environment”**” in the first sentence.

Preface, second paragraph

Changed “in assumptions” to “in **with** assumptions” in the first sentence.

Changed “I ought to have” to “**Instead,** I ought to have” in the second to last sentence.

Changed “I ought to have” to “**Rather than a theory,** I ought to have” in the last sentence.

Italicized “*science*” in the last sentence.

Preface, fifth paragraph

Changed “it **is useful**” to “**we owe it to ourselves**” in the third sentence.

Deleted the seventh sentence: “**In the pursuit of living well, we owe it to ourselves to distinguish between theology, religion, and faith.**”

Preface, sixth paragraph

Added the sentence: “**As we shall see, a prime example of scientific dogma is the belief that excellence in means is efficiency.**”

Preface, seventh paragraph

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changed “science **ought** to be” to “**we ought to define** science to be” in the second sentence.

Preface, ninth paragraph

Changed “**downside**” to “**disadvantage**” in the third sentence.

Italicized “***pi***” in the fourth sentence.

Chapter 1, Setting Words Aright, first paragraph

Italicized “***Concepts***” in the first sentence.

Chapter 1, Setting Words Aright, second paragraph

Italicized “***Knowledge resources***” in the second sentence.

Changed “**place** into use,” to “**put** into use;” in the third sentence.

Chapter 1, Setting Words Aright, third paragraph, second footnote

Changed “**X**” to “**10**” in the last sentence.

Chapter 1, Excellence in Means, second paragraph

Changed “**one hundred thousand**” to “**100,000**” in all (3 occurrences).

Changed “uses” to “**it** uses” in the third sentence.

Chapter 1, Excellence in Means, fifth paragraph

Changed “setups” to “setup **times**” in the third sentence.

Chapter 1, Excellence in Means, eighth paragraph

Changed “ever better” to “**in** ever better **ways**” in the second sentence.

Changed “high definition” to “high-**definition**” in the second sentence of the footnote.

Chapter 1, Excellence in Means, ninth paragraph

Changed “**the** temporal end” to “**a** temporal end” in the second sentence.

Chapter 1, Excellence in Means, tenth paragraph

Changed “**on** solely on” to “solely on” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 1, Excellence in Means, eleventh paragraph

Changed “on both what we know and what” to “both on what we know and on what” in the second sentence.

Chapter 1, Deciding Well, third paragraph

Changed “knowledge in use,” to “knowledge-in-use;” in the first sentence.

Changed “dot.com” to “dot-com” in the second sentence.

Chapter 2, Introduction, second paragraph

“Deciding to live well is a matter of using timeless tools (concepts, models, etc.) to help us to find temporal problems to solve and temporal tools to help us to solve these problems. We owe it to ourselves to plan our lives using timeless tools and work our plans using temporal ones. In planning terms, we ought to plan our lives using strategic tools and work our plans using tactical ones.”

was changed to:

“Let us consider living well from the temporal view of deciding well. We live well by using intellectual tools (concepts, models, etc.) to help us to find and solve problems. A common saying tells us simply to “plan our work and work our plan.”

“Now let us consider living well from the timeless view of deciding well. We live well by using timeless tools to help us find problems to solve and temporal tools to help us to solve these problems. We owe it to ourselves to plan our lives using timeless tools and to work our plans using temporal ones. We need both timeless and temporal tools. In planning terms, we need strategic tools to help us plan our lives and tactical tools to help us work our strategic plans.”

Chapter 2, Wealth, first paragraph

“Wealth is what we need to achieve our ends. Temporal wealth is what we need to satisfy our wants. Timeless wealth is what we need to live well.”

was changed to:

“In general, wealth is what we need to achieve our ends. From the temporal view of living well, wealth is what we need to live well based on what we currently know. Hence, temporal wealth is what we need to achieve what we currently want. From the timeless view of living well, wealth is what we need to live well based on all that can be known. Hence, timeless wealth is what we need to live well.”

Chapter 2, Pleasure and Joy, second and third paragraphs

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“There are two sorts of pleasure. The first is the pleasure that we derive directly from an activity. The second is the pleasure that is the result of an activity. We can think of the first as pleasure-in-acting and the second as pleasure-in-being. Eating junk food yields pleasure-in-acting; eating healthy food yields pleasure-in-being. We commonly refer to pleasure-in-acting as “pleasure” and pleasure-in-being as “joy.”

“In Western ethics, Aristotle defined pleasure as losing ourselves in activity.² To give us pleasure, an activity must not be too easy or too hard. Work that does not challenge us is boring. Work that challenges us too much is overwhelming. Between these extremes is a level that enables us to lose ourselves in activity. Pain-in-acting is anything that hinders losing ourselves in activity.”

were changed to:

“There are two sorts of pleasure. The first is the pleasure that comes from totally involving or immersing ourselves in activity. Aristotle defined this type of pleasure as losing ourselves in activity.² Surfers call this total involvement. To give us this type of pleasure, an activity must not be too easy or too hard. Activity that does not challenge us is boring. Activity that challenges us too much is overwhelming. Between these extremes is a level that enables us to lose ourselves in activity. We may call this type of pleasure, this losing ourselves in activity, *pleasure-in-acting*. Following this logic, we may also call anything that hinders our losing ourselves in activity *pain-in-acting*.”

Chapter 2, *Pleasure and Joy*, new third paragraph

Changed “hinders losing ourselves” to “hinders our losing ourselves” in the third and last sentences.

Chapter 2, *Pleasure and Joy*, new fifth paragraph

“Finding pleasure in an activity may call for investing time and money in training. Finding pleasure in playing chess calls for investing in knowledge of how to play chess. Finding pleasure in swimming calls for investing in the ability to swim well.”

was changed to:

“Finding pleasure in an activity may call for us to invest time and money in training. Finding pleasure in playing chess calls for an investment in knowledge of how to play chess. Finding pleasure in swimming calls for an investment in the ability to swim well.”

Chapter 2, *Pleasure and Joy*, last paragraph

“Seventeenth century philosopher Baruch Spinoza defined joy as the transition from a lesser to a greater perfection.² Joy ranges from relief to bliss. Relief is the state that arises from satisfying our basic needs; contentment is the state that arises from

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

satisfying our higher needs; and bliss is the ideal state that arises from satisfying all our needs. Pain-in-being is a matter of failing to satisfy needs.”

was changed to:

“The second type of pleasure is pleasure that is the product of acting. This is the pleasure of simply being. Baruch Spinoza defined this type of pleasure as the transition from a lesser to a greater perfection.² This type of pleasure, which we may call *pleasure-in-being*, ranges from relief to bliss. Relief is the state that arises from satisfying our basic needs; contentment is the state that arises from satisfying our higher needs; and bliss is the ideal state that arises from satisfying all our needs. Following this logic, we may call the condition that arises from failing to satisfy our needs *pain-in-being*.

“We commonly refer to pleasure-in-acting as “pleasure” and pleasure-in-being as “joy.” Using these common terms, losing ourselves in a good activity yields pleasure and joy. Similarly, losing ourselves in a bad activity yields only pleasure.”

Chapter 2, *Practical Wisdom*, first paragraph

Changed “the right things” to “those things that we need to live well” in the fourth sentence.

Changed “choose subordinate ends and the best means to them” to “satisfy our wants” in the fourth sentence.

Chapter 2, *Practical Wisdom*, last paragraph

Changed “means” to “ways” in the first and last sentences.

Changed “(rules of thumb / heuristic methods)” to “(rules of thumb/heuristic methods)” in the fourth sentence.

Merged first two sentences using a colon.

Chapter 2, *Two Means of Living Well*, last paragraph

Changed “the seven deadly sins” to “Dante’s seven deadly sins (lust, gluttony, greed, sloth, wrath, envy, and pride)” in the last sentence.

Chapter 2, *Alternatives to Living Well*, first two paragraphs

“The two major alternatives to pursuing the virtuous circle of pleasure and joy are pursuing pleasure and pursuing nothing. Those who pursue pleasure too often choose to mask pain-in-being with pleasure, which breaks the virtuous circle of pleasure and joy. Their pursuit of pleasure makes them vulnerable to mindlessly masking the pain of an unmet need with the pleasure of an activity that fails to satisfy the unmet need.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“Those who pursue nothing either pursue oblivion or mindlessly follow their traditions or leaders. They seldom consider whether their actions are wise. They are the most likely to fall into the cycle of poverty.”

were changed to:

“Some people pursue pleasure alone rather than the virtuous circle of pleasure and joy. When choosing to act, they consider only that an activity yields pleasure, not that it satisfies an unmet need. This makes them vulnerable to falling into the habit of masking the pain of an unmet need with the pleasure of an activity that fails to satisfy that unmet need. In short, it makes them vulnerable to acting compulsively.

“Other people pursue nothing. They seldom consider whether the activities they choose are good or bad. This makes them the most likely to fall into the vicious cycle of poor decision-making and deprivation, which we commonly call poverty.”

Chapter 2, *Alternatives to Living Well*, last paragraph

Italicized “*yin*” and “*yang*” in all (2 occurrences each).

Changed “ / ” to “/” in all (2 occurrences).

Chapter 2, *Human Capital, Work, and Leisure*, first paragraph

Changed “trading-off” to “trading off” in the last sentence.

Chapter 2, *Trade*, first paragraph

Changed “transactions but also” to “transactions, but also” in the fourth sentence.

Changed “paper,” to “paper” in the first sentence of the footnote.

Chapter 2, *Trust*, second paragraph

Changed “than non-knowledge assets” to “than are non-knowledge assets” in the second sentence.

Chapter 2, *Three Mistakes*

Changed “improving trade” to “the improvement of trade” in the first sentence of the first paragraph.

Changed “cannot improve” to “cannot in fact improve” in the second sentence of the first paragraph.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**the** good's quality” to “**a** good's quality” in the first sentence of the second paragraph.

Changed “**We**” to “**However, we**” in the second sentence of the second paragraph.

Changed “twentieth century” to “twentieth-century” in the fifth sentence of the last paragraph.

Chapter 2, Production, first paragraph

Changed “how **better** to build products” to “how to build products **better**” in the last sentence.

Chapter 2, Profit, first paragraph, first sentence

“**P**rofit is the expected return on **practical wisdom**.”

was changed to:

“**From a temporal view, profit is the actual return on a decision. From a timeless view, profit is the expected return on deciding well.**”

Chapter 2, Profit, first paragraph, footnote

Changed “**ten** dollars” to “**10** dollars” and “**a thousand** dollars” to “**500** dollars” in all (2 occurrences of each).

Changes in Version 2008.04.22

The following were the result of advice from the ISCE editor (Osborn).

Chapter 3, Introduction, second paragraph

Changed “Eighteenth century” to “Eighteenth-century” and “timeless end” to “**a timeless end**” in the first sentence.

Changed “**that** we generalize” to “**in which** we generalize” in the second sentence.

Changed “examine” to “**have examined**” in the third sentence.

Chapter 3, Introduction, second paragraph

Changed “Nineteenth century” to “Nineteenth-century” and “real world” to “real-world” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “are” to “were” in the third sentence.

Chapter 3, Introduction, third paragraph, footnote, first sentence

“W. V. O. Quine formally explained the difficulties the blurring of the distinction between statements within a system of concepts and changes to a system of concepts creates in his 1951 paper, *Two Dogma's of Empiricism*.”

was changed to:

“W. V. O. Quine formally explained the difficulties created by the blurring of the distinction between statements within a system of concepts and changes to a system of concepts in his 1951 paper, “Two Dogmas of Empiricism.””

Chapter 3, Introduction, fourth paragraph

Changed “Twentieth century” to “Twentieth-century” and “that we respond” to “in which we respond” in the first sentence.

Changed “chapter X” to “chapter 10” in the footnote.

Chapter 3, Introduction, ninth paragraph

Changed “that we should value” to “we should value” in second sentence.

Chapter 3, Introduction, tenth paragraph

Changed “at the core” to “that is at the core” in last sentence.

Chapter 3, Introduction, thirteenth paragraph

Changed “hinders deciding well” to “hinders us from deciding well” in fourth and fifth sentences.

Changed “knowledge of how to decide well” to “of this knowledge” in last sentence.

Chapter 3, Introduction, sixteenth paragraph

Changed “how treating others well helps us to pursue the Good and the Truth” to “this” in second sentence.

Changed “find ourselves” to “are” in last sentence.

Chapter 3, Introduction, seventeenth paragraph

Changed “Twentieth century” to “Twentieth-century” in the first sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “**Rawls**” to “**He**” in the second sentence.

Changed “**to** satisfy” to “satisfy” in the first sentence of the last footnote.

Chapter 3, Introduction, last paragraph

Changed “cooperating” to “cooperati**on**” in the second sentence.

Chapter 3, *The Ring of Truth*, second paragraph

Changed “*Ode on a Grecian Urn*” to ““*Ode on a Grecian Urn*”” in the first sentence.

Chapter 3, *The Ring of Truth*, last paragraph

Changed “**beauty**” to “**Beauty**” in the first sentence.

Changed “**is**” to “*is*” in the sixth sentence.

Chapter 3, Refining Everyday Thinking, third paragraph

Changed “long term” to “long-term” in the sixth sentence of the first footnote.

Chapter 3, Refining Everyday Thinking, fourth paragraph, footnote

Removed quotations around “weed out” in the first and second sentences.

Italicized “**applications**” in the second sentence.

Chapter 3, Refining Everyday Thinking, fifth paragraph

Changed “appear **to us to be** simple” to “appear simple” in the first sentence.

Changed “predict” to “predict **them**” in the second sentence.

Changed “knowledge in use” to “knowledge-in-use” in the last sentence.

Chapter 3, Refining Everyday Thinking, seventh paragraph

Changed “beat” to “**beats**” in the last sentence.

Chapter 3, Refining Practical Wisdom, last paragraph

Changed “stories” to “**the** stories” in the fifth sentence.

Changed “help us **to** find problems to solve, not to help us **to** predict” to “help us find problems to solve, not to help us predict” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “ / ” to “/” in the second footnote (2 occurrences).

Chapter 3, Refining Practical Stories, first paragraph

Changed “to predict” to “predict” in the fourth sentence.

Chapter 3, Refining Practical Stories, second paragraph

Changed “to find” to “find” in the fourth sentence.

Chapter 3, Refining Practical Stories, third paragraph

Changed “to be” to “as” in the third sentence.

Changed “knowledge in use” to “knowledge-in-use” in the fourth sentence.

Changed “THE” to “The” in the Adam Smith quote in the footnote.

Chapter 3, Refining Practical Stories, fourth paragraph

Changed “genetic level” to “genetic-level” and “higher level” to “higher-level” in the first two sentences of the third footnote.

Changed “mystically link” to “link mystically” in the third sentence of the last footnote.

Chapter 3, Trading Failures, first paragraph

Changed “flow” to “this flow” and “uneven flow” to “the uneven flow” in the second sentence.

Changed “flow” to “the flow” in the third sentence.

Changed “coverage” to “coverage,” in the second to last sentence.

Chapter 3, Recursive Failures, first paragraph

Changed “that we conceive” to “we conceive” and “that we see” to “we see” in the third sentence of the footnote.

Chapter 3, Recursive Failures, last paragraph

Changed “our current national income accounting system” to “the modern economic national accounting system” in the footnote.

Chapter 3, Computer Models, first paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “knowledge in use” to “knowledge-in-use” in the last sentence.

Changed “Gaussian” to “a Gaussian” and “most resulting” to “the resulting” in the second sentence of the footnote.

Removed italics from “A Focus on Exceptions that Prove the Rule” and changed “reprinted” to “reproduced” in the last sentence of the footnote.

Chapter 3, Computer Models, second paragraph

Changed “Agent based” to “Agent-based” in the first sentence.

“The best way to avoid debacles is to prevent embacles, the piling up of stress.”

was changed to:

“The best way to avoid a debacle, the sudden release of a large amount of stress, is to prevent embacles, the piling up of frozen accidents under stress.”

Chapter 3, A Crude Look at the Whole, first paragraph

Changed “fewer resources” to “with fewer resources” in the second sentence.

Chapter 3, A Crude Look at the Whole, second paragraph

Changed “to identify” to “identify” in the second sentence.

Chapter 3, A Crude Look at the Whole, last paragraph

Changed “retard progress” to “retard progress toward the timeless end of revering life well” in the third sentence.

Deleted the sentence: “Retarding progress robs the whole of life of a better future.”

Chapter 3, A Tale of Revolutions, last paragraph, footnote

Changed “knows” to “would know” in the third sentence.

Chapter 3, Conclusion, second paragraph

Changed “that” to “in which” (2 occurrences) and “tend” to “do tend” in the second to last sentence.

Chapter 4, Sovereignty, second paragraph

Changed “permanently,” to “permanently;” in the last sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Chapter 4, Sovereignty, third paragraph

Changed “good will” to “goodwill” in the second sentence (3 occurrences).

Changed “**needed**” to “**required**” in the third sentence.

Chapter 4, Sovereignty, last paragraph

Added “ — ” to the second sentence (2 occurrences).

Chapter 4, *The Explicit Experiment*, first paragraph

Changed “--” to “ — ” in the Declaration quote (2 occurrences).

Chapter 4, *The Explicit Experiment*, third paragraph

Changed “ --” to “ — ” in the Gettysburg Address quote (6 occurrences).

Chapter 4, *The Explicit Experiment*, fourth paragraph

Added quotation marks to the First Amendment quote in the Word version.

Chapter 4, *The Explicit Experiment*, last paragraph, footnote

Changed “social justice inspired” to “social justice-inspired” in the second sentence.

Changed “Christianity inspired” to “Christianity-inspired” in the fourth sentence.

Changed “**thirties**” to “**1930s**” and “**forties**” to “**1940s**” in the last sentence.

Chapter 4, *Tax Well*, first paragraph

Changed “as how” to “as **to** how” in the second sentence.

Changed “**is** never” to “**would** never **be**” in the last sentence.

Chapter 4, *Lower Trade Barriers*, first paragraph, last sentence

“Nothing is more useful to a person than **is another** person **guided by wisdom.**”

was changed to:

“Nothing is more useful to a person than a person **who pursues Wisdom.**¹³”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“¹³ Compare this to Proposition 35, Corollary 1 of the fourth book of Spinoza’s *Ethics*: There is no individual thing in nature, which is more useful to man, than a man who lives in obedience to reason.”

Chapter 4, *Control the Money Supply Passively*, first paragraph, footnote

Changed “power,” to “power:” in the fourth sentence.

Chapter 4, *Promote Practical Science*, first paragraph

Changed “Further” to “Furthermore” in the second sentence.

Chapter 4, *Promote Savings for Welfare*, third paragraph

Changed “government run” to “government-run” in the first sentence.

Changed “dependents” to the more universal variant “dependants” in the fourth sentence.

Changed “does” to “do” in the last sentence of the last footnote.

Afterword, first paragraph

Changed “that” to “in which” in the second sentence.

Afterword, second paragraph

Changed “it was their” to “that it was their” in the second and third sentences.

Afterword, third paragraph

Changed “safety — ” to “safety:” in the last sentence.

Afterword, last paragraph

Changed “I am” to “Thus, I am” and “that” to “in which” in the first sentence.

Appendix A, title

Changed double quotes to single quotes.

Appendix A, first paragraph

Italicized “*kaizen*” in the fourth sentence.

Appendix A, last paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “, Flatland, characters performed” to “Flatland, characters perform” in the first sentence.

Appendix B, Introduction, first paragraph

Changed “major problem” to “main problem” in the first sentence.

Appendix B, *Schweitzer's Universal Spiritual Need*, third paragraph, third sentence

“Cultures that adopt this must add an ethical system to govern worldly affairs.”

was deleted.

Appendix B, *Schweitzer's Universal Spiritual Need*, fourth paragraph, first footnote

Italicized “*karma*” and “*dharma*” in the first sentence.

Appendix B, *Schweitzer's Universal Spiritual Need*, last paragraph

Changed “slow evolution” to “a slow evolution” and “in Indian” to “in both Indian” in the first sentence.

Changed “slow evolution” to “a slow evolution” in the second sentence.

Appendix B, *Practical Benefits of Magical Mysticism*, last paragraph

Changed “Archimedes’s” to “Archimedes” in the second sentence.

Appendix B, *Heroic Death*, second paragraph

Changed “amount” to “amount of willingness” in the last sentence.

Appendix B, *Heroic Death*, last paragraph

Removed italics from the last sentence: “Those who ritualize heroic death are either fools or knaves.”

Appendix B, *Einstein's Twin Warnings*, first paragraph

Changed “to mystically link or relink” to “to link or relink mystically” in the second sentence.

Changed “refining everyday thinking” to “the endless process of refining everyday thinking” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Removed italics from the last sentence: “**Atheists ought to heed Einstein’s warning, “Science without religion is lame.”**”

Appendix B, *Einstein's Twin Warnings*, second paragraph

Added quotation marks to the two New Testament passages.

Removed italics from the last sentence: “**Theists ought to heed Einstein’s warning, “Religion without science is blind.”**”

Appendix C, *Folding in Processes*, third paragraph

Changed “**twenty-four** identical wheel bolt” to “**24** identical wheel-bolt” in the last sentence.

Appendix C, *Folding in Processes*, ninth paragraph

Changed “time” to “**of their** time” in the second sentence.

Changed “Decision related” to “Decision-related” in the last sentence.

Appendix C, *Smoothing Flows*, first paragraph

Changed “smooth flow” to “**this** smooth flow” in the fourth sentence.

Changed “**the result of the smoothing process**” to “**this smooth flow**” in the last sentence.

Appendix C, *Temporal Details*, first paragraph

Changed “**nineteen eighties**” to “**1980s**” in the last sentence.

Changed “Tokyo based” to “Tokyo-based” in the first sentence.

Changed “*Quality Circles,*” to “*Quality Circles;*” in the second sentence.

Appendix C, *Machine Tools*, second paragraph

Changed “industrial age” to “industrial-age” in the first sentence.

Changed “knowledge age” to “knowledge-age” in the third and fifth sentences.

Changed “**they try**” to “**it tries**” in the sixth sentence.

Appendix C, *Machine Tools*, fourth paragraph

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Changed “The human centered” to “This human-centered” in the first sentence.

Removed italics from and added quotation marks to “automation with a human touch” in the second sentence.

Italicized “*ninben no tsuita jidoka*” in the second sentence.

Appendix C, *Machine Tools*, fifth paragraph

Removed italics from and added quotation marks to “fool-proofing” in the second sentence.

Italicized “*baka-yoka*” in the second sentence.

Appendix C, *Production Links*, first paragraph

Changed “in to” to “into” in the second sentence.

Appendix C, *Production Links*, second paragraph

Changed “consuming work center” to “the consuming work center” in the second sentence.

Changed “batch size” to “the batch size” in the third sentence.

Appendix C, *Production Links*, third paragraph

Restored the missing footnote in the Word version, which had an HTML link to a footnote rather than an actual footnote.

Appendix C, *Production Links*, last paragraph

Changed “out of balance” to “out-of-balance” in the second sentence.

Appendix C, *Inducing Knowledge*, first paragraph

Changed “eighties” to “1980s” in the second sentence.

Appendix D, first paragraph

Changed “choose” to “decide” in the second sentence.

Appendix D, second paragraph

Changed “measuring” to “how to measure” in the first sentence.

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Appendix D, last paragraph

Changed “the same as” to “similar to” in the fifth sentence.

Changes in Version 2008.04.30

Acknowledgments, fifth paragraph

“In 1996, I joined the Santa Fe Institute’s business network.”

was changed to:

“The next two were seekers of larger truths who I met at the Santa Fe Institute.”

Changed “philosopher of science,” to “philosopher of science” during the 1990s,” in the second sentence.

Changed “a scientist” to “an economist” in the last sentence.

Preface, last paragraph, end

Added the paragraph:

“Pursuing timeless ends well calls for distinguishing between terms and concepts. I use the linguistic convention of surrounding terms with single quotation marks and concepts with double quotation marks. For example, the term ‘wealth’ may denote either the temporal concept of “what we need to satisfy our wants” or the timeless concept of “what we need to live well.” Similarly, the term ‘knowledge resources’ may denote either the temporal concept of “useful skills and expertise” or the timeless concept of “useful patterns of energy, matter, space, and time.” In pursuing timeless ends well, we need temporal concepts to solve temporal problems and timeless concepts to choose temporal problems to solve.”

Chapter 1, Excellence in Means, last paragraph, footnote

Changed “subordinate problem” to “temporal problem” in the first and third sentences.

Changed “a problem scale” to “a temporal problem scale” in the last sentence.

Chapter 1, Two Views of Deciding Well, last paragraph, last sentence

Added the footnote:

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

⁸ Note that the distinction between the temporal and timeless views of deciding well concerns the distinction between efficiency and the combination of efficiency and effectiveness. Unlike the distinction between efficiency and effectiveness, this distinction is independent of our choice of a temporal problem to solve. Just as we can never choose the largest number, we can never choose a temporal problem so large that it eliminates the distinction between the temporal and timeless views of deciding well.”

Chapter 2, Introduction, second paragraph

Changed “saying” to “maxim” in the last sentence.

Changed “our” to “your” in the last sentence (2 occurrences).

Chapter 2, *Pleasure and Pain*, last paragraph

“We commonly refer to pleasure-in-acting as “pleasure” and pleasure-in-being as “joy.” Using these common terms, losing ourselves in a good activity yields pleasure and joy. Similarly, losing ourselves in a bad activity yields only pleasure.”

was changed to:

“We commonly use the term ‘pleasure’ to mean pleasure-in-acting and the term ‘joy’ to mean pleasure-in-being. Using these common terms, losing ourselves in a good activity yields pleasure and joy, and losing ourselves in a bad activity yields only pleasure.”

Chapter 2, Profit, footnote

Changed “Investing 10 dollars in a risky venture” to “Paying \$10 for a lottery ticket” and “500 dollars” to “\$100” in the second sentence.

Changed “investing 500 dollars in a risky venture” to “Paying \$100 for a lottery ticket” and “10 dollars” to “\$10” in the third sentence.

Chapter 3, Refining Everyday Thinking, last paragraph

Changed “timeless view of believing well, this timeless way” to “view of timeless science, this way” in the first sentence.

Chapter 3, *Refining Practical Stories*, third paragraph, second to the last sentence

“The modern concept of wealth¹⁸ is much better than this concept.”

¹⁸ In the opening sentence of *Wealth*, Smith speaks of nations working to provide the things that their people consume: “The annual labour of every nation is the fund which originally supplies it with all the necessaries and conveniences of life which it annually consumes....” From the temporal view of modern economics, this is a positive statement

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

about what nations do. From the timeless view of this work, it is an explanatory statement. We use explanatory statements to guide our actions, to help us to find problems to solve. Smith, Adam, *An Inquiry into the Nature and Causes of the Wealth of Nations*, (Edinburgh: 1776), reprinted in Project Gutenberg, <<http://www.gutenberg.org/catalog>>, (18 February 2008).”

was changed to:

“The modern **economic** concept of wealth is much better than this concept.”

Chapter 3, *A Tale of Revolutions*, first paragraph, first sentence, footnote

Changed “book 1, chapter 1” to “(Edinburgh: 1776), book 1, chapter 1, reprinted in Project Gutenberg, <<http://www.gutenberg.org/catalog>>, (30 April 2008)” in the first sentence.

Chapter 3, *A Tale of Revolutions*, second paragraph, last sentence

Added the footnote:

“²⁹ This is not to say that Adam Smith did not consider moral philosophy, which he famously did in *The Theory of Moral Sentiments*. It is only to say that Smith based his economics on how we please ourselves rather than on how we decide well.”

Changes in Version 2008.05.07

Acknowledgments, second paragraph

Changed “don’t” to “do not” in the fifth sentence.

Acknowledgments, third paragraph

Changed “business school” to “Graduate School of Business” in the first sentence.

Preface, second paragraph

Changed “a theory,” to “a theory of moral philosophy,” in the last sentence.

Preface, fourth paragraph

Changed “modern Western belief” to “modern belief” in the first sentence.

Changed “modern belief in his definition of philosophy, which he used to introduce” to “belief in the introduction to” in the second sentence.

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Preface, fifth paragraph

Changed “or pursuing” to “or **atheists** pursuing” in the second to last sentence.

Changed “ought” to “ought (**owe it to ourselves**)” in the last sentence.

Chapter 3, Introduction, third paragraph

Changed “**Stewart**” to “**Stuart**” in the first sentence.

Chapter 3, Introduction, fourth paragraph

Changed “**established empirical facts**” to “**our beliefs**” in the first sentence.

Changed “**is more complex than Mill’s “black swan” example leads us to believe it to be**” to “**concerns not only our beliefs but also the concepts underlying our beliefs**” in the last sentence.

Chapter 3, Introduction, fourth paragraph, last sentence, footnote

“W. V. O. Quine **formally explained the difficulties created by the blurring of the distinction between statements within a system of concepts and changes to a system of concepts in his 1951 paper, “Two Dogmas of Empiricism.”** What follows in this section confirms Quine’s prescription for a holistic approach to meaning. With one major caveat, it also confirms Quine’s belief that “Philosophy of science is philosophy enough.” This caveat is that we define science as the timeless process of refining everyday thinking.”

was changed to:

“**Allowing for experience to change our system of concepts blurs the distinction between truths grounded in reason (means independent of fact) and truths grounded in fact. Philosophers will recognize this the analytic versus synthetic truth problem, which is the first of W. V. O. Quine’s two dogmas of empiricism. See Quine, W. V. O., “Two Dogmas of Empiricism,” *The Philosophical Review* Vol. 60, No. 1 (Jan., 1951) pp. 20-43. Reprinted in Quine, W. V. O., *From a Logical Point of View*, (Harvard University Press, 1953; second, revised edition 1961).”**

Chapter 3, Introduction, eighth paragraph

Changed “**raises a single question, which is**” to “**calls for us to ask**” in the first sentence.

Chapter 3, Introduction, ninth paragraph, last sentence, footnote

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The primary source of this essential description of modern liberalism is John Dewey, who **partially reconciled the pragmatic philosophies of Charles S. Pierce and William James with the idealistic philosophy of George Hegel.**”

was changed to:

“The primary source of this essential description of modern liberalism is John Dewey, who **cooked German idealism and American pragmatism into a democratic socialist stew.**”

Chapter 3, Introduction, eleventh paragraph

Changed “he called wisdom, first philosophy, **and** theology” to “he **variously** called wisdom, first philosophy, **or** theology” in the second to last sentence.

Chapter 3, Introduction, twelfth paragraph, end

Added the footnote:

“**We can imagine (1) an infinitely large problem that contains all other problems, (2) a means of solving this universal problem, and (3) a means of improving the means of solving this universal problem. Part of the means of improving the means of solving this universal problem (3) is refining our beliefs about (1), (2), and (3). We may call this endless process of refining our beliefs about (1), (2), and (3) “science.” We may also call this means of defining science “boundless pragmatism.” Note that this holistic definition of science reconciles W. V. O. Quine’s belief that philosophy of science is philosophy enough with Morton White’s apparently contradictory belief that philosophy ought to include the whole of human experience.**”

Chapter 3, Refining Everyday Thinking, ninth paragraph

Changed “these sciences would embrace revering life well” to “the **intellectual life** sciences would embrace **the timeless end of** revering life well” in the last sentence.

Chapter 3, Refining Practical Wisdom, second paragraph, second footnote

Changed “**timeless** view of science” to “view of **timeless** science” in the fifth sentence.

Chapter 4, *The Explicit Experiment*, second paragraph

Changed “**timeless** view of science” to “view of **timeless** science” in the fifth sentence.

Chapter 4, *The Sovereign Story of Timeless Science*, second paragraph, footnote

“The sovereign story of timeless science is **simply a refinement of Franklin’s** sovereign story of **moral science. The Declaration of Independence, as interpreted by philosopher**

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

Mortimer Adler, calls for us to pursue happiness justly, where happiness is the timeless end of living well. The sovereign story of timeless science calls for us to pursue happiness justly *ever more wisely*. This timeless story echoes Franklin's 1780 appeal to Joseph Priestley for a **thousand year view of moral science**. **For more on Adler's interpretation of the Declaration, see his book, *We Hold These Truths* (New York, Macmillan Publishing Company, 1987).**"

was changed to:

"Arguably, the sovereign story of timeless science is nothing more than a refinement of the sovereign story of the Declaration of Independence. In his book *We Hold These Truths* (New York, Macmillan Publishing Company, 1987), Mortimer Adler argues that the Preamble of the Declaration calls for us to pursue happiness justly, where happiness is the timeless end of living well. In contrast, the sovereign story of timeless science calls for us to pursue happiness justly *ever better*. This is timeless story is closer to Franklin's 1780 appeal to Joseph Priestley for a boundless moral science than is Adler's less complete timeless story."

Chapter 4, Conclusion

"From the timeless view of deciding well, governing well is a matter of helping all of us to decide well. Until we choose our governments by how well they govern, we will not get governments that foster knowledge useful in deciding well. We will not get governments that foster the better angels of our nature.

"In a larger sense, governing well is a matter of testing our beliefs about Justice. We ought to ensure that our experiment is properly run, which is to say that our sovereign rights story is clear and that our laws, habits, customs, and actions conform to it. We also ought to encourage rival experiments in revering life well. To do otherwise is to deny our role as researchers in the research program of, by, and for intelligent life."

was changed to:

"From the timeless view of deciding well, we owe it to ourselves to embrace our role as researchers in the research program of, by, and for intelligent life. We ought to ensure that our experiments in governance are properly run, which is to say that our sovereign rights stories are clear and that our laws, habits, customs, and actions conform to them. We also ought to encourage rival experiments in revering life well. To do otherwise is to deny our proper role in the flourishing of life.

"Governing well is a matter of helping all of us decide well. Until we choose our governments by how well they govern, we will not get governments that foster knowledge useful in deciding well. We will not get governments that foster the better angels of our nature."

The Science of Practical Wisdom
Changes from May 12, 2005 through May 10, 2008

Changes in Version 2008.05.10

Preface, fourth paragraph

Changed “modern **Western** belief” to “modern belief” in the first sentence.

Changed “**modern** belief in **his definition of philosophy, which he used to** introduce” to “belief in the **introduction to**” in the second sentence.

Preface, fifth paragraph

Changed “ought (**owe it to ourselves**)” back to “ought” in the last sentence.

Chapter 1, Excellence in Means, last paragraph

Changed “problems” to “**temporal** problems” in the sixth sentence.

Chapter 1, Two Views of Deciding Well, first paragraph

Changed “**Our**” to “**Further, our**” in the fourth sentence.

Deleted the last sentence: “**Modern economists call people who act in this way “rational.”**”

Chapter 1, Two Views of Deciding Well, last paragraph, last sentence

“**We** commonly call people who act **in this way** “wise.””

was made into a separate paragraph and changed to:

“**Modern economists call people who act according to the temporal view of deciding well “rational.” In contrast, we commonly call people who act according to the timeless view “wise.”**”

Chapter 2, Introduction, second and third paragraphs

“**Let us consider living well** from the temporal view of deciding well. **We** live well by using intellectual tools (concepts, models, etc.) to help us **to** find and solve problems. A common maxim tells us simply to “plan your work and work your plan.”

“**Now let us consider living well from** the timeless view of deciding well. **We** live well by using timeless tools to help us find problems to solve and temporal tools to help us to solve **these** problems. **We owe it to ourselves to** plan our lives using timeless tools and to work our plans using temporal ones. **We need both timeless and temporal tools.** In planning terms, we **need** strategic tools **to help us plan our lives** and tactical tools **to help us work our strategic plans.**”

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

were changed to:

“From the temporal view of deciding well, we live well by using intellectual tools (concepts, models, etc.) to help us find and solve problems. A common maxim tells us simply to “plan your work and work your plan.” In contrast, from the timeless view of deciding well, we live well by using timeless tools to help us find temporal problems to solve and temporal tools to help us solve temporal problems. We plan our lives using timeless tools and to work our plans using temporal ones. In planning terms, we plan our lives using strategic tools and work our plans using tactical tools.”

Chapter 2, Introduction, last paragraphs

Changed “given problems” to “temporal problems” in the first sentence.

Chapter 2, Wealth, first paragraph

Changed “temporal wealth” to “the temporal concept of wealth” in the third sentence.

Changed “timeless wealth” to “the timeless concept of wealth” in the fifth sentence.

Chapter 3, Introduction, second paragraph

Inserted the heading “The Curious End of Believing Well.”

Chapter 3, *The Elephant in the Room*, first paragraph

Changed “philosophical terms” to “other words” in the last sentence.

Chapter 3, *The Elephant in the Room*, last paragraph

Changed “assumptions about the creation of the Universe, our instincts, and our abilities” to “assumptions” in the last sentence.

Chapter 3, *Recursive Failures*, first paragraph, footnote

Changed “change the world for the better” to “change the world” in the third sentence.

Chapter 4, *The Sovereign Story of Timeless Science*, second paragraph, footnote, last sentence

“This is timeless story is closer to Franklin’s 1780 appeal to Joseph Priestley for a boundless moral science than is Adler’s less complete timeless story.”

was deleted.

Chapter 4, *Tax Well*, first paragraph, last two sentences

The Science of Practical Wisdom

Changes from May 12, 2005 through May 10, 2008

“The people who pay taxes are often not the people who bear the burden of them. A tax on practical wisdom would never be wise.”

were changed to:

“*Taxes on practical wisdom, which is to say taxes on profit, are never wise.*”

Chapter 4, *Promote Savings for Welfare*, last paragraph

“Policymakers might combine (1) a government-run safety net program, (2) a highly progressive **personal income** tax system, and (3) a tax-exempt universal welfare savings account program. The safety net program would ensure that all of us have what we need to decide well. The welfare savings account would allow income tax-free withdrawals for qualified welfare expenses. These expenses would include retirement, medical, unemployment, and educational expenses for the owners of the account and their dependants. They would also include unlimited giving to private charities.¹⁵ **The government would tax all other income as consumption.** The haves as well as the have-nots ought to decide well.¹⁶”

were changed to:

“Policymakers might combine (1) a government-run safety net program, (2) a highly progressive **consumption** tax system, and (3) a **consumption** tax-exempt universal welfare savings account program. The safety net program would ensure that all of us have what we need to decide well. **The government would tax all income as consumption.** The **universal** welfare savings account would allow **consumption** tax-free withdrawals for qualified welfare expenses. These expenses would include retirement, medical, unemployment, and educational expenses for the owners of the account and their dependants. They would also include unlimited giving to private charities.¹⁵ The haves as well as the have-nots ought to decide well.¹⁶”
