

# Boundless Pragmatism, An Invariant View of Deciding Well

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## 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**

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“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

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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.

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## 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**

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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).

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## 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

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

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## 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 “**Economists**” 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.**”

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## Changes in Version 2005.02.07

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## 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.””

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## 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

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“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**.”

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## 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:

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“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**



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“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

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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.**

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“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.<sup>5</sup> 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.”

“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:  $3, 22/7, 355/113, \dots$ , they seek ever better recursive processes for calculating pi:  $\pi = 4(1 - 1/3 + 1/5 - 1/7 + 1/9 - 1/11 + \dots)$ ;  $\pi = 2 \cdot \sqrt{3}(1 - 1/3 \cdot 3 + 1/5 \cdot 3^2 - 1/7 \cdot 3^3 + 1/9 \cdot 3^4 - 1/11 \cdot 3^5 + \dots)$ ;  $\dots$ , 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

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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.<sup>6</sup> 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.

“<sup>6</sup>Maslow, 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.

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## 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

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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

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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.”

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## 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



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“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.”<sup>4</sup> 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.”<sup>4</sup> 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.

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## 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.”

# Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2005

## Chapter 6, third paragraph

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

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## 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.”

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Change Archive for 2005

## 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.

# Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2005

## 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:

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Change Archive for 2005

“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.”

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## 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:

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Change Archive for 2005

“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.

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Change Archive for 2005

## 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.”

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## 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



## **Boundless Pragmatism, An Invariant View of Deciding Well**

Change Archive for 2005

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.”<sup>2</sup>”

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

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Change Archive for 2005

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.**”

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Changes in Version 2005.03.25

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Change Archive for 2005

## 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.”

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Change Archive for 2005

## 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.**”

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## 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

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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:

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“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 in 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

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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**

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“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.

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## **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**



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Added the footnote:

“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, 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.<sup>3</sup> 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,<sup>3</sup> 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

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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:

“<sup>3</sup> 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

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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.<sup>4</sup>

<sup>4</sup> 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.

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## **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,<sup>3</sup> 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

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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.”

“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.”<sup>4</sup>

“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.<sup>5</sup>

“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.<sup>6</sup>

<sup>4</sup> 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,<sup>3</sup> comes close to producing such theories. Austrian economists recognize that

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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.<sup>4</sup> In biological terms, we can base our theories of consumption on the set of all “teleonomic theories.”<sup>5</sup> We can then tighten these loose theories by culling members of this set.<sup>6</sup>

<sup>5</sup> 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

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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.

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Changes in Version 2005.04.15

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## 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.<sup>5</sup> We progress toward our ultimate ends by means of decision-making.<sup>6</sup>

“<sup>5</sup> 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.

“<sup>6</sup> 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:

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

“<sup>s</sup> 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.”

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## Chapter 4, Fluidity, first paragraph

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

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## 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**

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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 "**Increasing**" in the first sentence.

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## 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.

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## 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.”

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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

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

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## 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.

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## 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:

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“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.

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## 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:



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“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.

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

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## 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.<sup>11</sup> 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.

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

was deleted.

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## 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:

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“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:

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“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.

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## 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

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“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

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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.”

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## 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.

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## 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

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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.

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## 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.”



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## 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.

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“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.

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## **Changes in Version 2005.05.18**

### **Acknowledgments, fourth paragraph, first sentence**

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

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## 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.

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## 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.

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## 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

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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:

“<sup>13</sup> 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.<sup>3</sup> **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:

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“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.<sup>3</sup> **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.**”

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## 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.

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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:

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“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 “analogue” to “analog” in the first sentence.

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## 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.”



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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

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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 (C<sub>1</sub>). 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 (C<sub>2</sub>). 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

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standards for predicting. What remains are scientific theories that predict ( $C_1$ ). 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 ( $C_2$ ). 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.**"

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## 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

<sup>2</sup> 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.

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## 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 (C<sub>1</sub>). 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 (C<sub>2</sub>). 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:

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“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 (C<sub>1</sub>). 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 (C<sub>2</sub>). 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.

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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.

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## **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.”

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### 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,<sup>2</sup> 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,<sup>2</sup> 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

“<sup>12</sup> 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

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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:

“<sup>2</sup> 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.”



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## 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:

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“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.”

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Changes in Version 2005.06.02

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Change Archive for 2005

## 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

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“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.

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## 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:

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“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.

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## 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

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“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,<sup>6</sup> and countless forms of conspicuous consumption spring to mind.

“<sup>6</sup> 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.

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## Appendix B, Religious Fundamentalism, second paragraph

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

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### 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,<sup>6</sup> 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.**”

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“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.<sup>7</sup> In biological terms, we can base our theories of consumption on the set of all “teleonomic theories.”<sup>8</sup> We can then tighten these loose theories by culling members of this set.<sup>9</sup>

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

“<sup>6</sup> 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



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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.

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## 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**

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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

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Deleted the footnote:

“<sup>6</sup> 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?”

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## 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.

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## 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,<sup>6</sup> 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,<sup>6</sup> 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.”

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## 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

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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.”<sup>4</sup>

<sup>4</sup> 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).

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## 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.”

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### 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

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“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.

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## 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.”

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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*.**<sup>3</sup> 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



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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.<sup>2</sup> 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*.<sup>3</sup> **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.”

**“<sup>2</sup> 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:

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“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.

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### 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

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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.

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

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## 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.

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

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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.”

was changed to:

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“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.

“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

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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 takes the leading role. Wall Street, The City, and Chicago’s pits are rapidly becoming “the international financial market.””

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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.**”

were deleted.



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## 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.

## Chapter 4, Increasing Excellence, second paragraph

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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.

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## 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.

### Chapter 1, Pursuing our Ultimate Ends, third paragraph

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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.

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## 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:

“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

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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 international bond market has moved from Wall Street, The City, and Chicago’s trading pits to cyberspace.”

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was changed to:

“The international **currency** market has moved to cyberspace.”

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## 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.

Changed the sixth and seventh sentences from:

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“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.

### Afterword, last paragraph

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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**

Changed “**provides**” to “**yields**” in the first sentence.

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Changed “number” to “quantity” in the second sentence.

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## 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.”

was changed to:



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“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:

“**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.”

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## 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.**”<sup>2</sup> 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.**”<sup>2</sup> 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 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

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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 provides its citizens with a moral vision of how to pursue happiness in a freely progressing society.**”

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“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

“**Government policy makers administer justice by deciding who makes what decisions under what incentives. Excellence in policy making** is a matter of continuously

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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:

“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)

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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.

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## 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.

### Chapter 2, Science as Refining Everyday Thinking, third paragraph, second to last sentence

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“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.”**”

“To live wisely is to seek to live ever more wisely. We owe it to ourselves to be entrepreneurs in the business of life.”

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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 government rather than the actions of the governed and that they should err on the side of not intervening justly rather than intervening unjustly.**



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“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.”<sup>10</sup>

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).<sup>10</sup>

“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.””

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### Changes in Version 2005.07.19

Entire document

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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 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**

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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. **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

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“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% 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

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“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.

### Chapter 1, Mainstream Economics’ Blind Spot, third paragraph, last sentence

Inserted the following sentence:

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“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.

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## 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 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

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“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.”

### Preface, last paragraph

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

### Preface, end

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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

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.



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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.

### 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**

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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.”

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.”

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## 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:

“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

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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.

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## 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 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:

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“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

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

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“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.

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

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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.

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## 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 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:

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“<sup>2</sup> 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

Changed “**involves**” to “**is**” in the third sentence.

Changed “**personal characteristic**” to “**habit**” in the third sentence.

### Chapter 3, *Practical Wisdom*, third paragraph



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“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.”

### 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.”

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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 Sāṃkhya 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 Sāṃkhya 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 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

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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 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.

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## 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.

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## 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.

### 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.

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## 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.

## 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.”

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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.

“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:

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“**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.<sup>2</sup> **The slopes of these sand piles** tend toward a critical value 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-*

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*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.<sup>2</sup> 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.

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## 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.

### 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



# Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2005

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.”

## 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.

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Changed “**managerial** excellence” to “excellence” in the third sentence.

Changed “**progress from improving managerial** excellence” to “excellence” in the third sentence.

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## 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.<sup>2</sup> **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.**”

were changed to:

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“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.**<sup>2</sup> 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 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.

Changed “**managerial** excellence” to “excellence **in living**” in the third sentence.

Changed “excellence” to “excellence **in living**” in the third sentence.

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## 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:

“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

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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

“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*.”

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“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.<sup>2</sup> 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.<sup>3</sup> 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.”

<sup>2</sup> 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.”

<sup>3</sup> Bak, Per and Kan Chen “Self-Organized Criticality”, *Scientific American*, Jan. 1991: 46-53.”

was deleted.

### 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.”

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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*<sup>2</sup> and *modular scale-free networks*,<sup>3</sup> 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.”

<sup>2</sup> Bak, Per and Kan Chen “Self-Organized Criticality”, *Scientific American*, Jan. 1991: 46-53.”

<sup>3</sup> 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.

### 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.”

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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.

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## 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.**”

### Chapter 3, Two Means of Living Wisely

Changed “**pursuing happiness**” to “**living wisely**” in all (2 occurrences).

### Chapter 3, Alternatives to Pursuing Happiness, title



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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 / 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

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“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.”

### 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

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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.<sup>2</sup> 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.<sup>2</sup> 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.<sup>3</sup> New Deal “emergency” agricultural marketing orders still benefit established producers at the expense of the rest of the planet.”

were changed to:

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“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.<sup>3</sup> 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.”<sup>4</sup>

“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.”<sup>4</sup>

“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*

“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

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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.

### Chapter 5, Just Taxation, first three paragraphs

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“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.

“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

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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

Changed “problem solving” to “problem-solving” in the first sentence.

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Change Archive for 2005

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.

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## **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.

### **Chapter 2, Science as Refining Everyday Thinking, fourth paragraph**



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“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.

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Change Archive for 2005

## 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, care, sensitivity, and social responsibility higher than the “masculine” qualities of independence, self-reliance, discipline, and individual responsibility. **Lakoff believes**

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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?”

### Afterword, fourth paragraph, first five sentences

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Change Archive for 2005

“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

Changed “**For** those on the right, **the major problem is**” to “**Those on the right ought to know**” in the first sentence.

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## 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.”

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## 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

Changed “logically incompatible belief systems” to “belief systems” in the first sentence.

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### 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 activity, but if we believe that we are here for a higher purpose we are likely to seek to discover and fulfill that purpose.

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“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.”

### Appendix B, *Schweitzer's Universal Spiritual Need*, fourth paragraph, last two sentences

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“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.<sup>4</sup> 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.”  
~~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 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).”



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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.”

### Appendix B, *Schweitzer's Mistakes*, last paragraph, first two sentences

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“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:

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“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).**”<sup>10</sup>

“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.”

“<sup>10</sup>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.<sup>10</sup> 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.”

“<sup>10</sup>**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

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Change Archive for 2005

“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.

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“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.**”

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### 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

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Change Archive for 2005

“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.

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Change Archive for 2005

“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:

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“**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:



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“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**

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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:

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“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**

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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.

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## 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

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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 solving” in the second sentence.

Changed “**are** best solved” to “**we** best solve” in the third sentence.

Changed “it saved” 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.

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## **Changes in Version 2005.08.27**

### **Preface, seventh paragraph**

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“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.

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## 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 “**technologies, 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.

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## 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.**”

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## 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.



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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.

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“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:

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“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: “<sup>5</sup> 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*<sup>2</sup> and *modular scale-free networks*,<sup>3</sup> 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*<sup>2</sup> and *modular scale-free networks*,<sup>3</sup> 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.

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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.

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## Appendix B, Secular Humanism, first paragraph, first sentence

“Secular humanists often cite science as their reason for dismissing our need for mystical oneness.<sup>10</sup>

“<sup>10</sup>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.”

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).<sup>10</sup>

“<sup>10</sup>Rather 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).”

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## 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.”

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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.

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## 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.

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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

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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

“<sup>5</sup> 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:

“<sup>5</sup> 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:



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“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.

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## **Changes in Version 2005.09.12**

### **Acknowledgments, tenth paragraph**

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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.

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## 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.<sup>6</sup> **This solution requires that economists, as scientists, give up the power that comes from helping decision-makers formulate alternatives.**”

was changed to:

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“Fifty years ago, Milton Friedman **avoided this** problem **by** **limiting** economic science to theories that predict.”

and merged with the last paragraph.

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## 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

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“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.

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## **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.

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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:

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“Fifty years ago, Milton Friedman **avoided this problem by** limiting economic science to theories that predict.<sup>6</sup> 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.<sup>6</sup> 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.

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## 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



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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.

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### 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<sup>2</sup> and modular scale-free networks,<sup>3</sup> 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”).”

<sup>2</sup> Bak, Per and Kan Chen “Self-Organized Criticality”, *Scientific American*, Jan. 1991: 46-53.”

<sup>3</sup>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:

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“Early efforts to explain this network,<sup>2</sup> along with Vilfredo Pareto’s famous power law distribution of income, point to a power law distribution of creative-destructive events (“catastrophes”).”

<sup>2</sup> 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.

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## 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

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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.

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## 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.

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

Deleted “pragmatic” in the second sentence.

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### 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):”

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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.

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## 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:

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“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.

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### 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.”<sup>12</sup>

“**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 revere life can reach the Creator. Which bears better fruit?**

“***Religious fundamentalists ought to heed Einstein's warning, “Religion without science is blind.”***”

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“<sup>12</sup> Ibid.”

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## 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.



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## 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.”<sup>2</sup>

<sup>2</sup> 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.

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Changed “our accounting problems” to “our **national income** accounting” in the fifth sentence.

Changed “crisis” to “**major** crisis” in the last sentence.

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## 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

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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.

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## Changes in Version 2005.10.15

### Acknowledgments, fourth paragraph, last two sentences

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“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 predicting. Copernicus’s theory later proved its worth as a tool for explaining by

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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

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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?**

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“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



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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.”

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### 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 “relation**ship**” to “relation” in the first sentence.

#### **Chapter 2, Science as Refining Everyday Thinking, last paragraph, end**

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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:

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“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.

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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

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“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.

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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 “**Policy-makers**” to “**Tax** policymakers” in the first sentence.

### Chapter 5, all

Changed “**policy-makers**” to “**policymakers**” in all.

### Afterword, third paragraph

Changed “**airplanes**” to “**airliners**” in the fourth sentence.

### Appendix A, *Traditional Production Systems*, sixth paragraph

Changed “**permit**” to “**let**” in the fifth sentence.

### Appendix A, *Smoothing Flows*, third paragraph

Changed “WIP **inventory**” to “WIP” in the third sentence.

### Appendix A, *Production Links*, third paragraph

Changed “**inventory**” to “**stock**” in the first sentence.

Changed “**inventory** 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,

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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**

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Changed “**is less dependent**” to “depends **less**” in the six sentence.

Changed “**major crisis**” to “**catastrophe**” in the last sentence.

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## 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



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“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**

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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

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“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).<sup>10</sup> 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.<sup>10</sup>”

### Appendix B, Religious Fundamentalism, second paragraph

Added the sentence: “How do we know?”

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### 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.

## **Boundless Pragmatism, An Invariant View of Deciding Well**

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“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.

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## **Changes in Version 2005.10.28**

**Acknowledgments, tenth paragraph, last sentence**

## **Boundless Pragmatism, An Invariant View of Deciding Well**

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“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.

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### 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

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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

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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.”



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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.”

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## 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:

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“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.

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“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.

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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.

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## 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,

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Change Archive for 2005

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.<sup>2</sup> Once we have learned to conceptualize the world in one way, it is difficult for us to do so in another.<sup>3</sup> 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.*”

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“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**.<sup>2</sup> 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.<sup>3</sup> 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.**”

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## 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.”

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Change Archive for 2005

## 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



# Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2005

Changed “**Mainstream** economic” to “**Economic**” in the first sentence.

Changed “**mainstream** economists” to “economists” in the last sentence.

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## 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**.<sup>2</sup> Once we have learned to think of the world **using one conceptual framework**, it **is** hard for us to do so in another.<sup>3</sup> 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:

## Boundless Pragmatism, An Invariant View of Deciding Well

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“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**.<sup>2</sup> Once we have learned to think of the world **in one way**, it **can be** hard for us to do so in another.<sup>3</sup> 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.

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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.

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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”

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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.

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## 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.”

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## 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:

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“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,<sup>2</sup> 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

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“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.”

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## 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.<sup>4</sup>”

were changed to:



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“The second is *efficiency*, which they define as excellence in choosing means to subordinate ends.<sup>4</sup> **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.”

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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 (reflexive<sup>4</sup> / 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 (reflexive<sup>4</sup> / recursive) relation between the intellectual tools that we use to guide our actions and reality.”

### Chapter 3, Introduction, first paragraph

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“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:

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“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.**<sup>2</sup> 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.**<sup>2</sup> 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**

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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.

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## 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

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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.

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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?**

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“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.

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## 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

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“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.<sup>5</sup>

“*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.”

<sup>5</sup> 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.<sup>5</sup>”

<sup>5</sup> 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.<sup>6</sup>”

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“<sup>6</sup> 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.**<sup>10</sup>

“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.<sup>11</sup> 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.”

“<sup>11</sup> Rawls, John, *A Theory of Justice*, (Cambridge, MA: The Belknap Press of Harvard University, 1971), chapter III.”

were changed to:

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“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.<sup>10</sup> 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.”

<sup>10</sup> 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

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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**

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Changed “reverence for life” to “revering life” in the first sentence.

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## 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*.”

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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



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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

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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

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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.”

“<sup>2</sup> 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:

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“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).

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## 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

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“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.

“<sup>2</sup> 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*

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*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**

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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.

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## 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,

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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.”

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## 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.



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‘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.

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## 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.*”

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## 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.”

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## Changes in Version 2005.12.05

### Chapter 2, Economic Science, second paragraph

Changed “decision-oriented instrumentalism” to “instrumentalism” in the last sentence.

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## 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 and effectiveness would depend on one's level in the hierarchy. *Failure to define a problem scale can cause great confusion.*”

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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.<sup>5</sup> We make mistakes. If we are wise, we learn from our mistakes. If we are wise, waste is a regrettable by-product of learning.”

“**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.

Changed “**Using** discipline” to “**Discipline**” in the fifth sentence.

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## 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:

“**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.**”

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“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.”

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## 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.

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## Changes in Version 2005.12.20

### Chapter 1, Economics' Blind Spot, end

Added the paragraph:

“For more on the subject of a learning worldview, see Appendix A, The Toyota System.”

### Chapter 1, Managerial Excellence, fourth paragraph

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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**

Changed “learn” to “**to learn**” in the first sentence.

### **Chapter 5, Control the Money Supply Passively, last paragraph, last two sentences**

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“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.**”

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### 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 possibility of learning turns what otherwise would be a simple closed-ended problem into a complex open-ended one.**”

was returned to normal font.



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## 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.**”

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## Changes in Version 2005.12.24

### Acknowledgments, seventh paragraph

Changed “**the late philosopher-entrepreneur** Howard Sherman” to “Howard Sherman” in the first sentence.

### Chapter 1, Deciding Wisely, last paragraph, fourth sentence

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“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” 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

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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.”

were changed to:

“They promise heaven on earth for those true believers who survive the final battle against evil.”

### 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.

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## Changes in Version 2005.12.31

### Acknowledgments, third paragraph

Changed “reflective” to “openly reflective” in the first sentence.

### Acknowledgments, fourth paragraph, last sentence

“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,

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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 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.

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## 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 “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.**”

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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*<sup>7</sup> and the *Tao Te Ching*.<sup>8</sup>”

“<sup>7</sup> *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.”

“<sup>8</sup> *In the pursuit of knowledge, everyday something is added.*

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*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.”*<sup>7</sup>

“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.”

<sup>7</sup> *The Bhagavad-Gita*. Trans. Barbara Stoler Miller. (New York: Bantam Books, 1986), third teaching, paragraph 19.”

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