

Boundless Pragmatism, An Invariant View of Deciding Well

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Changes in Version 2013.03.30

Entire Document

Changed “sovereign rights story” to “sovereign-rights story” in all (9 occurrences).

Appendices

Removed Appendix B (stub) from the work.

Removed references to Appendix B from footnotes in the *Public Entropy* subsection of the third chapter and the Good Policies section in the fifth chapter.

Demoted Appendix A to Appendix B. Updated references in footnotes in the first and third chapters.

Promoted Appendix C to Appendix A. Deleted reference to this appendix in a footnote in the *Academic Fields* subsection of the fourth chapter. Added a reference to the Georg Cantor footnote in the first chapter (see below).

Acknowledgments, first paragraph

Changed “**public** high school” to “high school” in the first sentence.

Acknowledgments, last paragraph

Changed “assistant” to “assistant **for financial matters**” in the second sentence.

Deleted “(1947-9)” and “(1949-59)” from the second sentence.

Changed “(1942-6)” to “**during the Second World War**” in the fourth sentence.

Preface, entire section

Changed “**complex adaptive**” to “” in all (3 occurrences).

Preface, seventh paragraph

Changed “of reason” to “of reason **than rationality**” in the last sentence.

Preface, eighth paragraph

Changed “*the science of science,*” to “” in the first sentence.

Chapter 1, title quote, footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “commonly known **by various courtesy and honorary names, which include**” to “**more** commonly known **as**” in the last sentence.

Chapter 1, Choosing Frames Well, first paragraph

Changed “**that help us survive and thrive. We naturally arrange concepts**” to “**, which we arrange**” in the first two sentences.

Changed “**useful** structures **for** reducing our sensations **of the world**” to “structures **useful in** reducing our sensations” in the last sentence.

Chapter 1, Choosing Frames Well, second paragraph

Changed “use **to reduce our sensations of the world to concepts**” to “use” in the first sentence.

Chapter 1, Choosing Frames Well, last paragraph, footnote, last three sentences

“**From this view, mathematics is the science of patterns. Rather than logic, its basis is the reason of pursuing the timeless end of deciding well. For more about this concept of mathematics, see Appendix A.**”

were changed to:

“For more about this, see Appendix A.”

Chapter 1, Choosing Frames Well, last paragraph, footnote, end

Added the sentence:

“**For more about this concept of mathematics, see Appendix A.**”

Chapter 1, Useful Frames, first paragraph, last three sentences

Changed “**to help**” to “**that help**” in all (2 occurrences).

Promoted sentences to a new paragraph.

Chapter 1, *The EOQ/RTS Example*, last paragraph

Changed “produce” to “produce **these goods**” in the fifth sentence.

Chapter 1, *Seeing Through Apparent Miracles*, second paragraph

Changed “**communicate his experiences in Spaceland**” to “**explain his journey**” in the sixth sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, *Seeing Through Apparent Miracles*, third paragraph

Changed “**these apparent miracles**” to “**their system**” in the third sentence.

Chapter 1, Values, third paragraph, footnote

Changed “**temporal view** third person **plural to timeless view** first person **plural**” to “third-person to first-person” in the third sentence.

Chapter 1, Values, fifth paragraph

Changed “**invariant with respect to**” to “**the same for all**” in the second sentence.

Changed “**English**” to “**Europeans**” in all (3 occurrences).

Inserted a paragraph break after the second sentence.

Chapter 1, *Ever More Complete Multiple-Frame Models*, first paragraph, footnote

“**In other words, there exists a virtuous circle between deciding well and believing well.**”

was deleted.

Chapter 1, Values, last paragraph, third sentence

“¹³ **We might also call the timeless end of living well *the Good, Well-being, Welfare, or Eudaemonia*. ‘Happiness’ has the advantage of highlighting the temporal nature of the prevailing concept of happiness (a state of well-being).**”

was deleted.

Chapter 1, Timeless Reason, entire section

Changed “symbol **for**” to “symbol **of**” in all (7 occurrences).

Chapter 1, Timeless Reason, first two paragraphs

“From the view of this multiple-frame approach to deciding well, hereafter referred to simply as *the multiple-frame approach*, **expanding the scope of the problems we face helps us find better problems to solve. When we expand the scope of these problems to the limits of imagination, a structure of values independent of beliefs and circumstances emerges. Understanding the process by which we best progress toward these invariant ends can help us progress ever more readily.**¹⁵

“**The process by which we best progress towards these invariant ends** involves distinguishing between the models we use to help us solve given problems, **the best of which are those of**

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

modern science, and those we use to help us find problems to solve, the best of which concern pursuing the boundless factors of deciding well.”

were changed to:

“From the view of this multiple-frame approach¹⁵ to deciding well, hereafter referred to simply as *the multiple-frame approach*, involves distinguishing between the models we use to help us solve given problems and those we use to help us find problems to solve.”

Chapter 1, Timeless Reason, new second paragraph

Changed “rationality (the reasoning of geometry, mathematics, and logic)” to “rationality” in the first sentence.

Deleted the last three sentences:

“If we are intellectually honest, we admit that these models can never be complete. There can never be a theory of everything. There can only be strategies for learning everything, which includes learning ever more about strategies for learning everything.”

Chapter 1, Timeless Reason, new third through fifth paragraphs

“In using the second type of model, we explicitly include what we do not currently know into our models of the world. In effect, we choose to address the problem that contains all other problems in pursuing the timeless end of deciding well. We divide this universal problem into infinitely large parts, each of which concerns how best to pursue a boundless factor of deciding well. We then use these infinitely large, partial models of the universal problem to help us find and judge problems to solve. If a problem rings true with all of these partial models, we have found a beautiful problem to solve, a problem that is consistent with all that we currently know about pursuing the timeless end of deciding well.

“In choosing to use the second type of model, we choose to address problems that are too complex to address using temporal (rational/modern) reason alone. We may call this way of thinking about problems too complex to address using temporal reason alone *timeless reason*.¹⁶

“Timeless reason concerns the models we use to find problems to solve in pursuing the timeless end of deciding well. In building these models, we face problems. The most basic of these problems is the problem of whether the problem we believe is best is indeed best. Dwight Eisenhower provided us with a solution to this problem: “If a problem cannot be solved, enlarge it.” If we follow this simple maxim to its logical conclusion, we end with the problem that contains all other problems in deciding well. Our problem then becomes one of how best to address this universal problem.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“¹⁶ Pragmatic philosophers may find this distinction between temporal and timeless reason useful in addressing problems raised by Nelson Goodman in his book *Fact, Fiction, and Forecast* (Cambridge, MA: Harvard University Press, 1983).”

were changed to:

“In using the second type of model, we explicitly include what we do not currently know into our models of the world. **We use these models to help us find problems to solve.** The most basic of these problems is the problem of whether the problem we believe is best is indeed best. Dwight Eisenhower provided us with a solution to this problem: “If a problem cannot be solved, enlarge it.” Following this simple advice completely, we end with the problem that contains all other problems in deciding well. Our problem then becomes one of how best to address this universal problem.”

Chapter 1, Timeless Reason, last paragraph

Changed “**formal**” to “**logically consistent and complete**” in the first sentence.

Changed “**this knowledge**” to “**these provisions**” in the last sentence.

Chapter 1, Timeless Beauty, first paragraph

Changed “multiple-frame” to “timeless” in the first sentence.

Changed “efficiencies functioning on multiple **dimensions**” to “efficiency functioning on multiple **levels**” in the third sentence.

Changed “**are the efficiencies**” to “**is the efficiency**” in the last sentence.

Chapter 1, Timeless Beauty, third paragraph

Changed “*the Stanza della Segnatura*” to “**this library**” in the first sentence.

Changed “**discovering**” to “**learning**” in the last sentence.

Chapter 1, Timeless Beauty, fourth paragraph, second through last sentences

Added names of dialogs to the two Platonic themes (*Protagoras* and *Timaeus*) to the first sentence.

Changed “**quintessence**” to “**aether**” in the fifth sentence.

Added the following paragraph at the end of the sixth sentence:

“¹⁶ Taken together with the octagonal oculus, the pursuits of Beauty, Truth, Justice, and Wholeness form a Latin cross with the long member representing the factor in mind. We can

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

clearly see this cross in the horizontal and vertical rays emanating from the symbol of the Holy Ghost (encircled dove) in the fresco below the theology circle. Looking at this fresco, the factor we have in mind is Wholeness. A high-resolution image of this fresco is available online at <[http://upload.wikimedia.org/wikipedia/commons/1/19/Raphael - Disputation of the Holy Sacrament.jpg](http://upload.wikimedia.org/wikipedia/commons/1/19/Raphael_-_Disputation_of_the_Holy_Sacrament.jpg)> (31 December 2012).”

Changed “multiple-frame” to “timeless” and “discovering” to “learning” in the last sentence.

Promoted the last sentence to a new paragraph and added the following:

“From the timeless view of this work, this Tantalean image represents learning ever more about both Wisdom and the world. The four aspects of virtue represent the timeless ends of contemplating well (Beauty), believing well (the Truth), governing ourselves well (Justice), and linking well with something infinitely greater than ourselves (Wholeness). The four putti holding up the papal symbol stand at the center of the edges of the octagon nearest to these boundless factors of deciding well. Three of the four putti tethering down this symbol stand at the center of the edges nearest to earth, water, and air. The putto that ought to stand at the center of the edge nearest to fire instead sits on the corner of fire and theology with his tether clearly in the domain of theology. This greater tension in theology concerns the conflict between our current beliefs about the pursuit of Wholeness and the true pursuit of Wholeness. Given our imperfect knowledge of pursuing Wisdom, the pursuits of Wholeness and the Truth, though interwoven, are not one and the same.¹⁷”

“¹⁷ In a letter to Marcellinus of Carthage, Augustine of Hippo addressed this issue: “If anyone shall set the authority of Holy Writ against clear and manifest reason, he who does this knows not what he has undertaken; for he opposes to the truth not the meaning of the Bible, which is beyond his comprehension, but rather his own interpretation; not what is in the Bible, but what he has found in himself and imagines to be there.” In a letter to Christina of Lorraine concerning the use of biblical quotations in science, Galileo Galilei used this quote to buttress the claim that the Bible concerns how to go to heaven, not how heaven goes. An English translation of Galileo’s letter is available online at <<http://www.college.columbia.edu/core/sites/core/files/text/Galileo.pdf>> (31 December 2012).”

Chapter 1, Timeless Beauty, new sixth paragraph

Changed “now known as *The School of Athens*” to “below the philosophy circle” in the first sentence.

Changed “floor symbol with the dynamism of the ceiling symbol” to “square-within-an-octagon-within-a-square pattern with the dynamism of the oculus” in the last sentence.

Chapter 1, Timeless Beauty, new seventh paragraph, third through fifth sentences

“A symbol of following this advice would combine elements of the symbol of the reasoning on which Plato and Aristotle stand with those of the symbol of pursuing Wisdom and worldly

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

knowledge on the ceiling. Ironically, a means of combining these two symbols lies beneath our feet as we look up at them in the *Stanza della Segnatura*. We find this means in a crude version of a self-similar pattern known to Roman artisans since the late eleventh century.”

were changed to:

“A symbol of this aspiration would combine elements of the symbol of the reasoning on which Plato and Aristotle stand with those of the symbol of pursuing Wisdom and worldly knowledge in the center of the ceiling. In his description of refining reason at the end of Book IX of *The Republic*, Plato provided us with a means of combining these elements into such a symbol. His Socrates describes the human psyche as consisting of a hydra, a lion, and a human. Inside this human part is a psyche consisting of a hydra, a lion, and a human. Inside this human part is a psyche consisting of a hydra, a lion, and a human. And so on to infinity. Our hydra parts are ruled by desire, our lion parts by spirit, and our human parts by reason. We refine reason by having our human parts train our lion parts to control our hydra parts. Ironically, a visual means of expressing this means of refining reason lies beneath our feet as we look up at the oculus. We find this means in a crude version of a self-similar tile pattern known to Roman artisans since the late eleventh century.”

Chapter 1, Timeless Beauty, new eighth paragraph

Changed “strategy we use to address problems too complex to address using temporal reason alone” to “models we use to find problems to solve in pursuing the timeless end of deciding well” in the first sentence.

Changed “models of the world” to “these models” in the second sentence.

Chapter 1, Timeless Beauty, second to last paragraph

Changed “the pre-Socratic Greek philosopher of flux, of endless change” to “which visually connects the square-within-a-square-within-a-square floor pattern (endless rationality) to the square-within-an-octagon-within-a-square floor pattern (reason of Plato and Aristotle)” in the first sentence.

Changed “conflicting two-point” to “two-point” in the fourth sentence.

Deleted the second sentence: “This figure visually connects the square-within-a-square-within-a-square floor pattern (endless rationality) to the square-within-an-octagon-within-a-square pattern (reason of Plato and Aristotle).”

Chapter 1, Timeless Beauty, second to last paragraph, second to last sentence

“Raphael completed what many people believe to be his greatest work without this figure. Some art historians believe that he added it as a symbol of inspired genius in response to seeing Michelangelo’s recently-completed figure of Jeremiah on the ceiling of the Sistine Chapel.¹⁹ Regardless of the truth of this belief, we can see that the figure of Heraclitus

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

visually connects a symbol of endless rationality (a square within a square within a square) to a symbol of the reason of Plato and Aristotle (a square within an octagon within a square). As Heraclitus contemplates the symbol of endless rationality under his feet, he records his thoughts on the level of his heart. The architectural block on which he both writes and leans not only is out of line with the rest of the architecture in the fresco, but also violates its single-point perspective with a conflicting two-point perspective. This striking juxtaposition reminds us of the problem of representing higher dimensional objects, A. Square's "up-but-not-north" problem. From all of these cues, it is easy to imagine Heraclitus suddenly inspired to replace each of the squares in the pattern beneath his feet with the more complex pattern slightly above his head, thereby creating a truncated version of the endlessly self-similar image shown above:"

"¹⁹ Columbia University's Art Humanities Series video on *The School of Athens* makes this point. It is available online at <<http://www.youtube.com/watch?v=uOrG6jfBzEU>> (22 December 2012)."

were changed to:

"This figure visually connects the square-within-a-square-within-a-square floor pattern (endless rationality) to a square-within-an-octagon-within-a-square pattern (reason of Plato and Aristotle). As Heraclitus contemplates the pattern under his feet, he records his thoughts on the level of his heart. The architectural block on which he both writes and leans not only is out of line with the rest of the architecture in the fresco, but also violates its single-point perspective with a conflicting two-point perspective. This striking juxtaposition reminds us of the problem of representing higher dimensional objects, of A. Square's up-but-not-north problem. From all of these cues, it is easy to imagine Heraclitus suddenly inspired to replace each of the squares in the pattern beneath his feet with the more complex pattern slightly above his head, thereby creating a three-level version of the six-level image shown above:²¹"

"²¹ Raphael completed the philosophy fresco without the figure of Heraclitus. Some art historians believe that he added it as a symbol of inspired genius in response to seeing Michelangelo's recently-completed figure of Jeremiah on the ceiling of the Sistine Chapel. The obvious reason that Raphael did not add this self-similar symbol of refining reason at the same time is that he did not imagine it. An alternative reason is that there was no place for it. Replacing the putti above the oculus in the ceiling would have better integrated the fresco dedicated to philosophy. However, it would have harmed the integration of the room as a whole by damaging the relation between the ceiling and the fresco dedicated to theology, particularly the common personification of natural phenomena that we do not yet understand."

Chapter 1, Timeless Beauty, last paragraph

"As a symbol of the Renaissance, compare this symbol to Leonardo da Vinci's *Vitruvian Man*, which represents the techno-science of first-century BCE Roman engineer Vitruvius:

[Vitruvian Man]

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

In as much as *Vitruvian Man* became a political banner for temporal reason, we likely would have been better off with this symbol of refining reason. To pursue Wisdom well, we must beware of the foolish use of such temporal symbols as *Vitruvian Man* and of such temporal beliefs as the Protagorean sophistry that we associate with it (Man is the measure of all things, of things which are, that they are, and of things which are not, that they are not.”)

was changed to:

“[Three-level imagine of the square-within-an-octagon-within-a-square]

Compare this symbol to Leonardo da Vinci’s *Vitruvian Man*:

[Vitruvian Man]

The first is a symbol of refining the pursuit of the timeless end of deciding well (Wisdom) and the second is a symbol of a refinement of classical knowledge (the techniques of first-century BCE Roman engineer Vitruvius). The first is a symbol of renaissance and the second is a symbol of the Renaissance.”

Chapter 1, end

Added the following section:

“**Overview**

The spirit of our age concerns breaking unwieldy wholes into parts in order to solve problems better. A major danger in breaking wholes into parts is forgetting to consider the infinitely greater whole, which is important not only in philosophy (the induction problem) and physics (the entanglement problem), but also in economics (the learning problem). Although complete knowledge of this whole will remain forever beyond our grasp, we must not pass over it in silence. Expanding the scope of the problems we face helps us find better problems to solve. When we expand the scope of these problems to the limits of imagination, a structure of values independent of beliefs and circumstances emerges. Understanding the process by which we best progress toward these invariant ends can help us progress ever more readily.”

Chapter 2, Invariant Tools for Living Well, entire section

Changed “invariant” to “timeless” in all (4 occurrences).

Chapter 2, Wealth, entire section

Removed all italics.

Chapter 2, Timeless Tools for Living Well, second paragraph, footnote, last two sentences

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“The “recursionist” approach to economics put forth in this work competes against the Austrian and Marxist schools in describing the world as it is in the process of becoming **and prescribing the world as it ought to be. Note that the difference between tools for describing the world as it is in the process of becoming and tools for prescribing the world as it ought to be is the reasonable claim that we ought to live well.**”

were changed to:

“The “recursionist” approach to economics put forth in this work competes against the Austrian and Marxist schools in describing the world as it is in the process of becoming. **Given that we ought to live well, it also competes against these two schools in** prescribing the world as it ought to be.”

Chapter 2, Timeless Tools for Living Well, last paragraph

Changed “**the way that the inexhaustibility of knowledge useful in living well creates symmetry in deciding well**” to “**the unity of virtue**” in the last sentence.

Chapter 2, *Pleasure and Pain*, fifth paragraph

Changed “complete pleasure (**ecstasy**)” to “**ecstasy** (complete pleasure)” in the last sentence.

Chapter 2, *Pleasure and Pain*, last paragraph

Changed “**; cause overwhelming emotions and appetites; retard learning; and, in cases of panic and delirium, impair reason**” to “**, impair reason, and retard learning**” in the second sentence.

Chapter 2, *Three Common Mistakes*, last paragraph

Changed “**, a designer handbag was produced off the books, or**” to “**or**” in the second sentence.

Chapter 3, *Contemplating the Way Forward*, last paragraph

Changed “processes” to “processes **for deciding well**” in the second sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, first paragraph, footnote

Changed “**programmed** rules” to “rules” in the third sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, third paragraph

Changed “**2012**” to “**today**” in the first sentence.

Changed “*biological*” to “**modern biological**” in the last sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 3, *Overcoming Constraints in Deciding Well*, last paragraph

Changed “means of” to “approach to” in the last sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, last paragraph, footnote, last five sentences

“From the multiple-frame view, it takes us from the realm of mathematics to the realm of science. We best address the problem of computing π (well) by pursuing the timeless end of deciding well. Following this line of thinking, there is little difference between computing the value of π and pursuing Wisdom. The timeless end of computing π (well) is a complex structure of knowledge rather than a simple number. Further, refining the process of computing the value of π (well) is part of the process of computing the value of π (well).”

were changed to:

“ From the multiple-frame view, it takes us from the realm of mathematics to the realm of self-referential science. We best address the problem of computing π (well) by pursuing the timeless end of deciding well. Following this line of thinking, refining the process of computing the value of π (well) is part of the process of computing the value of π (well). Further, the timeless end of computing π (well) is a complex structure of knowledge rather than a simple number.”

Chapter 3, *Three Approaches to Policy*, second paragraph

Changed “biological” to “modern biological” in the first sentence.

Chapter 3, *Public Order*, entire subsection

Changed “invariant” to “timeless” in all (2 occurrences).

Chapter 3, *Public Order*, second paragraph

Changed “biological” to “modern biological” in the first sentence.

Chapter 3, *Public Entropy*, third paragraph, footnote

Changed “about how” to “for how” in the fifth sentence.

Chapter 3, *Public Entropy*, last paragraph, footnote, last sentence

“For more about inducing the creation of useful knowledge, see Appendix B.”

was deleted.

Chapter 3, *Forward-Looking Science*, title

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “*Forward-Looking*” to “*Decision.*”

Chapter 3, *Decision Science*, sixth paragraph

Changed “the world” to “deciding well” in the fourth sentence.

Chapter 3, *Decision Science*, seventh paragraph, last two sentences

“These coherent sets concern the world not as it currently is, but rather as it is in the process of becoming. They concern not the world as we find it, but rather the world as we may form it.”

were changed to:

“These coherent sets concern not the world as we find it, but rather the world as we may form it.”

Chapter 3, *Decision Science*, eighth paragraph, first footnote

Changed “battalion” to “company” in all (2 occurrences).

Changed “raw recruits” to “poorly-trained, unseasoned soldiers” in the third sentence.

Changed “raw recruits” to “these soldiers” and “highly trained and seasoned” to “highly-trained, seasoned soldiers” in the fourth sentence.

Chapter 3, *Decision Science*, last paragraph

Changed “expected net present value¹¹” to “current certainty equivalent¹¹” in the third sentence (2 occurrences).

“¹¹ Expected net present value is a common measure of the current value of uncertain future cash flows. More beautiful measures use a risk-preference function rather than the expected value function to reduce uncertain to certain cash flows and a yield-curve rather than a single interest rate to discount future cash flows.”

was changed to:

“¹¹ A certainty equivalent is a measure of uncertain cash flows that considers the decider’s risk preferences. Consider a bet involving an even chance of winning \$1,000,200 or losing \$1,000,000. A risk-neutral decider would value this bet at \$100, which is the expected value of this bet ($0.5 * \$1,000,200 - 0.5 * \$1,000,000$). A risk-avoiding decider in this situation would value this bet at less than \$100. A risk-seeking decider in this situation would value it at more than \$100.”

Chapter 3, *The Elephant in the Room*, first paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Inserted the following paragraphs:

“All living beings naturally seek to order their bodies and environments to suit their needs. They do so by taking order into their environment and by casting disorder from it. For the world as a whole, the amount of order decreases over time. Hence, the source of order that makes life as we know it possible is the order at the beginning of the world. The odds against our world being as ordered as it appears to have been in the beginning are in the realm that mathematicians consider to be practically infinite.¹⁷”

“From a theistic view, we were lucky to have been born into a world created to be conducive to life. From an atheistic view, we were extremely lucky to have been born into a world conducive to life. From the multiple-frame view, we may never know for certain whether our world was created, one of a practically infinite number of accidental worlds, or something else. However, we can know with great certainty that we ought to pay for the privilege of being born into a world conducive to living our life well by paying forward the debt we owe to the living beings that made possible living our life well. We best do so by deciding well.”

¹⁷ In a lecture given to Oxford University’s Newton Institute on November 7th, 2006 mathematician Roger Penrose estimated the odds against our universe being as ordered as it appears to have been at the big bang to be at least ten-to-the-ten-to-the-one-hundred-and-twenty-third power to one against. A video of this lecture is available online at <<http://www.newton.ac.uk/webseminars/pg+ws/2005/gmr/gmrw04/1107/penrose/index.html>> (22 December 2012).”

Chapter 3, The Elephant in the Room, new third paragraph

Changed “invariant” to “invariant ends” in the first sentence.

Chapter 4, Refining Everyday Thinking, section

Removed the Venn diagram and references to the Venn diagram.

Chapter 4, Recursivity, second paragraph, fourth and fifth sentences

“From the Copenhagen view of physics, quantum mechanics is the lowest level of abstraction that we can imagine. Searching for models that explain causation on the level of quantum mechanics on a lower level wastes resources.”

were changed to:

“From the view of people who believe that quantum mechanics is the lowest level of abstraction, searching for models that explain the behavior of objects on the level of quantum mechanics is foolish.”

Chapter 4, Academic Fields, fourth paragraph, last two sentences

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“For example, we would not exclude **consciousness from the study of quantum mechanics, hence would see more clearly such things as the conflict between the absolute time of quantum mechanics (entangled states of the world) and the relativistic time of Einstein’s theory of invariance. The true sciences would include mathematics as the science of patterns.**⁴”

“⁴ For more about mathematics as the science of patterns, see Appendix B.”

were changed to:

“For example, we would not exclude **positive-sum game theory from biological evolution.**”

Chapter 4, *Academic Fields*, last paragraph

Changed “**endless**” to “**self-similar, self-referential, multiple-frame**” in the first sentence.

Chapter 4, *Refining Invariant Science*, last paragraph, first sentence

Added the footnote:

“⁴ For mathematics to be a basis of a self-referential process of refining everyday thinking, mathematics must be a part of this process. From the multiple-frame view, the true sciences would include mathematics as the science of patterns. For more about this, see Appendix A.”

Chapter 4, *Refining Deciding Well*, title

Changed title to “*Refining Finding Problems to Solve.*”

Chapter 4, *Modern Policy Mistakes*, third paragraph

Changed “**one of the greatest advances in human history**” to “**this great advance**” in the last sentence.

Chapter 5, *A Sovereign Story for Deciding Well*, last paragraph, footnote

Changed “**fabric of civilization**” to “civilization” in the second sentence.

Chapter 5, *Pursue Invariant, not Temporal Order*, entire subsection

Changed “**invariant**” to “**timeless**” in all (3 occurrences).

Chapter 5, *Pursue Invariant, not Temporal Order*, second paragraph

Changed “**fabric of civilization**” to “civilization” in the second sentence.

Chapter 5, *Good Policies*, first paragraph, footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “(e.g., expert systems, fractal geometry, and inexpensive information processing)” to “, e.g., fractal geometry,” in the second sentence.

Changed “do so” to “invest in inventing means of doing so” in the third sentence.

Chapter 5, Civil Faith, first paragraph

Changed “invariant liberalism” back to “timeless liberalism” in all (2 occurrences).

Changed “may its” to “may call its” in the second sentence.

Chapter 6, Worldly Benefits of Detachment, last paragraph

Changed “consciousness and our” to “our consciousness and” in the third sentence.

Chapter 6, Einstein's Twin Warnings, entire subsection

Promoted this subsection to a section.

Chapter 6, A Common Timeless End, last paragraph, last three sentences

“From the multiple-frame view, we only need to choose between living well and linking well when we lack the resources to pursue both. Pursuing the timeless end of deciding well provides us with the resources to pursue both. We best settle this conflict by having these beliefs compete in the marketplace of ideas for helping us decide well.”

were changed to:

“From the multiple-frame view, we best settle this conflict by having these beliefs compete in the marketplace of ideas for helping us decide well.”

Chapter 7, title quote, footnote (heading reference)

Changed “by the courtesy name” to “as” in the last sentence.

Chapter 7, An Extraordinary Anomaly, second paragraph

Changed “fail to address our ignorance rationally, and so act irrationally” to “act unreasonably” in the last sentence.

Chapter 7, An Extraordinary Anomaly, last paragraph

Changed “invariant values and” to “how well they ring true with all that we currently know about pursuing the timeless end of deciding well and to judge” in the first sentence.

Chapter 7, OODA Loop Analysis, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “” by” to “.” It included purposely” in the second sentence.

Added “in Saddam Hussein” at the end of the new third sentence.

Changed “Commandant General” by” to “Commandant” in the new fourth sentence.

Chapter 7, *Boyd's Grand Strategy*, last paragraph

Changed “biological” to “modern biological” in the first sentence.

Chapter 7, *Boyd's Grand Strategy*, last paragraph, last sentence

“They are things that we invent rather than discover.¹⁴”

“¹⁴ Boyd saw patterns in the way we compete to live well. He wanted to explain these patterns using a decision-cycle model that included learning-by-doing. Regrettably, he based his model on modern interpretations of biological evolution, quantum mechanics, and Gödel’s incompleteness theorems. We see the resulting sophistry most clearly in his essay *Destruction and Creation*. From the multiple-frame view, indispensability in deciding well makes intellectual tools something we discover rather than invent. Like mathematics and logic, the reason that binds the boundless factors of deciding well together into a coherent whole appears to be indispensable in deciding well. As we shall see in the next chapter, we can never prove formally that we have found the best means of deciding well. Hence, we can never prove indispensability in deciding well. However, we can seek to disprove experimentally that the tools that ring truest with all that we currently know about deciding well are indispensable in deciding well by acting as if these tools are indispensable in deciding well.”

was changed to:

“¹⁴”

“¹⁴ Boyd saw patterns in the way we compete to live well. He wanted to explain these patterns using a decision-cycle model that included learning-by-doing. Regrettably, he based his model on modern interpretations of biological evolution, quantum mechanics, and Gödel’s incompleteness theorems. We see the resulting sophistry most clearly in his essay *Destruction and Creation*. From the multiple-frame view, the reason that binds the boundless factors of deciding well together into a coherent whole appears to be indispensable in deciding well as logic and mathematics are.”

Chapter 7, *The Grandest Possible*, first paragraph

Changed “grandier, nobler” to “grandier” in the second sentence.

Chapter 7, *The Scope of Biological Evolution*, first and second paragraphs

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“From the view of modern biology, living beings cooperate well in order to compete well for resources useful in living well. Those living beings who *always* seek to cooperate before they seek to compete, **to look for win–win solutions to resource problems before they seek to compete over resources**, are anomalies. Our national goal of improving our fitness to cope with and shape our environment is superior to our grand strategy.

“From the multiple-frame view, living beings also compete **well** in order to cooperate **well** in living well. Those living beings that seek to compete over resources before they seek to cooperate in living well are the special case of beings that have not yet developed the wisdom to do otherwise. Our national goal is the grand strategy of deciding well using the multiple-frame approach to deciding well. **Further, recent discoveries show us that what happens to us may change not only how our genes work, but also how our descendants’ genes work. The line between genetic and cultural evolution is not distinct as most modern evolutionary biologists would have us believe.** As intelligent beings bound to live well in the flow of time, we ought to describe the world in ways that are most useful to intelligent beings bound to live well in the flow of time. We ought to take a boundless view of biological evolution.”

were changed to:

“From the view of modern biology, living beings cooperate in order to compete well for resources useful in living well. Those living beings who always seek to cooperate before they seek to compete are anomalies. Our national goal of improving our fitness to cope with and shape our environment is superior to our grand strategy. **We distinguish between biological and cultural evolution.**

“From the multiple-frame view, living beings **not only cooperate in order to compete well for resources useful in living well, but also** compete in order to cooperate in living well. Those living beings that seek to compete before they seek to cooperate are the special case of beings that have not yet developed the wisdom to do otherwise. Our national goal is the grand strategy of deciding well using the multiple-frame approach to deciding well. **Our genetics and culture coevolve.**¹⁷

“As intelligent beings bound to live well in the flow of time, we ought to describe the world in ways that are most useful to intelligent beings bound to live well in the flow of time. We ought to take a boundless view of biological evolution.”

“¹⁷ **Recent discoveries show us that what happens to us may change not only how our genes work, but also how our descendants’ genes work. The line between genetic and cultural evolution is not distinct as most modern evolutionary biologists would have us believe.**”

Chapter 7, The Scope of Biological Evolution, last two paragraphs

“**All living beings naturally seek to order their bodies and environments to suit their needs. They do so by taking order into their environment and by discarding disorder from it. For the world as a whole, the amount of order decreases over time. Hence, the source of order that makes life as we know it possible is the order at the beginning of the world. The odds against**

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

our world being as ordered as it appears to have been in the beginning are in the realm that mathematicians consider to be practically infinite.¹⁷”

“From a theistic view, we were lucky to have been born into a world created to be conducive to life. From an atheistic view, we were extremely lucky to have been born into a world conducive to life. From the multiple-frame view, we may never know for certain whether our world was created, one of a practically infinite number of accidental worlds, or something else. However, we can know with great certainty that we ought to pay for the privilege of being born into a world conducive to living our life well by paying forward the debt we owe to the living beings that made possible living our life well. We best do so by pursuing the transcendental end of zero public entropy, which calls for us to pursue the boundless factors of deciding well.”

“¹⁷ Mathematician Roger Penrose estimated the odds against our universe being as ordered as it appears to have been at the big bang to be at least ten-to-the-ten-to-the-one-hundred-and-twenty-third power to one against. He made this estimate in a lecture titled “Before the Big Bang? A New Perspective on the Weyl Curvature Hypothesis” at Oxford University’s Newton Institute on November 7th, 2006. A video of this lecture is available online at <<http://www.newton.ac.uk/webseminars/pg+ws/2005/gmr/gmrw04/1107/penrose/index.html>> (22 December 2012).”

were deleted.

Chapter 8, Beautiful Reason, entire chapter

Changed “frames” to “models” in all (9 occurrences).

Chapter 8, Beautiful Reason, title quote, end

“So if you look back at the history of the beginning of this century you’ll see papers by logicians studying the foundations of mathematics in which they had programming languages. Now you look back and you say this is clearly a programming language! If you look at Turing’s work, you see, of course, there’s a machine language. If you look at papers by Alonzo Church, you see the lambda calculus, which is a functional programming language. If you look at Gödel’s original paper, you see what to me looks like LISP. It’s very close to LISP. It begs to be rewritten in LISP.” — *Gregory Chaitin*¹”

“¹ Introductory remarks of a lecture given given by Gregory Chaitin at the Carnegie Melon University’s School of Computer Science on March 2, 2000. A video of this lecture is available online at <<http://www.youtube.com/watch?v=HLPO-RTFU2o>> (30 July 2012).”

was changed to:

““The safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato. I do not mean the systematic scheme of thought

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

which scholars have doubtfully extracted from his writings. I allude to the wealth of general ideas scattered through them.” — *Alfred North Whitehead*¹

¹ Whitehead, A. N. *Process and Reality* (New York: Free Press, 1979), p. 39.”

Chapter 8, Beautiful Reason, fourth paragraph

Changed “Socrates” to “**Plato’s** Socrates” in the last sentence.

Chapter 8, Beautiful Reason, fourth paragraph, footnote

² Reason, so conceived, does not consider the unity of the virtues. In Plato’s early-to-middle transitional dialogue *Protagoras*, Socrates argues for the unity of virtue.”

was deleted.

Chapter 8, Beautiful Reason, fifth paragraph

Changed “but also the models” to “but also the **coherent sets of** models” in the second sentence.

Changed “**coherent** sets of models” to “sets of models” in the last sentence.

Chapter 8, Beautiful Reason, sixth paragraph

Re-added a footnote (now including the title of the lecture) which was deleted from the end of the first sentence on July 30, 2012:

¹ The inspiration for this thought experiment was an observation that mathematician Gregory Chaitin made in the introductory remarks of a lecture titled “A Century of Controversy Over the Foundations of Mathematics” that he gave at the Carnegie Mellon University’s School of Computer Science on March 2, 2000: “So if you look back at the history of the beginning of this century you’ll see papers by logicians studying the foundations of mathematics in which they had programming languages. Now you look back and you say this is clearly a programming language! If you look at Turing’s work, you see, of course, there’s a machine language. If you look at papers by Alonzo Church, you see the lambda calculus, which is a functional programming language. If you look at Gödel’s original paper, you see what to me looks like LISP. It’s very close to LISP. It begs to be rewritten in LISP.” A video of this lecture is available online at <http://www.youtube.com/watch?v=HLPO-RTFU2o> (30 March 2013).”

Changed “to prove” to “to prove **formally**” in the fourth sentence.

Changed “finesse **appears to be**” to ““**genetic**” finesse **is**” in the last sentence of the last footnote.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 8, Beautiful Reason, last paragraph, second sentence

“From the **invariant** view of believing well, **which is the view of believing well ever more wisely**, we ought to choose the one that rings the truest with all that we currently know about believing well ever more wisely.”

was changed to:

“From the **multiple-frame** view of believing well, we ought to choose the one that rings the truest with all that we currently know about believing well ever more wisely.”

Chapter 8, Complete Reason, first paragraph, first footnote, first five sentences

“Consider the following claims. **First**, for any set of rules for pursuing the Truth, we will either discover or never discover the Truth. **Second**, if we discover the Truth, we prove that the set of rules is complete. **Third**, if we never discover the Truth, we never prove that the set of rules is complete. **Fourth**, pursuing the Truth is an endless process.”

were changed to:

“Consider the following claims: (1) for any set of rules for pursuing the Truth, we will either discover or never discover the Truth; (2) if we discover the Truth, we prove that the set of rules is complete; (3) if we never discover the Truth, we never prove that the set of rules is complete; and (4) pursuing the Truth is an endless process.”

Chapter 8, Complete Reason, first paragraph, second footnote

Changed “*science includes all of the interwoven pursuits of the*” to “*it includes pursuing all*” in the last sentence.

Chapter 8, Summary, entire section

“**Summary**

The spirit of our age concerns breaking unwieldy wholes into parts in order to solve problems better. A major danger in breaking wholes into parts is forgetting to consider the infinitely greater whole, which is important not only in philosophy (the induction problem) and in physics (the entanglement and observer problems), but also in economics (the learning problem). Although complete knowledge of this whole will remain forever beyond our grasp, we must not pass over it in silence. Expanding the scope of the problems we face helps us find better problems to solve. When we expand the scope of these problems to the limits of imagination, a structure of values independent of beliefs and circumstances emerges. Understanding the process by which we best progress toward these invariant ends can help us progress ever more readily.”

was replaced by:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Eudaemonia

Pursuing the timeless end of deciding well using the multiple-frame approach to deciding well involves building superrational frameworks for supporting our current beliefs. By themselves, these frameworks are useless. We make them useful by adding what we currently believe we know about pursuing the boundless factors of deciding well to them. Missing from this structure is a means of understanding constraints on our ability to receive and process information unconsciously. To decide well, we need to consider these constraints. Both as humans and as people living with humans, we need to consider the human condition.

“We may think of our minds (psyches/souls) as having parts that provide us with information. We may call these parts *daemons* after the term that computer scientists use to describe processes that run in the background. Some of our daemons use processes of which we can be fully aware, such as consciously formed habits. Others use processes of which we can never be aware, such as how we turn physical contact with airborne molecules into signals our minds perceive as smells. Between these two extremes are a broad range of daemons that use processes of which we can learn to be more aware, such as why things ring true or false to us.

“We ought to trust the information we receive from our daemons only to the degree that this information rings true with all else that we currently know about pursuing the timeless end of deciding well. If the information our daemons provide us conflicts with our reason, we ought to trust our reason to determine whether this information is useful in deciding well.

“Deciding well calls for us to govern our minds well, which in turn calls for us to decide well. We may call the timeless end of governing our minds well *Eudaemonia*.⁶ Including Eudaemonia in our set of boundless factors of deciding well provides us with a means of thinking about the parts of our minds that process information unconsciously.⁷

“Today, we are experiencing an unprecedented increase in our capacity for processing information outside of ourselves. Increasing this capacity tends to increase the pace of change, which in turn increases our need for a sense of beauty based on pursuing the boundless factors of deciding well. In perfecting this sense of beauty, we learn ever more about governing our minds well.”

“⁶ Modern translations of eudaemonia include happiness, well-being, and flourishing. All of these concern living well rather than governing our minds well. Eudaemonia literally means having a good attending or indwelling spirit. Following this literal meaning, the timeless end of governing our minds well means having a perfectly good attending or indwelling spirit, a spirit ruled by Reason. Given our ignorance of Wisdom, the pursuits of the timeless end of living well (Happiness) and of governing our minds well (Eudaemonia), though interwoven, are not one and the same.”

“⁷ Plato’s Socrates teaches us that when we find ugliness in reasoning, we ought to seek to find the source of this ugliness. When we read in *The Republic* that political leaders ought to lie about the true nature of their eugenics program and to exile masses of people, we ought to

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

look for what mistakes in reasoning led to these ugly prescriptions. From the bounded vision of governing ourselves well that Plato put forth in *The Republic*, parts of the human mind are like parts of the polis (city-state). In an ideal state, all people work together for the good of the state. In an ideal human mind, all parts work together for the good of the human. From the boundless view of governing ourselves well put forth in this work, parts of the human mind are like parts of the whole of life. In an ideal state, all people work together in deciding well. In an ideal mind, all parts work together in deciding well. *Plato's bounded view of politics conflicts with his boundless (hydra-lion-human) view of reason.*"

Appendix A, entire appendix

Made significant changes, including removing all analysis relating to apeirogons. The net result is a version that is a page shorter and more to the point.

Appendix B, *Folding in Production Processes*, first paragraph

Changed "assembly" to "molding, assembly, packaging" in the first sentence.

Appendix B, *Smoothing Flows*, first paragraph, last sentence

"For those who understand the system, the smoothing process is more impressive than this smooth flow."

was deleted.

Appendix B, *Smoothing Flows*, last paragraph, end

Added the paragraph:

"For those who understand the system, the smoothing process is more impressive than this smooth flow."

Appendix B, *Looking Forward*, first paragraph

Changed "The" to "Note that the" in the first sentence.

Changed "ever" to "even" in the last sentence.

Demoted this subsection to the end of the first footnote in the next section.

Appendix B, *Rapid Tool Setting*, first paragraph

Changed "simply removes one" to "removes one such" in the fifth sentence.

Appendix B, *Less is More*, first paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “**solve**” to “**address**” in the third sentence.

Changed “**common sense**” to “**reasonable**” in the fifth sentence.

Changes in Version 2013.04.19

Chapter 1, Timeless Reason, second paragraph

Changed “**marginalist**” to “**modern**” in the second sentence.

Chapter 1, Timeless Beauty, first paragraph

Changed “**this** timeless concept of reason” to “**the** timeless concept of reason **put forth in this work**” in the first sentence.

Chapter 1, Timeless Beauty, third paragraph

Changed “**library**” to “**room**” in the first sentence.

Chapter 1, Timeless Beauty, eighth paragraph

Changed “dynamism of the oculus” to “dynamism of the **image above the** oculus” in the first sentence.

Chapter 1, Timeless Beauty, ninth paragraph

Changed “A. Square” to “**Flatlander** A. Square” in the fifth sentence.

Chapter 1, Timeless Beauty, last paragraph

Changed “symbol of renaissance” to “**timeless** symbol of renaissance” and “symbol of the Renaissance” to “**modern** symbol of the Renaissance” in the last sentence.

Chapter 1, Timeless Beauty, entire section

Demoted this section to an appendix (C) titled “**Renaissance Art.**” Introduced this section with quotes from Protagoras and Plato's Socrates.

Chapter 1, Overview, entire section

“**Overview**”

The spirit of our age concerns breaking unwieldy wholes into parts in order to solve problems better. A major danger in breaking wholes into parts is forgetting to consider the infinitely greater whole, which is important not only in philosophy (the induction problem)

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

and physics (the entanglement problem), but also in economics (the learning problem). Although complete knowledge of this whole will remain forever beyond our grasp, we must not pass over it in silence. Expanding the scope of the problems we face helps us find better problems to solve. When we expand the scope of these problems to the limits of imagination, a structure of values independent of beliefs and circumstances emerges. Understanding the process by which we best progress toward these invariant ends can help us progress ever more readily.”

was deleted.

Chapter 3, Pursuing the Ring of Truth, last paragraph

Changed “Beauty is the quality of objects whose contemplation” to “Contemplating truly beautiful things” in the first sentence.

Chapter 3, Pursuing the Ring of Truth, last paragraph, end

Added the following footnote:

“² For more about the relation between beauty and enlightenment, see Appendix C.”

Appendix C, last paragraph, end

Added the following sentence: “Which is the better tool for helping us live well?”

Changes in Version 2013.04.23

Chapter 3, *Public Entropy*, last two paragraphs

“Extending this prescription to the whole of science, we ought to want a set of partial descriptions of the world, each member of which contains instructions for how we ought to use it. These descriptions and instructions ought to be as simple as possible, but not simpler; and the set of these descriptions and instructions ought to be as small as possible, but not smaller.⁸

“We can use the concept of public entropy to help us see science not only as a source of partial descriptions of the world, but also as a means of linking these partial descriptions into an ever more coherent whole that we can use to find ever better problems to solve.⁹ We can begin by using this concept to relate quantum mechanics to deciding well.”

were changed to:

“Extending this prescription to our strategy for deciding well, we ought to want a set of partial descriptions of the world, each member of which contains instructions for how we

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

ought to use it.⁸ These descriptions and instructions ought to be as simple as possible, but not simpler; and the set of these descriptions and instructions ought to be as small as possible, but not smaller.

“We can use the concept of public entropy to help us link partial descriptions of the world into an ever more coherent whole that we can use to find ever better problems to solve.⁹ We can begin by using it to relate quantum mechanics to deciding well.”

Chapter 3, The Elephant in the Room, third paragraph

Changed “invariant ends and religious values” to “religious values and boundless factors of deciding well” in the first sentence

Changes in Version 2013.04.24

Preface, seventh paragraph

Changed “the” to “*natural (invariant) science*, in the” in the first sentence.

Chapter 4, *Academic Fields*, last paragraph

Changed “*invariant science*” to “*natural (invariant) science*” in the first sentence.

Chapter 4, Refining Invariant Science, title

Changed title to “Refining Natural Science.”

Chapter 4, Refining Natural Science, second paragraph

Changed “models we use to explain deciding well” to “coherent sets of models that we use to find problems to solve” in the first sentence.

Changed “models” to “sets of models” in the second sentence.

Changed “this set” to “these sets” in the third sentence.

Chapter 4, *Refining Finding Problems to Solve*, second paragraph, last footnote, second through fourth sentences

“Our needs for such things as nutrition and water emerge on the level of our physical bodies. Our needs for such things as affection and esteem emerge on the level of our minds. Our needs for such things as the longing to link with something infinitely greater than ourselves emerge on the level of our spirits.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

were deleted.

Chapter 4, *Modern Policy Mistakes*, fifth paragraph, second sentence

“Over time, these accidents pile up like blocks of ice in a near-freezing river.”

was changed to:

“These accidents are like blocks of ice in a near-freezing river.”

Chapter 4, Testing Invariant Science, title

Changed title to “Testing Natural Science.”

Chapter 4, Testing Natural Science, first paragraph

Changed “believing well” to “deciding well” in the second sentence.

Chapter 5, Sovereignty, first paragraph

Changed “, which we may also call governing ourselves well,” to “ ” in the first sentence.

Chapter 5, *The Explicit Experiment*, second paragraph

Changed comma-delineated phrase to semicolon-delineated block quote in the fifth sentence.

Appendix A, The Basis of Mathematics, first paragraph, third and fourth sentences

“By definition, we can never achieve this timeless end. Hence, we can never prove formally that any tool for pursuing it is indispensable.”

were changed to:

“Because we can never know we have achieved this end, we can never prove formally that any tool for pursuing it is indispensable.”

Changes in Version 2013.04.26

Preface, fifth paragraph

Changed “a more complete concept of reason than rationality, a” to “a” in the last sentence.

Preface, sixth paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “current concepts of reason” to “modern concept of reason as rationality (the reason of geometry, mathematics, and logic)” in the first sentence.

Chapter 5, *The Explicit Experiment*, third paragraph

Moved prepositional clause from the end to the beginning of the first sentence.

Changed “his” to “this” in the second sentence.

Chapter 6, *Heroic Death*, second paragraph, last two sentences

“The worst promote an apocalyptic vision of the future buttressed by a romantic vision of the past. They promise heaven on earth for all true believers who survive the final battle against evil.⁸”

“⁸ Berman, Paul, *Terror and Liberalism* (New York: W. W. Norton & Company, 2003).”

were changed to:

“The worst promise heaven on earth for all true believers who survive the final battle against evil.”

Chapter 7, *Boyd’s Grand Strategy*, last paragraph, footnote, last sentence

“From the multiple-frame view, the reason that binds the boundless factors of deciding well together into a coherent whole appears to be indispensable in deciding well as logic and mathematics are.”

was deleted.

Chapter 7, *The Scope of Biological Evolution*, last paragraph

Changed “evolution” to “evolution, a view in which the inexhaustibility of knowledge plays a guiding role” in the last sentence.

Changes in Version 2013.04.29

Chapter 2, *Timeless Tools for Living Well*, first paragraph

Changed “multiple-frame approach to deciding well put forth in this work” to “multiple-frame approach” in the third sentence.

Chapter 2, *Timeless Tools for Living Well*, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “multiple-frame approach to deciding well” to “multiple-frame approach” in the last sentence.

Chapter 5, *A Sovereign Story for Deciding Well*, second paragraph

Changed “multiple-frame approach to deciding well” to “multiple-frame approach” in the first sentence.

Chapter 5, *Pursue Timeless, not Temporal Order*, first paragraph

Changed “multiple-frame approach to deciding well” to “multiple-frame approach” in the last sentence.

Chapter 5, *Civil Faith*, first paragraph

Changed “multiple-frame approach to governing well” to “multiple-frame approach” in the second sentence.

Chapter 7, *The Scope of Biological Evolution*, second paragraph

Changed “multiple-frame approach to deciding well” to “multiple-frame approach” in the third sentence.

Chapter 8, *Beautiful Reason*, last paragraph

Changed “multiple-frame view of believing well” to “multiple-frame view” in the second sentence.

Chapter 8, *Complete Reason*, first paragraph, last footnote

Changed “multiple-frame approach to believing well” to “multiple-frame approach” in the third sentence.

Chapter 8, *Eudaemonia*, first paragraph

Changed “multiple-frame approach to deciding well” to “multiple-frame approach” in the first sentence.

Chapter 8, *Eudaemonia*, third paragraph

“We ought to trust the information we receive from our daemons only to the degree that this information rings true with all else that we currently know about pursuing the timeless end of deciding well. We ought to trust our reason. To trust our reason calls for us to trust the foundations of our reason, which in turn calls for us to trust the foundations of these foundations, which in turn calls for us to trust the foundations of these foundations, and so on

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

to infinity. We best address this infinitely large problem by deciding well using the multiple-frame approach.”

was deleted.

Chapter 8, Eudaemonia, new third paragraph, first sentence

“Deciding well calls for us to govern our minds well, which in turn calls for us to decide well.”

was changed to:

“The multiple-frame approach to deciding well calls for us to reason well. At the end of Book IX of *The Republic*, Plato defined reason as the endless process of governing our minds well.⁶”

“⁶ For more about Plato’s boundless view of reason, see Appendix C. Regrettably, in Book II Plato also provided us with a bounded view of governing our minds well by comparing governing our minds well to governing ourselves well: In an ideal state, all citizens work together for the good of the state. In an ideal human mind, all parts work together for the good of the human. We ought to take the boundless view: In the ideal state, all citizens work together in deciding well. In the ideal human mind, all parts work together in deciding well.”

Chapter 8, Eudaemonia, new third paragraph, second footnote

“⁷ Plato’s Socrates teaches us that when we find ugliness in reasoning, we ought to seek to find the source of this ugliness. When we read in *The Republic* that political leaders ought to lie about the true nature of their eugenics program and to exile masses of people, we ought to look for what mistakes in reasoning led to these ugly prescriptions. From the bounded vision of governing ourselves well that Plato put forth in *The Republic*, parts of the human mind are like parts of the polis (city-state). In an ideal state, all people work together for the good of the state. In an ideal human mind, all parts work together for the good of the human. From the boundless view of governing ourselves well put forth in this work, parts of the human mind are like parts of the whole of life. In an ideal state, all people work together in deciding well. In an ideal mind, all parts work together in deciding well. *Plato’s bounded view of politics conflicts with his boundless (hydra-lion-human) view of reason.*”

was deleted.”

Chapter 8, Eudaemonia, last paragraph

“Today, we are experiencing an unprecedented increase in our capacity for processing information outside of ourselves. Increasing this capacity tends to increase the pace of change, which in turn increases our need for a sense of beauty based on pursuing the boundless factors of deciding well. In perfecting this sense of beauty, we learn ever more about governing our minds well.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

was deleted.

Appendix C, last paragraph, second through last sentences

“The first is a symbol of refining **the pursuit of the timeless end of deciding well (Wisdom)** and the second is a symbol of a refinement of **classical knowledge** (the **techniques** of first-century BCE Roman engineer Vitruvius). **The first is a timeless symbol of renaissance and the second is a modern symbol of the Renaissance.** Which is the better **symbol** for helping us live well?”

were changed to:

“The first is a **timeless symbol of renaissance**, of refining deciding well. The second is a **modern symbol of the Renaissance**, of a refinement of the **knowledge** of first-century BCE Roman engineer Vitruvius. Which is the better **tool** for helping us live well?”

Changes in Version 2013.04.30

Entire document

Updated all website reference dates.

Chapter 2, *Tools for Pursuing Pleasure and Joy*, last paragraph, last five sentences

“**When we have too much yang, we pursue pleasure too much. When we have too much yin, we pursue joy too much.** When *yin* and *yang* are in balance, we pursue the virtuous circle of pleasure and joy. **From the Western tradition,** we need tools to help us know when our emotions and appetites overwhelm our **faculties in order to help us know when we ought to abandon deliberation and decision rules for discipline.** **One solution to this problem is** a list of warning signals: lust, gluttony, greed, sloth, wrath, envy, and pride.”

were changed to:

“When *yin* and *yang* are in balance, we pursue the virtuous circle of pleasure and joy.

“**Regardless of whether we choose an active or a contemplative life,** we need tools to help us know when our emotions and appetites overwhelm our **ability to reason well.** **The Western tradition provides us with** a list of warning signals: lust, gluttony, greed, sloth, wrath, envy, and pride.”

Chapter 3, *Decision Science*, seventh paragraph

Changed “existence” to “**the world**” in all (4 occurrences).

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “find it” to “**currently** find it” in the last sentence.

Chapter 3, *Decision Science*, eighth paragraph, first footnote, fourth sentence

“**This belief rests on the belief that we ought to test the most beautiful of competing beliefs.**”

was deleted.

Chapter 3, *Decision Science*, eighth paragraph, second footnote, last two sentences

“A risk-avoiding decider **in this situation** would value this bet at less than \$100. A risk-seeking **decider in this situation** would value it at more than \$100.”

were changed to:

“A risk-avoiding decider would value this bet at less than \$100 **and a risk-seeking one** would value it at more than \$100.”

Chapter 3, *Decision Science*, eighth paragraph, first footnote, end

Added the sentence: “**It rings truer with all that we currently believe we know about deciding well.**”

Chapter 3, *Decision Science*, last paragraph, last two sentences

“The better **solution to the problem of whether to invest in this research program** is the decision science **solution**. It rings true with **more of what** we currently believe we know **and do not yet know about the world.**”

were changed to:

“The better **formal problem to solve** is the decision science **problem**. It rings truer with **all that** we currently believe we know **about deciding well.**”

Chapter 3, *The Elephant in the Room*, last three paragraphs

“**One of the most beautiful things to emerge from deciding well is the coincidence of religious values and boundless factors of deciding well. The essential atheistic explanation of this coincidence is simple and straightforward. We evolved to have a religious need to become a part of something infinitely greater than ourselves. We satisfy this need by deciding well. We collectively refine our means of deciding well by deciding well over time. In the fullness of time, we discover and use the multiple-frame approach to deciding well.**

“**The essential theistic explanation of this coincidence is as simple and straightforward. The Creator created what we call the laws of nature. These laws include the need for life to flourish. We flourish by deciding well. We collectively refine our means of deciding well by**

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

deciding well over time. In the fullness of time, we discover and use the multiple-frame approach to deciding well.

“Although these two essential explanations differ in their assumptions, they share the same means. Regardless of what core set of currently unfalsified beliefs, what personal faith, we choose to help us find the best problem to solve, the essential process of deciding well is the same for all of us. We are all as blind men seeking to know an infinitely large elephant.”

were appended to the end of last sentence of the preceding paragraph and changed to:

“using the multiple-frame approach, which calls for us to recognize that we are all as blind men seeking to know an infinitely large elephant.”

Chapter 7, The Scope of Biological Evolution, last paragraph

Changed “evolution, a view in which the inexhaustibility of knowledge plays a guiding role” back to “evolution” in the last sentence.

Chapter 8, Beautiful Reason, sixth paragraph, second footnote

Changed “is” to “may be” in the last sentence.

Chapter 8, Eudaemonia, last paragraph, first footnote

Changed “in Book II Plato also provided us with a bounded view of governing our minds well by comparing governing our minds well to governing ourselves well” to “by likening governing our minds well to governing ourselves well in Book II of *The Republic*, Plato also provided us with a bounded view of governing our minds well” in the second sentence.

Changed “We” to “As we have seen, we” in the last sentence.

Appendix A, The Basis of Mathematics, last two paragraphs

“We can apply this reasoning to mathematics as a whole. Mathematics is the study of patterns. We use mathematics as a tool for pursuing the timeless end of deciding well. To prove that mathematics is indispensable in pursuing this timeless end, we seek to disprove the proposition that there exist some patterns that are indispensable in pursuing it. We do so by acting as if some patterns are indispensable.

“We base mathematics on the reason of the self-referential, self-similar, multiple-frame process of deciding well. We presume that the most useful tools in deciding well are the most likely to be indispensable in deciding well. When confronted with more than one solution to a mathematical problem, we choose the solution that appears to be most useful in deciding well. In doing so, we seek to disprove it is most useful in deciding well.”

were changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“We can apply this reasoning to mathematics as a whole. To prove that mathematics is indispensable in **deciding well**, we seek to disprove the proposition that there exist some patterns that are indispensable in **deciding well**. We do so by acting as if some patterns are indispensable in **deciding well**.

“We base mathematics on the reason of deciding well. When confronted with more than one solution to a mathematical problem, we choose the solution that appears to be most useful in deciding well. In doing so, we seek to disprove it is most useful in deciding well. **We presume that the most useful tools in deciding well are the most likely to be indispensable in deciding well.**”

Appendix C, fourth paragraph, fifth sentence

Added the footnote:

² **A high resolution image of the entire ceiling is available online at <http://upload.wikimedia.org/wikipedia/commons/9/90/Raphael_-_Ceiling_of_the_Selling_Room.jpg> (30 April 2013).**”

Appendix C, seventh paragraph

Changed “self-similar **means of refining reason**” to “self-similarity” in the second to last sentence.

Appendix C, ninth paragraph

Changed “**suddenly** inspired” to “inspired” in the last sentence.

Appendix C, last paragraph

Changed “refining **deciding well**” to “**endlessly** refining **everyday thinking**” in the first sentence.

Appended paragraph to preceding paragraph.

Changes in Version 2013.05.02

Chapter 2, *Pleasure and Pain*, fifth paragraph

Changed “**ecstasy** (complete pleasure)” to “complete pleasure (**ecstasy**)” in the last sentence.

Chapter 3, *Three Approaches to Policy*, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “wisdom that surpasses current wisdom” to “the timeless end of deciding well (Wisdom)” in the last sentence.

Chapter 3, *Public Order*, last paragraph

Changed “an timeless” to “a timeless” in the second sentence.

Chapter 4, *Recursivity*, first paragraph

Changed “undermines” to “eventually undermines” in the fifth sentence.

Deleted the last sentence: “The models we use to describe the behavior of ants do not change what ants do, but the models we use to describe our behavior tend to change what we do.”

Chapter 4, *Recursivity*, second paragraph

“The two-way relation between the world and the descriptions that we use to guide our actions gives rise to a wide variety of phenomena, which range from speculative bubbles to complex systems of human organizations. We can think about the cause of these phenomena as the interplay of two tendencies of the descriptions that we use to guide our actions. The first is their tendency to become more popular, which, in part, is due to the inexhaustibility of knowledge. The second is their tendency to undermine the conditions on which we base them. Repeatedly using these descriptions to guide our actions without considering how our actions change reality tends to lead us ever further away from the ideal means of deciding well.”

was reduced to a footnote to the first paragraph.

Chapter 5, *Civil Faith*, title

Changed title to “Timeless Liberalism.”

Chapter 8, *Eudaemonia*, last paragraph

Changed “the parts” to “how best to govern the parts” in the last sentence.

Changed “take the boundless view” to “decide well using the multiple-frame approach” in the last sentence of the first footnote.

Changed “ignorance” to “imperfect knowledge” in the last sentence of the second footnote.

Appendix A, *The Big Picture*, second paragraph

Changed “submit an answer” to “answer this question” in the first sentence.

Appendix C, fourth paragraph, last footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“³ Taken together with the octagonal oculus, the pursuits of Beauty, Truth, Justice, and Wholeness form a Latin cross with the long member representing the factor in mind. We can clearly see this cross in the horizontal and vertical rays emanating from the symbol of the Holy Ghost (encircled dove) in the fresco below the theology circle. Looking at this fresco, the factor we have in mind is Wholeness. A high-resolution image of this fresco is available online at <http://upload.wikimedia.org/wikipedia/commons/1/19/Raphael_-_Disputation_of_the_Holy_Sacrament.jpg> (30 April 2013).”

was deleted.

Appendix C, fourth paragraph

Changed “hold” to “push” and “tether” to “pull” in the last sentence.

Moved the first footnote to the end of the last sentence.

Appendix C, fifth paragraph

Changed “holding” to “pushing” in the third sentence.

Changed “tethering” to “pulling” in the fourth sentence.

Changed “fire” to “fire, halfway between poetry and theology,” in the fifth sentence.

Changed “concerns” to “symbolizes” and “our current” to “passionately held” in the sixth sentence.

Changed “pursuing Wisdom” to “Wisdom” in the last sentence.

Moved the last sentence to the end of the footnote.

Appendix C, last paragraph, footnote

“Raphael completed the philosophy fresco without the figure of Heraclitus. Some art historians believe that he added it as a symbol of inspired genius in response to seeing Michelangelo’s recently-completed figure of Jeremiah on the ceiling of the Sistine Chapel. The obvious reason that Raphael did not add this self-similar symbol of refining reason at the same time is that he did not imagine it. An alternative reason is that there was no place for it. Replacing the putti above the oculus in the ceiling would have better integrated the fresco dedicated to philosophy. However, it would have harmed the integration of the room as a whole by damaging the relation between the ceiling and the fresco dedicated to theology, particularly the common personification of natural phenomena that we do not yet understand.”

was changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Raphael completed the philosophy fresco without the figure of Heraclitus. Some art historians believe that he added it as a symbol of inspired genius in response to seeing Michelangelo’s figure of Jeremiah on the ceiling of the Sistine Chapel. The obvious reason that Raphael did not add this symbol of refining everyday thinking is that he did not imagine it. An alternative reason is **making room for it would have harmed the integration of the room as a whole. For example, replacing the papal symbol and putti above the oculus in the ceiling would have harmed** the relation between the ceiling and the fresco dedicated to theology. **Arguably, this is but one of many compromises made in flattening a universal story of enlightenment into this walk-in Christian mandala.”**

Changes in Version 2013.05.04

Chapter 1, Timeless Reason, last paragraph

Changed “model” to “**multiple-frame** model” in the second sentence.

Chapter 3, *Decision Science*, seventh paragraph

Changed “**coherent sets**” to “**multiple-frame models**” in the last sentence.

Chapter 4, Refining Natural Science, second paragraph

“Refining the process of refining everyday thinking also calls for refining the **coherent sets of** models that we use to find problems to solve.⁵ We refine these **sets** by weeding out all models that are not clear, concise, and *beautiful*. We further refine these **sets** by weeding out models that fail to meet our (evolving) standards for helping us find problems to solve. The rub is that we do not know exactly what it is that we ought to seek.”

was changed to:

“Refining the process of refining everyday thinking also calls for refining the **multiple-frame** models that we use to find problems to solve.⁵ We refine these **multiple-frame** models by weeding out all **single-frame** models that are not clear, concise, and *beautiful*. We further refine these **multiple-frame** models by weeding out **single-frame** models that fail to meet our (evolving) standards for helping us find problems to solve. The rub is that we do not know exactly what it is that we ought to seek.”

Chapter 8, Beautiful Reason, fifth paragraph

“When we pursue the timeless end of deciding well by pursuing the boundless factors of deciding well, we seek not only to find the best solution to given problems, but also the best problems to solve. Reason concerns not only the models we use to solve given problems, but also the **coherent sets of** models that we use to find problems to solve. Excellence in finding problems to solve calls for **models** that are ambiguous with respect to the timeless ends of all

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

boundless factors of deciding well and the means of pursuing these ends. We may call the set of rules that we use to relate beliefs well within **these sets of models** *the rules of Reason.*”

was changed to:

“When we pursue the timeless end of deciding well by pursuing the boundless factors of deciding well, we seek not only to find the best solution to given problems, but also the best problems to solve. Reason concerns not only the **single-frame** models we use to solve given problems, but also the **multiple-frame** models that we use to find problems to solve. Excellence in finding problems to solve calls for **(coherent sets of) single-frame** models that are ambiguous with respect to the timeless ends of all boundless factors of deciding well and the means of pursuing these ends. We may call the set of rules that we use to relate beliefs well within **this approach to deciding well** *the rules of Reason.*”

Appendix C, fifth paragraph

Changed “**too passionately held**” to “**fervent**” in the last sentence.

Changes in Version 2013.05.07

Preface, fifth paragraph, first sentence

Added the sentence:

“**Given our imperfect knowledge of how to pursue the timeless end of deciding well, the pursuits of the timeless end of deciding well and the timeless end of believing well, though interwoven, are not one and the same.**”

Chapter 1, *Steps for Building Multiple-Frame Models*, third paragraph

Changed “**problems to solve in deciding well that involve profound changes to**” to “**holes in**” in the first sentence.

Chapter 1, *Steps for Building Multiple-Frame Models*, fourth paragraph

“**Because we lack the knowledge of how to pursue these two ends perfectly, it useful for us to think of them as separate pursuits, each subject to its own set of problems.**”

was deleted.

Chapter 3, *Contemplating the Way Forward*, third paragraph

Changed “**approximates**” to “**approximations**” in the fifth sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 3, *Contemplating the Way Forward*, fourth paragraph

Changed “approximations” to “approximates” in all (2 occurrences).

Chapter 3, *Overcoming Constraints in Deciding Well*, last paragraph, footnote

Changed “short” to “other words” in the second sentence.

Changed “self-referential” to “(self-referential)” in the fourth sentence.

Chapter 4, *Academic Fields*, fourth paragraph

Changed “*positive-sum game theory*” to “*natural (invariant) game theory*” in the last sentence.

“*For more about natural game theory and biological evolution, see the seventh chapter.*”

Chapter 6, *Heroic Death*, second paragraph

Changed “the final battle” to “a final battle” in the last sentence.

Appendix C, fifth paragraph, footnote, last sentence

“*Given our imperfect knowledge of Wisdom, the pursuits of Wholeness and the Truth, though interwoven, are not one and the same.*”

was deleted.

Changes in Version 2013.05.11

The following edits were prompted by comments made by V. Wellman:

Preface, third paragraph

Changed “the temporal and the timeless” to “events and processes” in the second sentence.

Changed “timeless model of deciding well, a model” to “model” in the sixth sentence.

Changed “cycle” to “cycle on any given level of abstraction” in the seventh sentence.

Changed “temporal” to “temporally-bounded” in the eighth sentence.

Preface, fourth paragraph, last two sentences

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“These constraints concern all steps in **the** decision cycle. **We overcome these constraints by learning ever more about deciding well.**”

were changed to:

“These constraints concern all **three** steps in **this** decision cycle: (1) overcoming constraints in finding problems to solve helps us become ever more *effective*; (2) overcoming constraints in solving given problems helps us become ever more *efficient*, and (3) overcoming constraints in learning from experience helps us become ever *wiser* (ever more effective and efficient). This dynamic concept of economics, which we may call *the economics of deciding well*, concerns not only efficiency, but also effectiveness and wisdom.”

Preface, third paragraph, end

Added the following paragraphs:

“In taking this boundless approach to deciding well, we use many bounded models of the world to help us evaluate solutions to given problems. In bounding our models of the world, we exclude what happens outside the bounds of our models from our models. In effect, we presume to know more than we can ever possibly know in order to build logically consistent models of the world that help us predict well within given domains.

“In taking this boundless approach, we also use a boundless model of the world to help us find problems to solve. The most basic problem we face is the problem of whether the problem we believe is best is truly best. Dwight Eisenhower provided us with a solution to this problem: “If a problem cannot be solved, enlarge it.” Following this simple advice completely, we end with the problem that contains all other problems in deciding well. Our problem then becomes one of how best to address this universal problem.

“We do not have the knowledge we need to build a logically consistent and complete model of this universal problem. The best we can do is to build a complex model that provides us with a strategy for addressing it. As military strategist John Boyd wrote, such a grand strategy ought to provide us with (1) the ability to peer into and discern the inner nature of things; (2) the internal drive to think and take action without being urged; (3) the power to adjust or change in order to cope with new or unforeseen circumstances; and (4) the power to perceive or create interaction of apparently disconnected events or entities in a connected way.”

Preface, new seventh and eighth paragraphs

“Over time, we collectively learn that the timeless end of believing well (the truth) is one of many universally useful and inexhaustible factors of deciding well that we can never have in excess. Given our imperfect knowledge of how best to pursue the timeless end of deciding well, the pursuits of the timeless end of deciding well and the timeless end of believing well, though interwoven, are not one and the same. We also learn that the endless pursuits of all of these “boundless factors” intertwine to form a single endless pursuit:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

For any boundless factor of deciding well (A) and any other boundless factor of deciding well (B), pursuing A well calls for us to decide well, which in turn calls for us to pursue B well. Further, pursuing B well calls for us to decide well, which in turn calls for us to pursue A well. Hence, the pursuit of A and the pursuit of B intertwine to form a **single endless** pursuit in which the better we decide, the more tightly the endless pursuits of these two factors intertwine. Applying this logic to all boundless factors of deciding well, the endless pursuits of all boundless factors of deciding well intertwine to form a **single endless** pursuit in which the better we decide, the more tightly the endless pursuits of these factors intertwine.”

“We can use this **insight into the nature** of deciding well to build *multiple-frame* models of deciding well. **We can use these models to find problems to solve** that “ring true” with all that we currently know about deciding well. **If a problem rings true, then we have found a “beautiful” problem to solve.** We can then use the models that best help us predict what will happen within the bounds of our chosen problem to help us **solve it.** **Underlying this process of finding and solving problems is a concept of reason that calls for us to define, decompose, and discard our ignorance.**”

were changed to:

“**To address this universal problem well we need to consider the knowledge resources that we need to address it well. We may think of these resources as parts of factors of deciding well that we can never have in excess. We may call these boundless aspects of wisdom *boundless factors of deciding well.* So conceived, the pursuits of these boundless factors form a complex structure:**

For any boundless factor of deciding well (A) and any other boundless factor (B), pursuing A well calls for us to decide well, which in turn calls for us to pursue B well. Further, pursuing B well calls for us to decide well, which in turn calls for us to pursue A well. Hence, the pursuit of A and the pursuit of B intertwine to form a **complex** pursuit in which the better we decide, the more tightly the endless pursuits of these two factors intertwine. Applying this logic to all boundless factors of deciding well, the endless pursuits of all boundless factors of deciding well intertwine to form a **complex** pursuit in which the better we decide, the more tightly the endless pursuits of these boundless factors intertwine.

“We can use this **complex description** of deciding well to build **boundless** models **that help us find “beautiful” problem to solve,** problems that “ring true” with all that we currently know about deciding well. We can then use the bounded models that best help us predict what will happen within the bounds of our chosen problem to help us evaluate alternative solutions.”

Preface, new ninth paragraph, first sentence

“The **extraordinary** claim that we ought to replace **our modern concept of reason as rationality (the reason of geometry, mathematics, and logic)** with a **new** concept calls for extraordinary evidence.”

was changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Underlying this approach to deciding well is a concept of reason that is more complete than rationality (the reason of geometry, mathematics, and logic). This more complete concept of reason calls for us to define and discard waste in deciding well. The claim that we ought to replace rationality with a more complete concept of reason is extraordinary. Such a claim calls for extraordinary evidence.”

Preface, new tenth paragraph

Changed “(*invariant*) science” to “science” in the first sentence.

Preface, new eleventh paragraph

Changed “timeless” to “boundless” and “marginalist” to “modern” in the first sentence.

Preface, last paragraph

Changed “this approach” to “this boundless approach” and “timeless” to “boundless” in the first sentence.

Chapter 1, entire chapter

Changed “temporal” to “bounded” in all (23 occurrences).

Changed “timeless” to “boundless” in all (51 occurrences).

Chapter 1, Choosing Frames Well, first paragraph

Changed “ambiguity” to “waste” in all (3 occurrences).

Changed “we currently know how” to “it is currently economic for us” in the first sentence.

Chapter 1, Values, third paragraph

Changed “bounded process of deciding well” to “problem at hand” in the fourth sentence.

Chapter 1, Steps for Building Multiple-Frame Models, third paragraph

Changed “tautological way in which we define Wisdom and deciding well” to “way in which we define Wisdom and deciding well in terms of each other” in the first sentence.

Chapter 1, Ever More Complete Multiple-Frame Models, third paragraph, footnote

Changed “multiple-frame approach to deciding well” to “boundless approach to deciding well put forth in this work” in the last sentence.

Chapter 1, Timeless Reason, entire section

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Timeless Reason

From the view of this multiple-frame approach¹⁴ to deciding well, hereafter referred to simply as *the multiple-frame approach*, involves distinguishing between the models we use to help us solve given problems and those we use to help us find problems to solve.

“In using the first type of model, we choose to ignore what we do not know about how what happens outside model domains affect what happens inside them. We can see this most clearly in the *ceteris paribus* assumption in modern economic models. In effect, we presume to know more than we can ever possibly know in order to build logically consistent models that predict well within given domains.

“In using the second type of model, we explicitly include what we do not currently know into our models of the world. We use these models to help us find problems to solve. The most basic of these problems is the problem of whether the problem we believe is best is indeed best. Dwight Eisenhower provided us with a solution to this problem: “If a problem cannot be solved, enlarge it.” Following this simple advice completely, we end with the problem that contains all other problems in deciding well. Our problem then becomes one of how best to address this universal problem.

“We do not have the knowledge we need to build a logically consistent and complete model of this universal problem. The best we can do is to build a multiple-frame model that provides us with a strategy for addressing it. As we shall see, such a grand strategy ought to provide us with the ability to peer into and discern the inner nature of things, the internal drive to think and take action without being urged, the power to adjust or change in order to cope with new or unforeseen circumstances, and the power to perceive or create interaction of apparently disconnected events or entities in a connected way.¹⁵ The strategy for learning put forth in this work provides us with ever more of these provisions.”

¹⁴ “We can be more certain about which *approaches* are best than we can about which *methods* are best. We can be more certain of the recursive approach to determining the value of π than we can be certain of the best method of determining the value of π . Similarly, we can be more certain of the multiple-frame approach to deciding well than we can be certain of the best method of deciding well.”

¹⁵ Boyd, J., *Patterns of Conflict*, 2005 Defense in the National Interest revision, slide #144. This slide presentation is available online in the Boyd archive section of Project White Horse, <<http://www.projectwhitehorse.com/boydsarchive.htm>> (30 April 2013).”

was reduced to the a sentence at the end of the preceding paragraph:

“We may call this complex approach to deciding well the *boundless approach to deciding well*, or simply the *boundless approach*. We may also call the “view” of this approach the *boundless view of deciding well*, or simply the *boundless view*.”

Chapter 2, entire chapter

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “temporal” to “bounded” in all (16 occurrences).

Changed “timeless” to “boundless” in all (4 occurrences).

Chapter 2, Boundless Tools for Living Well, first paragraph

Changed ““view” of the multiple-frame approach” to “boundless view of deciding well” in the third sentence.

Chapter 2, Boundless Tools for Living Well, second paragraph, footnote

² **Marginalist economics** is a collection of tools for describing the world as it currently is. **The** Chicago school distinguishes itself from other **marginalist** schools by distinguishing between tools for describing the world as it currently is (“positive economics”) and prescribing the world as it ought to be (“normative economics”). The “recursionist” approach to economics put forth in this work competes against **Austrian and Marxist** schools in describing the world as it is in the process of becoming. Given that we ought to live well, it also competes against these **two** schools in prescribing the world as it ought to be.”

was changed to:

² **Modern economics** more accurately refers to mainstream modern economics, the **economics that emerged from the marginalist revolution of the 1870s. In the tradition of Alfred Marshall, we may think of mainstream economics** as a collection of tools for describing the world as it currently is. **In the tradition of Milton Friedman, the modern** Chicago school distinguishes itself from other **mainstream** schools by distinguishing between tools for describing the world as it currently is (“positive economics”) and prescribing the world as it ought to be (“normative economics”). In contrast, the “recursionist” approach to economics put forth in this work competes against **various evolutionary** schools in describing the world as it is in the process of becoming. Given that we ought to live well, it also competes against these schools in prescribing the world as it ought to be.”

Chapter 2, Boundless Tools for Living Well, last paragraph

“In the rest of this chapter, *the bounded view* means the bounded view of modern economics. In the rest of this book, *the multiple-frame view* means the “view” of the multiple-frame approach.³”

³ **Earlier versions of this work used the term ‘multiplex view,’ which came from biologist Jack Cohen and mathematician Ian Stewart’s book about the co-evolution of minds and environments, *Figments of Reality: The Evolution of the Curious Mind* (Cambridge, England: Cambridge University Press, 1997). Regrettably, the authors overlooked the unity of virtue.”**

was deleted.

Chapter 2, entire chapter

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “the bounded view” to “the bounded view of modern economics” in all (7 occurrences).

Changed “the multiple-frame view” to “the boundless view” in all (7 occurrences).

Chapter 2, *Chicago Screwdrivers*, entire subsection

Deleted the second sentence in the first (and only) paragraph:

“Just as we ought never to use hammers to drive in screws, we ought never to use bounded tools to find problems to solve.”

Deleted the title, which effectively merged this subsection into the preceding subsection.

Chapter 3, entire chapter

Changed “temporal” to “bounded” in all (3 occurrences).

Changed “timeless” to “boundless” in all (7 occurrences).

Changed “the multiple-frame view” to “the boundless view” in all (6 occurrences).

Changed “the multiple-frame approach” to “the boundless approach” in all (6 occurrences).

Chapter 3, *Overcoming Constraints in Deciding Well*, third paragraph

Changed “pursuing the boundless end of living well” to “living well” in the last sentence.

Chapter 3, *Public Order*, last paragraph

Changed “boundless public order” to “boundless (timeless) public order” in the third sentence.

Changed “bounded public order” to “bounded (temporal) public order” in the fourth sentence.

Chapter 3, *Public Entropy*, last paragraph

“We can use the concept of public entropy to help us link partial descriptions of the world into an ever more coherent whole that we can use to find ever better problems to solve.⁹ We can begin by using it to relate quantum mechanics to deciding well.”

“⁹ Removing ambiguity from ambiguous links between beliefs in belief systems is like removing work-in-process inventory from elastic links between production processes in the Toyota production system. At the limit of the former, ambiguous links become logical. At the

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

limit of the latter, elastic links become rigid. In both cases, we remove waste from the process of deciding well.”

was changed to:

“We can use the concept of public entropy to help us know how best to remove waste from our belief systems. Removing waste from our belief systems is like removing work-in-process inventory from the Toyota production system. At the limit of the former, relations become logical. At the limit of the latter, links become rigid. In both cases, we remove waste from the process of deciding well. We can begin by relating quantum mechanics to deciding well.”

Chapter 3, *Decision Science*, title

Changed title to “*A Boundlessly Pragmatic Interpretation of Quantum Mechanics*.”

Chapter 3, The Elephant in the Room, first paragraph

Changed “in the realm that mathematicians consider to be practically infinite” to “practically infinite” in the last sentence.

Changed “Oxford University's” to “the Isaac” in the first sentence of the footnote.

Chapter 3, The Elephant in the Room, last paragraph, first two sentences

“From a theistic view, we were lucky to have been born into a world created to be conducive to life. From an atheistic view, we were extremely lucky to have been born into a world conducive to life.”

were deleted.

Chapter 4, entire chapter

Changed “temporal” to “bounded” in all (4 occurrences).

Changed “timeless” to “boundless” in all (1 occurrence).

Changed “the multiple-frame view” to “the boundless view” in all (6 occurrences).

Changed “the multiple-frame approach” to “the boundless approach” in all (1 occurrence).

Chapter 4, Refining Natural Science, second paragraph, footnote

“⁶ For mathematics to be a basis of a self-referential process of refining everyday thinking, mathematics must be a part of this process. From the multiple-frame view, the true sciences would include mathematics as the science of patterns. For more about this, see Appendix A.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

was deleted.

Chapter 5, entire chapter

Changed “temporal” to “bounded” in all (3 occurrences).

Changed “timeless” to “boundless” in all (7 occurrences).

Changed “the multiple-frame view” to “the boundless view” in all (4 occurrences).

Changed “the multiple-frame approach” to “the boundless approach” in all (3 occurrences).

Chapter 6, entire chapter

Changed “timeless” to “boundless” in all (8 occurrences).

Changed “the multiple-frame view” to “the boundless view” in all (4 occurrences).

Chapter 6, OODA Loop Analysis, second paragraph

Changed “temporal” to “temporally-bounded” in the first sentence.

Chapter 7, entire chapter

Changed “temporal” to “bounded” in all (2 occurrences).

Changed “timeless” to “boundless” in all (5 occurrences).

Changed “the multiple-frame view” to “the boundless view” in all (3 occurrences).

Changed “the multiple-frame approach” to “the boundless approach” in all (1 occurrence).

Chapter 8, entire chapter

Changed “temporal” to “bounded” in all (4 occurrences).

Changed “timeless” to “boundless” in all (9 occurrences).

Changed “the multiple-frame view” to “the boundless view” in all (1 occurrence).

Changed “the multiple-frame approach” to “the boundless approach” in all (3 occurrences).

Chapter 8, Beautiful Reason, third paragraph

Changed “unambiguous” to “logically consistent” in all (4 occurrences).

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix A, entire appendix

Changed “temporal” to “bounded” in all (1 occurrences).

Changed “timeless” to “boundless” in all (4 occurrences).

Appendix A, title

Changed title from “The Science of Patterns” to “The Study of Patterns.”

Appendix A, The Basis of Mathematics, title

Changed title to “The Science of Patterns.”

Appendix A, The Science of Patterns, first paragraph

Changed “can” to “can never” in the third sentence.

Changed “tool in question” to “tool” in the last sentence.

Appendix A, The Science of Patterns, second paragraph

Changed “mathematics as a whole” to “the science of patterns” in the first sentence.

Changed “mathematics” to “the science of patterns” in the first sentence.

Appendix A, The Science of Patterns, last paragraph

Changed “mathematics” to “the science of patterns” in the first sentence.

Changed “mathematical” to “pattern” in the second sentence.

Appendix B, entire appendix

Changed “timeless” to “boundless” in all (2 occurrences).

Appendix B, *Machine Tools*, second paragraph

Changed “a temporal view of producing well common in the West” to “the view of modern economics and management science” in the first sentence.

Changed “a boundless view of producing well” to “the boundless view” in the second sentence.

Changed “efficient” to “ever more efficient” in the fourth sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix B, Less is More, first paragraph

Changed “**always** exceed” to “exceed” in the last sentence.

Appendix C, entire appendix

Changed “**timeless**” to “**boundless**” in all (6 occurrences).

Changes in Version 2013.05.14

Chapter 1, Values, fourth paragraph

Changed “**induce**” to “**create**” in the second sentence.

Chapter 1, Values, sixth paragraph

Changed “**inducing**” to “**creating**” in the first sentence.

Chapter 1, Values, last paragraph, last sentence

“**We can use this insight as the basis for building multiple-frame models of deciding well for helping us find problems to solve.**”

was changed to:

“**The process of deciding well calls for refining the process of deciding well. To refine this process well, we need a means of breaking it down into wieldier problems. One way involves breaking down Wisdom into universally useful resources for deciding well that we can never have in excess. We may call these aspects of Wisdom *boundless factors of deciding well*. Taken together, the pursuits of these boundless factors form a complex model of deciding well. We can use this model to judge whether the problems we find “ring true” with all that we currently know about deciding well. If they do, we have found a “beautiful” problem to solve.**”

Changes in Version 2013.05.15

Preface, fifth paragraph

Changed “**many** bounded” to “bounded” in the first sentence.

Preface, eighth paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “boundless aspects” to “aspects” in the third sentence.

Changed “boundless factors” to “knowledge resources” in the fourth sentence.

Preface, tenth paragraph

“We can use this complex description of deciding well to build boundless models that help us find “beautiful” problem to solve, problems that “ring true” with all that we currently know about deciding well. We can then use the bounded models that best help us predict what will happen within the bounds of our chosen problem to help us evaluate alternative solutions.”

was appended to the preceding paragraph and changed to:

“We can use this model of the structure of deciding well to build complex models of deciding well that help us find “beautiful” problem to solve, problems that “ring true” with all that we currently know about deciding well.”

Preface, new tenth paragraph, first three sentences

“Underlying this approach to deciding well is a concept of reason that is more complete than rationality (the reason of geometry, mathematics, and logic). This more complete concept of reason calls for us to define and discard waste in deciding well. The claim that we ought to replace rationality with a more complete concept of reason is extraordinary. Such a claim calls for extraordinary evidence.”

was changed to:

“Underlying this approach to deciding well is a concept of reason based on beauty as well as logic. The claim that we ought to replace our current concept of reason calls for extraordinary evidence.”

Chapter 1, Ever More Complete Multiple-Frame Models, last paragraph, last two sentences

“We may call this complex approach to deciding well *the boundless approach to deciding well*, or simply *the boundless approach*. We may also call the “view” of this approach *the boundless view of deciding well*, or simply *the boundless view*.”

were changed to:

“We can then use bounded models that predict well within the domain of this problem to help us judge courses of action.

“We may call this complex approach to deciding well *the boundless approach to deciding well*, or simply *the boundless approach*. We may also call the “view” of this approach *the boundless view of deciding well*, or simply *the boundless view*.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 2, Boundless Tools for Living Well, last paragraph, footnote, second and third sentences

“In the tradition of Alfred Marshall, we may think of mainstream modern economics as a collection of tools for describing the world as it currently is. In the tradition of Milton Friedman, the modern Chicago school distinguishes itself from other mainstream schools by distinguishing between tools for describing the world as it currently is (“positive economics”) and prescribing the world as it ought to be (“normative economics”).”

were changed to:

“This approach to economics describes the world as it currently is.”

Chapter 3, Public Order, last paragraph

Changed “boundless (timeless)” back to “boundless” in the third sentence.

Changed “temporal” to “current” in the fourth sentence.

Chapter 3, Public Entropy, last paragraph

Changed “relating” to “more tightly linking” in the last sentence.

Chapter 7, An Extraordinary Anomaly, last paragraph

“Deciding well calls for all of us to judge actions by how well they ring true with all that we currently know about pursuing the boundless end of deciding well and to judge people by the content of their character as revealed by their actions.”

was changed to:

“In playing the boundless game of deciding well, we judge actions by how well they ring true with all that we currently know about deciding well and people by the content of their character as revealed by their actions.”

Chapter 7, The Scope of Biological Evolution, second paragraph

Changed “Our” to “We recognize that our” in the last sentence.

Chapter 8, Beautiful Reason, second paragraph

Changed “Our” to “We recognize that our” in the last sentence.

Chapter 8, Eudaemonia, last paragraph, first footnote

Moved the first (Appendix C reference) sentence to the end of the footnote.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “**Regrettably, in**” to “**In**” in the new first sentence.

Appendix A, The Science of Patterns, title

Changed title to “**Indispensable Patterns.**”

Appendix A, Indispensable, first paragraph

Changed “independent” to “**truly** independent” in the second sentence.

Changed “**boundless** end” to “end” in the third sentence.

Deleted the last sentence: “**We do so by acting as if the tool is indispensable.**”

Appendix A, Indispensable Patterns, second paragraph

“**We can apply this reasoning to the science of patterns. To prove that the science of patterns is indispensable in deciding well, we seek to disprove the proposition that there exist some patterns that are indispensable in deciding well. We do so by acting as if some patterns are indispensable in deciding well.**”

was deleted.

Appendix A, Indispensable Patterns, last paragraph, first sentence

“**We base the science of patterns on the reason of deciding well.**”

were changed to:

“**We may call the pursuit of knowledge of patterns that are indispensable in deciding well *the science of patterns.***”

Appendix C, fourth paragraph

Changed “myth” to “**mythology**” in the third sentence.

Appendix C, seventh paragraph, last two sentences

“**Ironically, a** visual means of expressing this self-similarity lies beneath our feet **as we look up at the oculus. We find this means** in a crude version of a self-similar tile pattern known to Roman artisans since the late eleventh century:”

were changed to:

“**A** visual means of expressing this self-similarity lies beneath our feet in a crude version of a self-similar tile pattern known to Roman artisans since the late eleventh century:”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, last paragraph

Changed “perspective **with a two-point perspective**” to “perspective” in the third sentence.

Changed “**juxtaposition**” to “**clash of perspectives**” and “higher dimensional” to “higher-dimensional” in the fourth sentence.

Changes in Version 2013.05.20

Chapter 1, Useful Frames, section

Demoted section to subsection.

Chapter 4, *Academic Fields*, fourth paragraph

Moved footnote to the end of the last sentence.

Changed “**natural (invariant) game theory**” to “**game theory**” in the last sentence.

Changed “**natural (invariant) game theory**” to “game theory” in the first sentence of the footnote.

Chapter 6, A Common Boundless End, first and last paragraphs

“**Defining the process of living well and the boundless end of living well in terms of one another creates ambiguity in the frame for living well. We may refine our beliefs about living well by creating a frame for satisfying our need for mystical oneness. We do this by defining the process of satisfying our need for mystical oneness and the boundless end of this process in terms of one another. We may call the boundless end of satisfying our need for mystical oneness Wholeness.**

“**However useful creating a frame for linking well may be in helping us better understand living well, it does not tell us whether we ought to link well in order to live well or to live well in order to link well. From a logical view, the belief that we ought to link well in order to live well conflicts with the belief that we ought to live well in order to link well. From the boundless view, we best settle this conflict by having these beliefs compete in the marketplace of ideas for helping us decide well.**”

were changed to:

“**The possibility that some part of us survives the death of our bodies casts doubt on the belief that we link well in order to live well, as opposed to living well in order to link well. We may address this problem by creating a frame for satisfying our need for linking well.**

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

We do so by defining the process of **linking well** and the boundless end of this process in terms of one another. We may call the boundless end of **linking well** *Wholeness*.

“Given our ignorance of **Wisdom**, the pursuits of **Happiness** and **Wholeness** are not one in the same. From a logical view, the belief that we ought to **pursue Happiness** conflicts with the belief that we ought to **pursue Wholeness**. From the boundless view, we **ought to pursue Wisdom, which calls for us to resolve such** conflicts in the marketplace of ideas for helping us decide well.”

Chapter 8, Eudaemonia, last paragraph, last sentence

“Including Eudaemonia in our set of boundless factors of deciding well provides us with a means of thinking about how best to govern the parts of our minds that process information unconsciously.”

was changed to:

“Pursuing this boundless end helps us use the normally unconscious parts of our minds ever more wisely.”

Appendix C, title quotes

Added reference to the Protagoras quote.

Removed braces from the last quote.

Changed “*Plato's Socrates*” back to “*Socrates*” in the last quote.

Appendix C, first paragraph, third sentence

“In the movie based on astronomer Carl Sagan’s book, *Contact*, **billionaire industrialist S. R. Hadden said that** the key to translating the alien message was **realizing that our modern way of reasoning is not the best**: “An alien intelligence is going to be more advanced and that means efficiency functioning on multiple levels and in multiple dimensions.”

was changed to:

“In the movie based on Carl Sagan’s book *Contact*, the key to translating the aliens’ message was **recognizing that they pursued Beauty**: “An alien intelligence is going to be more advanced and that means efficiency functioning on multiple levels and in multiple dimensions.””

Appendix C, second paragraph

Changed “**boundless**” back to “**timeless**” in the last sentence.

Changes in Version 2013.05.22

Preface, first paragraph

Changed “questioned relentlessly” to “challenged” in the fourth sentence.

Preface, third to last paragraph

Changed “science” to “true science” in the last sentence.

Preface, second to last paragraph

Changed “grand strategy for competing in time” to “grand strategy” in the fourth sentence.

Chapter 8, Eudaemonia, last paragraph, first footnote

Changed “In” to “Note that in” and “in Book II of *The Republic*,” to “,” in the first sentence.

Moved the sentence referring to Appendix C back to the beginning of the footnote.

Chapter 8, Eudaemonia, last paragraph, last footnote

Changed “end” to “ends” in the last sentence.

Appendix C, third paragraph

Changed “octagons, which represent learning ever more about Wisdom and the world” to “octagons” in the last sentence.

Appendix C, fourth paragraph

“The most important octagon is the faux oculus at the center of the ceiling, which is the result of combining two Platonic themes, the unity of virtue (*Protagoras*) and the four elements (*Timaeus*):

[Photograph of the central ceiling]

“The four circles containing women represent poetry, philosophy, jurisprudence, and theology. The four hourglass composites of scenes from Greek mythology and Roman history represent earth, water, air and fire. Together with the central oculus, these four composites form a Greek cross. The center of this cross represents both *Hagia Sophia* (Holy Wisdom) and *aether* (the mysterious fifth element). Above this oculus, four putti push up and another four putti pull down a circle that contains a symbol of the papacy.³”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

was changed to:

“The most important octagon is the faux oculus at the center of the ceiling, which is also the highest point in the room. Surrounding this oculus are four hourglass composites of scenes from Greek mythology and Roman history. Also surrounding it are four circles containing female figures that introduce the subjects of the four walls. These subjects are poetry (left), philosophy (bottom), justice (right), and theology (top):³

[Photograph of the ceiling]

“From the boundless view, the octagon is the result of combining two Platonic themes, the four elements (*Timaeus*) and the unity of virtue (*Protagoras*). We see the four elements in the hourglass composites. Together with the central oculus, these four composites form a Greek cross that aligns with the corners of the room. We see the unity of virtue in the pursuits of the boundless ends of poetry (Beauty), philosophy (the Truth), justice (Justice), and theology (Wholeness). Taken together with the oculus, the pursuits of these four aspects of Wisdom form a second cross that aligns with the walls of the room. The center of these two crosses represents both the mysterious fifth element (*aether*) and Wisdom (*Hagia Sophia*).”

Appendix C, fifth paragraph, first three sentences

“From the boundless view of this work, this Tantalean image represents learning ever more about both Wisdom and the world. The four aspects of virtue represent the pursuits of the boundless ends of contemplating well (Beauty), believing well (the Truth), governing ourselves well (Justice), and linking well with something infinitely greater than ourselves (Wholeness). The four putti pushing up the papal symbol stand at the center of the edges of the octagon nearest to these boundless factors of deciding well.”

were changed to:

“Above the oculus, four putti push up and another four pull down a circle that contains a symbol of the papacy:

[Photograph of the oculus]

From the boundless view, this Tantalean image represents learning ever more about both the world and the means of learning ever more about the world (Wisdom). The four putti pushing up the papal symbol stand at the center of the edges of the octagon nearest to the four circles that represent the boundless ends of poetry, philosophy, justice, and theology.”

Changes in Version 2013.05.25

Chapter 1, Ever More Complete Multiple-Frame Models, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed ““view”” to “multiple-frame “view”” in the last sentence.

Chapter 4, Modern Policy Mistakes, second paragraph

Changed “makes people” to “gives people the energy, clarity, and wholeness to” in the first sentence.

Changed “product” to “pill to the market” in the second sentence.

Appendix C, fourth paragraph

“The most important octagon is the faux oculus at the center of the ceiling, which is also the highest point in the room. Surrounding this oculus are four hourglass composites of scenes from Greek mythology and Roman history. Also surrounding it are four circles containing female figures that introduce the subjects of the four walls. These subjects are poetry (left), philosophy (bottom), justice (right), and theology (top):³

[Photograph of the ceiling]

“From the boundless view, the octagon is the result of combining two Platonic themes, the four elements (*Timaeus*) and the unity of virtue (*Protagoras*). We see the four elements in the hourglass composites. Together with the central oculus, these four composites form a Greek cross that aligns with the corners of the room. We see the unity of virtue in the pursuits of the boundless ends of poetry (Beauty), philosophy (the Truth), justice (Justice), and theology (Wholeness). Taken together with the oculus, the pursuits of these four aspects of Wisdom form a second cross that aligns with the walls of the room. The center of these two crosses represents both the mysterious fifth element (*aether*) and Wisdom (*Hagia Sophia*).”

was changed to:

“The most important octagon is the faux oculus at the center of the ceiling, which is also the highest point in the room. Surrounding this oculus are four hourglass composites of scenes from Greek mythology and Roman history, which represent fire (left top), earth (right top), water (right bottom), and air (left bottom). Also surrounding it are four circles containing female figures that introduce the subjects of the four walls. These subjects are poetry (left), philosophy (bottom), jurisprudence (right), and theology (top):

[Photograph of the ceiling]

“From the boundless view, the octagon is the result of combining two Platonic themes, the four elements (*Timaeus*) and the unity of virtue (*Protagoras*). Together with the central oculus, these four composites form a Greek cross that aligns with the corners of the room. We see the unity of virtue in the pursuits of the boundless ends of poetry (Beauty), philosophy (the Truth), jurisprudence (Justice), and theology (Wholeness). Taken together with the oculus, the pursuits of these four aspects of Wisdom form a second cross that aligns

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

with the walls of the room. The center of these two crosses represents both the mysterious fifth element and Wisdom.”

Changes in Version 2013.05.28

Appendix C, fourth and fifth paragraphs

“The most important octagon is the faux oculus at the center of the ceiling, which is also the highest point in the room. Surrounding this oculus are four hourglass composites of scenes from Greek mythology and Roman history, which represent fire (left top), earth (right top), water (right bottom), and air (left bottom). Also surrounding it are four circles containing female figures that introduce the subjects of the four walls. These subjects are poetry (left), philosophy (bottom), jurisprudence (right), and theology (top):³

[Photograph of the ceiling]

“From the boundless view, the octagon is the result of combining two Platonic themes, the four elements (*Timaeus*) and the unity of virtue (*Protagoras*). Together with the central oculus, these four composites form a Greek cross that aligns with the corners of the room. **We see the unity of virtue in the pursuits of the boundless ends of poetry (Beauty), philosophy (the Truth), jurisprudence (Justice), and theology (Wholeness). Taken together with the oculus, the pursuits of these four aspects of Wisdom form a second cross that aligns with the walls of the room. The center of these two crosses represents both the mysterious fifth element (*aether*) and Wisdom (*Hagia Sophia* and/or *Logos*).**

“Above the oculus, four putti push up and another four pull down a circle that contains a symbol of the papacy:

[Photograph of the oculus]

“From the boundless view, this Tantalean image represents learning ever more about both the world and the means of learning ever more about the world (Wisdom). The four putti pushing up the papal symbol stand at the center of the edges of the octagon nearest to the four circles that represent the boundless ends of poetry, philosophy, justice, and theology. Three of the four putti pulling down this symbol stand at the center of the edges nearest to earth, water, and air. The putto that ought to stand at the center of the edge nearest to fire, halfway between poetry and theology, instead sits on the corner of fire and theology with his rope clearly in the domain of theology. This greater tension in theology symbolizes the conflict between fervent beliefs about the pursuit of Wholeness and the true pursuit of Wholeness.⁴”

were changed to:

“The most important octagon is the faux oculus at the center of the ceiling, which is also the highest point in the room. Surrounding this oculus are four hourglass composites of scenes

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

from Greek mythology and Roman history, which represent fire (left top), earth (right top), water (right bottom), and air (left bottom). Also surrounding it are four circles containing female figures that introduce the subjects of the four walls. These subjects are poetry (left), philosophy (bottom), jurisprudence (right), and theology (top):³

[Photograph of the ceiling]

“From the boundless view, the octagon is the result of combining two Platonic themes, the four elements (*Timaeus*) and the unity of virtue (*Protagoras*). Together with the central oculus, the four **hourglass** composites form a Greek cross that aligns with the corners of the room. **The center of this cross represents the mysterious fifth element. Together with the oculus, the four circles form a cross that aligns with the walls of the room. The center of this cross represents Wisdom, which is** the unity of the boundless ends of poetry (Beauty), philosophy (the Truth), jurisprudence (Justice), and theology (Wholeness).

“**Reinforcing the relation between the fifth element and Wisdom is the scene in the rectangle in the lower left of the ceiling, which connects the circles representing the boundless ends of poetry (Beauty) and philosophy (the Truth):**

[Photograph of Urania]

“**This scene depicts a female representation of Wisdom (*Urania*, the Greek muse of astronomy) moving the mysterious element that keeps the heavens in motion (*aether*).**

“**Also reinforcing this relation are the Greek and Roman crosses formed by rays emanating from the encircled dove on the wall fresco dedicated to the boundless end of theology (Wholeness):**

[Photograph of Holy Ghost]

“**The dove represents the Holy Ghost, the mysterious divine element within ourselves. Pursuing the truth about this element calls for us to pursue the boundless end of deciding well (Wisdom), which in turn calls for us to pursue the truth about this element.”**

Appendix C, last paragraph, last sentence

“**Which is the better tool for helping us live well?”**

was promoted to a paragraph and changed to:

“**We can find a variation of the square-within-an-octagon-within-a-square theme of this boundless symbol of renaissance on the wall dedicated to the boundless end of jurisprudence (Justice). On the left, the chair of Emperor Justinian, an author of Roman law, sits directly on a square tile floor. On the right, the chair of Pope Gregory IX, an author of ecclesiastical law, sits on a square platform, which sits on an octagonal platform, which sits on a square tile floor:**

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

[Photographs of seated figures on jurisprudence wall.]

“Finally, we can find a musical version of this renaissance theme in the fresco dedicated to the boundless end of poetry (Beauty). In the visual center of this fresco, Apollo gazes toward heaven as he plays music on his nine-string “lyre.” He appears to play diatonic (eight-note, repeating-octave scale) melodies using the seven fingerboard strings and a two-note drone using the two strings above the fingerboard. Arguably, this two-note drone represents the two-part reason of Plato and Aristotle that underlies the boundless approach to deciding well:

[Photograph of Apollo playing lyre on poetry wall]

“From these various depictions of the reason of Plato and Aristotle, we may reasonably conclude that the decoration of this room portrays a multiple-frame strategy for pursuing Wisdom (*Hagia Sophia/Logos*). We may also speculate that this multiple-frame strategy is self-referential. If it is, we ought to judge the stories that we use to pursue Wisdom by how well they help us pursue Wisdom. We ought to judge them by their fruits.”

Changes in Version 2013.06.01

Chapter 1, Steps for Building Multiple-Frame Models, first paragraph

Added the following footnote to the first sentence:

¹³ Earlier versions of this work used the term ‘multiplex,’ which came from biologist Jack Cohen and mathematician Ian Stewart’s book about the co-evolution of minds and environments, *Figments of Reality: The Evolution of the Curious Mind* (Cambridge, England: Cambridge University Press, 1997). Regrettably, the authors overlooked the unity of virtue.”

Appendix C, fifth paragraph

Changed “*aether*” to “*celestial aether*” in the last sentence.

Appendix C, seventh paragraph, end

Added the sentence:

“Reinforcing this tension are the black clouds underlying the encircled female figure representing theology at the top of the ceiling, as opposed to the white clouds underlying justice, the mauve clouds underlying philosophy, and the pink clouds underlying poetry.”

Appendix C, eleventh paragraph

Changed “*endless* rationality” to “*reason as* rationality” in the first sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, last paragraph

Changed “**portray**” to “as a whole **depicts**” in the first sentence.

Changes in Version 2013.06.07

Acknowledgments, last paragraph

Changed “numbers, **especially for those he worked with in the**” to “numbers **without considering the usefulness of these numbers, a habit he acquired while rising through the ranks of**” in the fourth sentence.

Chapter 3, *Public Entropy*, last paragraph, last sentence

“We can begin by more tightly linking quantum mechanics to deciding well.”

was changed to:

“We can begin **using this concept of public entropy to remove waste from our belief systems** by more tightly linking quantum mechanics to deciding well.”

Chapter 6, *The Elephant in the Room*, last paragraph, second sentence

“From a logical view, the belief that we ought to **pursue Happiness** conflicts with the belief that we ought to **pursue Wholeness**.”

was changed to:

“From a logical view, the belief that we ought to **link well in order to live well** conflicts with the belief that we ought to **live well in order to link well**.”

Appendix C, third paragraph

Inserted the section title “**The Forgotten Role of Octagons**.”

Appendix C, *The Forgotten Role of Octagons*, ninth paragraph, footnote, last two sentences

“For example, replacing the papal symbol and putti above the oculus in the ceiling would have harmed the relation between the ceiling and the fresco **dedicated to theology**. **Arguably, this is but one of many compromises made in flattening a universal story of enlightenment into this walk-in Christian mandala**.”

were changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“For example, replacing the papal symbol and putti above the oculus in the ceiling would have harmed the relation between the ceiling and the **poetry, theology, and jurisprudence** frescoes.”

Appendix C, The Forgotten Role of Octagons, tenth paragraph

Changed “square **platform, which sits** on **an** octagonal platform” to “square-on-octagon” in the last sentence.

Appendix C, The Forgotten Role of Octagons, end

Added the following:

“**[The published work will contain two more sections.]**”

Changes in Version 2013.06.08

Appendix C, The Forgotten Role of Octagons, last paragraph, last three sentences

“**We may also speculate that this multiple-frame strategy is self-referential. If it is, we ought to judge the stories that we use to pursue Wisdom by how well they help us pursue Wisdom. We ought to judge them by their fruits in pursuing the truth about Wisdom.**”

were deleted.

Changes in Version 2013.06.10

Edits that resulted from Sally Osborn's review of May 22 version.

Entire document

Changed “indispensable **in**” to “indispensable **to**” in all (4 occurrences).

Preface, first paragraph

Changed “trained-economist” to “trained economist” in the first sentence.

Changed “school to” to “school **in order** to” in the third sentence.

Preface, third paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “temporally bounded” to “temporally-~~bounded~~” in the first sentence of the block quote.

Preface, sixth paragraph

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

Preface, seventh paragraph

Changed “~~need~~” to “~~require~~” in the first sentence.

Changed “problem” to “problem~~s~~” in the last sentence.

Chapter 1, Values, third paragraph, footnote

Changed “third-person” to “third person” and “first-person” to “first person” in the third sentence.

Chapter 1, Ever More Complete Multiple-Frame Models, third paragraph

Changed “debts ~~that~~ we” to “debts we” in the third sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, second and third paragraphs

Removed all italics from the last sentences.

Chapter 3, *A Boundlessly-Pragmatic Interpretation of Quantum Mechanics*, seventh paragraph

Changed “~~with~~ not only” to “not only ~~with~~” in the second sentence.

Chapter 3, *A Boundlessly-Pragmatic Interpretation of Quantum Mechanics*, eighth paragraph, first footnote

Changed “poorly-~~trained~~” to “poorly trained” in the third sentence.

Changed “highly-~~trained~~” to “highly trained” in the fourth sentence.

Chapter 4, Refining Natural Science, first paragraph

Changed “refining models” to “refining ~~the~~ models” in the second sentence.

Chapter 4, *Refining Finding Problems to Solve*, second paragraph

Changed “way ~~that~~” to “way ~~in which~~” in the first sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 4, *Refining Finding Problems to Solve*, third paragraph

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

Chapter 4, *Refining Finding Problems to Solve*, fourth paragraph

Changed “way” to “way **in which**” in the first sentence.

Chapter 5, *The Explicit Experiment*, first paragraph, second footnote

Changed “it.” to “it” in the last sentence.

Chapter 5, *A Sovereign Story for Deciding Well*, last paragraph, second footnote

Abbreviated the names of states (2 occurrences).

Chapter 5, *The Explicit Experiment*, first paragraph, second footnote

Changed “it.” to “it” in the last sentence.

Chapter 5, *Lower Barriers to Trade*, first paragraph, footnote

Changed “high technology” to “high-~~technology~~” in the last sentence.

Chapter 6, *A Hole in Pursuing Happiness*, first paragraph

Changed “**the** Beauty” to “Beauty” in the third sentence.

Chapter 6, *Mystical Oneness*, last paragraph

Changed “**M**edieval” to “**m**edieval” in the last sentence.

Chapter 6, *A Common Boundless End*, last paragraph

Changed “one **in**” to “one **and**” in the first sentence.

Chapter 7, *E–M Theory*, first paragraph

Changed “widely-~~used~~” to “widely used” in the fourth sentence.

Chapter 7, *OODA Loop Analysis*, second paragraph

Changed “temporally-~~bounded~~” to “temporally bounded” in the first sentence.

Chapter 7, *OODA Loop Analysis*, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “the dissonance experienced by the subjects of Bruner and Postman’s experiment **in Saddam Hussein**” to “**in Saddam Hussein** the dissonance experienced by the subjects of Bruner and Postman’s experiment ” in the third sentence.

Chapter 7, *Boyd's Grand Strategy*, last paragraph

Changed “**imaginations**” to “**imagination**” in the last sentence.

Chapter 8, *Beautiful Reason*, sixth paragraph

Changed “know it” to “know **that** it” in the last sentence.

Chapter 8, *Beautiful Reason*, sixth paragraph, first footnote

Changed “**O**ver” to “**o**ver” and “Melon” to “Mell**o**n” in the first sentence.

Chapter 8, *Complete Reason*, first paragraph, first footnote

Changed “prove the set” to “prove **that** the set” in the last sentence.

Chapter 8, *Eudaemonia*, first paragraph

Changed “by adding what we currently believe we know about pursuing the boundless factors of deciding well **to them**” to “**to them** by adding what we currently believe we know about pursuing the boundless factors of deciding well” in the third sentence.

Appendix A, *A Modern Intelligence Test*, sixth paragraph

Changed “way **that**” to “way **in which**” in the second sentence.

Appendix A, *A Modern Intelligence Test*, ninth paragraph

Changed “way **that**” to “way **in which**” in the second sentence.

Appendix A, *A Modern Intelligence Test*, tenth paragraph

Changed “explain top-row” to “explain **the** top-row” in the fifth sentence.

Appendix A, *The Big Picture*, second paragraph

Changed “complete **of** an answer” to “complete an answer” in the fifth sentence.

Appendix A, *The Big Picture*, third paragraph

Changed “symbols we plan” to “symbols **that** we plan” in the second sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix A, Indispensable Patterns, first paragraph

Changed “know we” to “know **that** we” in the third sentence.

Appendix A, Indispensable Patterns, last paragraph

Changed “disprove it” to “disprove **that** it” in the third sentence.

Appendix B, Folding in Production Processes, second paragraph

Changed “the operation **is**” to “**is** the operation” in the last sentence.

Appendix B, Temporal Details, first paragraph, footnote

Changed “**The** Cambridge Corporation” to “**t**he Cambridge Corporation” in the first sentence.

Changed “**The** Cambridge Corporation” to “Cambridge Corporation” in the second sentence.

Appendix B, Less is More, title

Capitalized “**I**s.”

Appendix C, second paragraph

Removed italics.

Appendix C, The Forgotten Role of Octagons, second paragraph

Changed order of adjectives in parentheses.

Changed “high resolution” to “high-**r**esolution” in the first sentence of the footnote.

Appendix C, The Forgotten Role of Octagons, fifth paragraph

Changed “theology with his rope” to “theology, **w**ith his rope” in the last sentence.

Appendix C, The Forgotten Role of Octagons, seventh paragraph, footnote

Changed “122” to “22” in the first sentence.

Appendix C, The Forgotten Role of Octagons, eleventh paragraph

Removed italics from “**V**itruvian Man” in the third to last sentence.

Appendix C, The Forgotten Role of Octagons, twelfth paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “square tile” to “square-tiled” in the all (2 occurrences).

Changes in Version 2013.06.12

Appendix C, The Forgotten Role of Octagons, first paragraph

Changed “this room” to “the Stanza della Segnatura” in the first sentence.

Appendix C, The Forgotten Role of Octagons, third paragraph, first sentence:

“Reinforcing the relation between the fifth element and Wisdom is the scene in the **rectangle in the lower left of the ceiling, which** connects the circles representing the boundless ends of poetry (Beauty) and philosophy (the Truth):”

was changed to:

“Reinforcing the relation between the fifth element and Wisdom is the scene in the **imperfect square that** connects the circles representing the boundless ends of poetry (Beauty) and philosophy (the Truth):”

Appendix C, The Forgotten Role of Octagons, fourth paragraph, last sentence

“Pursuing the truth about this element calls for us to pursue the boundless end of deciding well (**Wisdom**), which in turn calls for us to pursue the truth about this element..”

was changed to:

“Pursuing the truth about this element calls for us to pursue the boundless end of deciding well, which in turn calls for us to pursue the truth about this **mysterious** element. **In Roman Catholicism, the boundless end of deciding well is Holy Wisdom (Hagia Sophia/Logos).**”

Appendix C, The Forgotten Role of Octagons, second to last paragraph, end

Added the following:

“**Justinian addresses problems that concern everyday living and Gregory IX address problems that concern living wisely. In the corner scene above and to the left of Justinian, Solomon must choose the true mother of a child that two women claim. In the corner scene above and to the right of Gregory IX, Adam and Eve must choose whether to learn to live wisely:**

[Photographs of Solomon and Eden corner scenes]”

Appendix C, The Forgotten Role of Octagons, last paragraph, last sentence

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“From these various depictions of **the reason of Plato and Aristotle**, we may reasonably conclude that the decoration of this room as a whole depicts a multiple-frame strategy for pursuing Wisdom (*Hagia Sophia/Logos*).”

was changed to:

“From these various depictions of reason, we may reasonably conclude that the decoration of this room as a whole depicts a multiple-frame strategy for pursuing **the Truth about Holy Wisdom (*Hagia Sophia/Logos*)**, **which is a dualist version of pursuing the Truth about Wisdom (natural science)**.

“**[The published version of this work will contain two more sections.]**”

Changes in Version 2013.06.13

Appendix C, The Forgotten Role of Octagons, fifth paragraph, last four sentences

“**The four putti pushing up the papal symbol stand at the center of the edges of the octagon nearest to the four circles that represent the boundless ends of poetry, philosophy, jurisprudence, and theology. Three of the four putti pulling down this symbol stand at the center of the edges nearest to earth, water, and air. The putto that ought to stand at the center of the edge nearest to fire, halfway between poetry and theology, instead sits on the corner of fire and theology, with his rope clearly in the domain of theology.⁴ Reinforcing this tension are the black clouds underlying the encircled female figure representing theology at the top of the ceiling, as opposed to the white clouds underlying justice, the mauve clouds underlying philosophy, and the pink clouds underlying poetry.**”

“⁴ **In a letter to Marcellinus of Carthage, Augustine of Hippo addressed this issue: “If anyone shall set the authority of Holy Writ against clear and manifest reason, he who does this knows not what he has undertaken; for he opposes to the truth not the meaning of the Bible, which is beyond his comprehension, but rather his own interpretation; not what is in the Bible, but what he has found in himself and imagines to be there.” In a letter to Christina of Lorraine concerning the use of biblical quotations in matters of science, Galileo Galilei used this quote to buttress the claim that the Bible concerns how to go to heaven, not how heaven goes. An English translation of Galileo’s letter is available online at <<http://www.college.columbia.edu/core/sites/core/files/text/Galileo.pdf>> (30 April 2013).**”

were changed to:

“**This greater tension in theology symbolizes the conflict between fervent beliefs about the pursuit of Wholeness and the true pursuit of Wholeness.**”

Appendix C, The Forgotten Role of Octagons, second to last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“We can find a variation of the square-within-an-octagon-within-a-square theme of **this boundless symbol of renaissance** on the wall dedicated to the boundless end of jurisprudence (Justice). On the left, the chair of Emperor Justinian, **an author of Roman law**, sits directly on a square-tiled floor. On the right, the chair of Pope Gregory IX, **an author of ecclesiastical law**, sits on a square-on-octagon platform, which sits on a square-tiled floor:

[Photographs of Justinian and Gregory IX]

Justinian addresses problems that concern everyday living and **Gregory IX address problems that concern living wisely**. In the corner scene above and to the left of Justinian, Solomon must choose which of two woman is the mother of the child that both claim to be theirs. In the corner scene above and to the right of Gregory IX, Adam and Eve must choose whether to learn to live wisely:”

was changed to:

“We can find a variation of the square-within-an-octagon-within-a-square theme on the wall dedicated to the boundless end of jurisprudence (Justice). On the left, the chair of Emperor Justinian sits directly on a square-tiled floor. On the right, the chair of Pope Gregory IX sits on a square-on-octagon platform, which sits on a square-tiled floor:

[Photographs of Justinian and Gregory IX]

Justinian, **an author of civil law**, addresses problems that concern everyday living. In the corner scene above and to the left of Justinian, Solomon must choose which of two woman is the mother of the child that both claim to be theirs. **In contrast, Gregory IX, an author of ecclesiastical law, addresses problems that concern living wisely**. In the corner scene above and to the right of Gregory IX, Adam and Eve must choose whether to learn to live wisely:”

Appendix C, The Forgotten Role of Octagons, last paragraph, last sentence

“From these various depictions of reason, we may reasonably conclude that the decoration of this room as a whole depicts a multiple-frame strategy for pursuing **the Truth about Holy Wisdom (Hagia Sophia/Logos), which is a dualist version of pursuing the Truth about Wisdom (natural science)**.”

was changed to:

“From these various depictions of reason, we may reasonably conclude that the decoration of this room as a whole depicts a multiple-frame strategy for pursuing Holy Wisdom (*Hagia Sophia/Logos*).”

Changes in Version 2013.06.15

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 3, Public Entropy, fifth paragraph, footnote, end

Added the following sentences:

“Further complicating this issue is the knowledge intensity of the boundlessly pragmatic approach to finding problems to solve. Until people have achieved a critical mass in knowledge about pursuing the boundless factors of deciding well, they may be better off using bounded models. For more about this problem, see Appendix C.”

Appendix C, second paragraph

Changed “warrior” to “lawyer” in the last sentence.

Appendix C, The Forgotten Role of Octagons, fifth paragraph, second sentence

“In pointing up, Plato tells us to aspire to a more refined form of the reasoning on which he and Aristotle stand, as represented by the square-within-an-octagon-within-a-square pattern on the floor beneath their feet:”

was changed to:

“In pointing up, Plato tells us to pursue Wisdom by pursuing Beauty, Wholeness, Justice, and the Truth. In holding his hand parallel to the ground, Aristotle tells us to know the world around us. In following the advice of both Plato and Aristotle, we aspire to a more refined form of the reasoning on which Plato and Aristotle stand, as represented by the square-within-an-octagon-within-a-square pattern on the floor beneath their feet:”

Changed “aspire” to “pursue Wisdom by pursuing Beauty, Wholeness, Justice, and the Truth. In doing so, he tells us to aspire” in the second sentence.

Appendix C, The Forgotten Role of Octagons, tenth paragraph

Changed “which sits” to “which in turn sits” in the third sentence.

Changed “must choose whether” to “choose” in the last sentence.

Appendix C, The Forgotten Role of Octagons, end

“Black Clouds in Theology

From a modern view, there exists an internal contradiction within the Roman Catholic pursuit of Holy Wisdom. We can see the metaphorical storm this conflict creates in the black clouds underlying the figure of Theology:

[Photograph of the Theology figure]

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Compare these clouds with the clouds under the figures of Jurisprudence, Poetry, and Philosophy:

[Photographs of the Jurisprudence, Poetry, and Philosophy figures]

Arguably, the black clouds represent a storm; the white, full daylight; the pink, sunrise; and the mauve, morning twilight.

“In the scene above the oculus, this contradiction concerns an imbalance between poetry and theology. The four putti pushing up the papal symbol stand at the center of the edges of the octagon nearest to the four circles that represent the boundless ends of poetry, philosophy, jurisprudence, and theology. Three of the four putti pulling down this symbol stand at the center of the edges nearest to earth, water, and air. The putto that ought to stand at the center of the edge nearest to fire, halfway between poetry and theology, instead sits on the corner of fire and theology, with his rope clearly in the domain of theology. This greater tension in theology symbolizes the conflict between fervent beliefs about the pursuit of Wholeness and the true pursuit of Wholeness:

[Photograph of oculus moved from the fourth paragraph of this section]

Over a thousand years before Raphael painted this scene, Augustine of Hippo addressed this issue in a letter to Marcellinus of Carthage: “If anyone shall set the authority of Holy Writ against clear and manifest reason, he who does this knows not what he has undertaken; for he opposes to the truth not the meaning of the Bible, which is beyond his comprehension, but rather his own interpretation; not what is in the Bible, but what he has found in himself and imagines to be there.”⁶

“In the theology fresco, this contradiction concerns a conflict between art and the reason of Plato and Aristotle. We can see this conflict in the celestial figures in the upper left of the fresco. From the view of art, people are the measure of all things, of the existence of the things that are and the non-existence of the things that are not. Celestial beings are as realistically portrayed as the historical figures in the philosophy fresco are:

[Photograph of celestial beings in theology fresco]

In contrast, from the view of the reason of Plato and Aristotle, what some people perceive as celestial beings are natural phenomena that they do not yet fully understand. From this view, we ought to judge our beliefs by how useful they are in refining everyday thinking. Celestial beings of our world appear to be part of the white aether and the celestial beings beyond our world appear to be part of the golden aether.

“From the boundless view of deciding well, which is an imaginary view of the room as a whole, this internal contradiction concerns the problem of when we ought to use bounded models of the world to help us find problems to solve. We ought to do so only when the added benefit of using the boundless model of deciding well is not worth the extra cost of using it. The wiser we are, the less frequently this happens.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Over a hundred years after Raphael painted this scene, Galileo Galilei used this quote in an open letter to Christina of Lorraine in which he buttressed his claim that the Bible concerns how to go to heaven, not how heaven goes. The Inquisition banned this letter in all Catholic countries. An English translation of it is available online at <http://www.college.columbia.edu/core/sites/core/files/text/Galileo.pdf> (15 June 2013).”

Appendix C, end

Changed the bracketed note to reflect the addition of the section on black clouds.

Changes in Version 2013.06.17

Appendix C, second paragraph

Changed “Julius II, the Renaissance lawyer who aspired to create a Christian empire based on what he and his advisors believed were the timeless values of classical Greece and Rome” to “Julius II in the early sixteenth century of the Common Era” in the last sentence.

Appendix C, The Forgotten Role of Octagons, fourth paragraph

“Also reinforcing this relation are the Greek and Roman crosses formed by rays emanating from the encircled dove on the wall fresco dedicated to the boundless end of theology (Wholeness):

[Photograph of the Holy Ghost in the theology fresco]

The dove represents the Holy Ghost, the mysterious divine element within ourselves. Pursuing the truth about this element calls for us to pursue the boundless end of deciding well, which in turn calls for us to pursue the truth about this mysterious element. In Roman Catholicism, the boundless end of deciding well is Holy Wisdom (*Hagia Sophia/Logos*).”

was inserted before the last paragraph and changed to:

“*On the Theology Wall*

We can find a visual variation of the octagon theme near the center of the wall fresco dedicated to theology. Here rays emanating from the encircled dove form superimposed Greek and Roman crosses:

[Photograph of the Holy Ghost in the theology fresco]

The dove represents the Holy Ghost, the mysterious divine element within ourselves. Pursuing the truth about this element calls for us to pursue the boundless end of deciding well, which in turn calls for us to pursue the truth about this mysterious element. In Roman Catholicism, the boundless end of deciding well is Holy Wisdom (*Hagia Sophia/Logos*).

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“*On the Poetry Wall*”

Appendix C, The Forgotten Role of Octagons, new fifth paragraph, first sentence

“The next most important octagon is that on which Plato and Aristotle stand in the fresco below the philosophy circle:”

was changed to:

“*The Philosophy Fresco*

The next most important octagon is that on which Plato and Aristotle stand in the wall fresco dedicated to philosophy:”

Appendix C, *On the Philosophy Wall*, fifth paragraph

Inserted the subsection title: “*On the Jurisprudence Wall.*”

Appendix C, *On the Poetry Wall*, first paragraph

Changed “in the visual center” to “near the center” in the second sentence.

Changed “underlies the boundless approach to” to “underlies” in the fourth sentence.

Changed “reason” to “two-part reason” and “Holy Wisdom (*Hagia Sophia/Logos*)” to “Holy Wisdom” in the last sentence.

Appendix C, Black Clouds in Theology, second to last paragraph

Changed “the reason of Plato and Aristotle” to “philosophy” in all (2 occurrences).

Changed “refining everyday thinking” to “pursuing Wisdom” in the fifth sentence.

Changes in Version 2013.06.19

Appendix C, second paragraph

Added the footnote:

“² A bottom-up way of trying to understand the meaning of a work of art is to try to understand the worldview of the artist. In the case of the decoration of the room we now call the Stanza della Segnatura, an immediate problem we face in doing so is knowing who the artists were. The grotesque bands, roundels, and papal symbol in the ceiling contain the general plan for the work. Given that others painted these before Raphael received his commission to complete the work, no one can say with certainty who the author or authors of

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

the plan were. In her scholarly work *Raphael's Stanza della Segnatura, Meaning and Invention* (Cambridge, England: Cambridge University Press, 2002), Christiane Joost-Gaugier speculates that it was the polymath Tommaso Inghirami. A top-down way of trying to understand the meaning of a work of art is to try to understand the work relative to current beliefs about the world. This appendix uses boundlessly pragmatic variations of these two means. The first two sections concern the meaning of the Stanza della Segnatura based on what Inghirami and those around him likely knew about deciding well. The last section concerns the meaning of the work based on what we currently know about deciding well using the multiple-frame approach.”

Appendix C, The Forgotten Role of Octagons, second paragraph, footnote

“⁴ A high-resolution image of the entire ceiling is available online at <http://upload.wikimedia.org/wikipedia/commons/9/90/Raphael_-_Ceiling_of_the_Selling_Room.jpg> (30 April 2013).”

was changed to:

“⁴ High-resolution photographs of this room are available online at Wikipedia <http://en.wikipedia.org/wiki/Raphael_Rooms> (19 June 2013) and other locations.”

Appendix C, end

Added the following section:

“A Boundlessly Pragmatic View

To understand this room as a whole, we must consider not only the decoration on the ceiling and four walls, but also the floor. The first thing to notice about the floor is that it is a quadrangle with two parallel sides and two non-parallel sides. Given this asymmetric shape, it is not surprising that the symmetry of the ceiling beyond the oculus is so imperfect. The second thing we must consider is that the floor consists of a mishmash of different patterns separated by plain borders. With the exception of the borders along the non-parallel walls and the cursive borders within the large square with the crossed-keys symbol of the papacy at its center, these borders are either parallel or perpendicular to the two parallel walls. These parallel and perpendicular borders form rectangles that contain locally coherent patterns. By far the most complex of these patterns is the large square containing the symbol of the papacy at its center. From its position relative to the doors, which are on either side of the back wall, this was likely the main work area in the room:

[Photograph of Stanza della Segnatura floor]

With the exception of a symbol that crosses a border midway along the passage connecting to two doors at the back of the room, the fields of patterns defined by the rectilinear borders do not visually relate to each other. What coherence the floor has comes from the borders rather than the patterns of the fields.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“The system of organizing patterns in the floor reflects a rational mindset, a mindset concerned with knowing parts of the world as we currently find them, as opposed to the whole world as we may form it. In contrast, the system of organizing patterns in the ceiling reflects a (truly) beautiful mindset, a mindset concerned with knowing the whole world as we may form it, as opposed to parts of the world as we currently find them. To decide well, we need both types of mindsets.

“We see both mindsets at work in the gestures of Plato and Aristotle just below the center of the philosophy fresco. We also see both at work in the figures closest to the altar just below the center of the theology fresco:

[Photograph of the theology fresco altar]

On the left, church doctors study books and gesture toward the monstrance on the altar, which represents the divine role of the church on earth. On the right, other church doctors gesture or gaze upward toward Wisdom.

“*The Role of Julius II*

Separating these two groups of church doctors is a rectangular altar decorated with a cursive gold pattern on an azure field. Across the center of the pattern is the name Julius (IV LI VS). The heraldic colors of this decoration match those of his family coat of arms (gold oak tree on an azure field). If we look closely at this decoration, we see that the cursive gold pattern is a knot worthy of Gordias. In this context, the knot symbolizes the problem of managing the conflicting goals of the two groups of church doctors. Those on the left aim at promoting known ecclesiastic forms. Those on the right aim at discovering better ecclesiastic forms. To manage this conflict well, Julius II needs to see the bigger picture. This rings true with the image of Julius as Gregory IX on the wall dedicated to jurisprudence, where the square-on-octagon platform on which he sits raises him above those around him. In managing this conflict, Julius supports neither side, but rather the program of the church, which is to bring ever more Wisdom into the world.

“Supporting the claim that Julius II ought to be an enlightened jurist, a supporter of bringing ever more Wisdom into the world are two subtle references to Julius II in the ceiling. The more prominent consists in the twelve wedge-shaped images of his family coat of arms, three around each of the four squares. The variety of sizes and shapes of these twelve images suggests that they are supporting rather than major parts of the ceiling:

[Photograph of the primer mover corner]

The major parts of the ceiling are the octagonal oculus, the four circles, and the four squares. Holding these major parts in place are wide gold bands connected by roundels.⁹ In contrast, narrow bands decorated with the heraldic colors of Julius II hold the twelve wedge-shaped images and the symbols for the four elements in place. If we imagine the gold bands as the load-bearing parts of this structure, the wedges and hourglass composites are fillers that add strength and resilience to the ceiling as a whole. The narrow bands in the heraldic colors of Julius II are the mortar that holds these filler parts in place.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Supporting the claim that Julius II ought to be an enlightened jurist is the name Julius in the arch that spans the wall dedicated to jurisprudence. What makes this symbol especially telling is its location to the left and below the center of the arch as we face the wall:

[Photograph of Jurisprudence arch]

By putting this symbol below the center of this arch rather than at the center of the arch, the authors of the decoration would have Julius II aspire to becoming an ever better jurist rather than an ever better philosopher king. By putting this symbol below the center of this arch rather than at the center of the oculus, the authors would have Julius II aspire to becoming an ever better jurist rather than ever more Christlike.

“We can see a reason why the authors would limit the aspirations of Julius II in the decoration of bands in the load-bearing structure of the ceiling. As we enhance our talent for recognizing patterns, we develop the ability to form in our mind’s eye ever more complex patterns. The authors would have us believe that this aspect of opening our unconscious minds to consciousness occurs in three stages. In the first stage, we generate geometric patterns, such as those we see in the rectilinear bottom band. In the second, we generate natural patterns, such as those in the middle floral band. In the third, we generate patterns based on images from our unconscious minds, such as those in the golden bands filled with grotesque images that form most of the imaginary load-bearing structure in the ceiling.

“A great danger in pursuing this aspect of enlightenment is confusing beautiful patterns with patterns useful in deciding well. This is the problem of the putto that ought to stand at the center of the edge nearest to fire intruding into the realm of theology. The fact that some patterns from our unconscious mind are useful in deciding well does not mean that all patterns from our unconscious mind are useful in deciding well. We must judge these patterns by how well they ring true with everything we currently know about deciding well. We must then test those that ring true against experience.

“***Apollo and Marsyas***

Reinforcing the claim that the authors would have Julius II become an ever better jurist rather than an ever better philosopher king or ever more Christlike is the scene in the corner rectangle between the circles representing poetry and theology:

[Photograph of Apollo and Marsyas scene]

Here we see the victory celebration of a musical contest between Apollo and an intelligent and disciplined satyr named Marsyas. In this Greek myth, Marsyas challenges Apollo without fully understanding what his challenge entailed. In one version, Apollo not only played his lyre but also sang, which Marsyas was unable to do with his flute in his mouth. In another version, Marsyas initially outplayed Apollo, but then Apollo played his lyre upside down, a feat that Marsyas was unable to match with his flute. As a reward for defeating Marsyas, Apollo was given the right to have his way with Marsyas. He chose to have Marsyas skinned alive for the hubris of believing he could perform on the level of the gods.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“⁸ The inspiration for looking not only at the ceiling and walls but also at the floor came from *Raphael’s Stanza della Segnatura, Meaning and Invention*.”

“⁹ At the center of these roundels are what appears to be lotus blossoms, a symbol of refinement, purity, and enlightenment.”

Changes in Version 2013.06.20

Appendix C

Incorporated edits recommended by Sally Osborn into the chapter.

Added the last section to the HTML file.

Appendix C, The Forgotten Role of Octagons, second paragraph

Changed “ceiling, **which is also the highest point in the room**” to “ceiling” in the first sentence.

Changes in Version 2013.06.29

Appendix A, A Modern Intelligence Test, eighth paragraph

Changed “bounded results” to “(bounded) results” in the fourth sentence.

Appendix C, A Boundlessly Pragmatic View, first paragraph

Changed “**we must consider**” to “**to notice**” in the fourth sentence.

Changed “floor” to “floor **as a whole**” in the last sentence.

Appendix C, A Boundlessly Pragmatic View, second paragraph

Changed “(truly)” to “**wholly**” in the second sentence.

Appendix C, A Boundlessly Pragmatic View, last paragraph

Changed “**must**” to “**ought to**” in the second to last sentence.

Changed “**must then**” to “then **ought to**” in the last sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, The Role of Julius II, second paragraph, last five sentences

“The major parts of the ceiling are the octagonal oculus, the four circles, and the four squares. Holding these major parts in place are wide gold bands connected by roundels.⁹ In contrast, narrow bands decorated with the heraldic colors of Julius II hold the twelve wedge-shaped images and the symbols for the four elements in place. If we imagine the gold bands as the load-bearing parts of this structure, the wedges and hourglass composites are fillers that add strength and resilience to the ceiling as a whole. The narrow bands in the heraldic colors of Julius II are the mortar that holds these filler parts in place.”

“⁹ At the center of these roundels are what appears to be lotus blossoms, a symbol of refinement, purity, and enlightenment.”

were changed to:

“We can easily imagine that the gold bands around the oculus, four circles, and four squares are the load-bearing parts of the ceiling structure and the hourglass composites are fillers that add strength and resilience to the ceiling as a whole. We can even imagine that the roundels join the load-bearing parts together. At the center of each of these roundels is what appears to be a lotus blossom, a symbol of purity in an impure world. Further, the narrow bands decorated with the heraldic colors of Julius II hold the filler parts in place. The decoration on these bands is an unknotted version of the altar pattern, a symbol of pursuing Wisdom well.”

Changes in Version 2013.07.02

The following changes were prompted by the need to convert the book into Kindle format.

Entire work (Kindle format)

Replaced bullet-point lists with Kindle-friendly formatting. Replaced unprintable special characters with approximates. Reduced size of indentations of paragraphs and block quotes. Changed spacing around block quotes. Changed size of some images. Added copyright page. Changed footnotes to endnotes. Added mistakenly erased sentence in the last paragraph of the acknowledgments on June 7, 2013.

Entire work (all formats)

Checked all twenty confirmed Internet links and changed their dates to (2 July 2013).

Acknowledgments, last paragraph (HTML only)

Inserted sentence mistakenly erased on June 7, 2007:

“John Harris pointed out people and habits worth imitating.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 8, Eudaemonia, last paragraph, first footnote

“For more about Plato’s boundless view of reason, see Appendix C. Note that in likening governing our minds well to governing ourselves well, Plato also provided us with a bounded view of governing our minds well: In an ideal state, all citizens work together for the good of the state. In an ideal human mind, all parts work together for the good of the human. As we have seen, we ought to take the boundless view: In the ideal state, all citizens work together in deciding well. In the ideal human mind, all parts work together in deciding well.”

was changed to:

“Plato also provided us with a bounded view of governing our minds well in likening governing our minds well to governing ourselves well: In an ideal human mind, all parts work together for the good of the human. In an ideal state, all citizens work together for the good of the state. As we have seen, we ought to take the boundless view: In the ideal human mind, all parts work together in deciding well. In the ideal state, all citizens work together in deciding well. For more about Plato’s boundless view of reason and how it relates to governing our minds well, see Appendix C.”

Appendix A, title quotes, second quote

““In mathematics the art of proposing a question must be held of higher value than solving it.” — *Georg Cantor*”

“² Cantor, Georg, “De aequationibus secundi gradus indeterminatis” (Doctoral dissertation, University of Berlin, 1867).”

was deleted.

Appendix C, *Apollo and Marsyas*, last paragraph, end

Added the sentence:

“Apollo then put the hide of Marsyas to use as a wineskin.”

Changes in Version 2013.07.03

The following changes were prompted by the need to convert the book into Kindle format.

Entire work, all formats

Removed section headings immediately after chapter headings in all chapters and appendices.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, Seeing Through Apparent Miracles, first paragraph

Changed “is less costly” to “costs less” in all (6 occurrences in the first three bullet points).

Chapter 4, Refining Natural Science, title

Changed title to “Refining Everyday Thinking.”

Changes in Version 2013.07.12

Preface, tenth paragraph

Changed “approach” to “complex approach” in the first sentence.

Chapter 1, Values, last paragraph

“The process of deciding well calls for refining the process of deciding well. To refine this process well, we need a means of breaking it down into wieldier problems. One way involves breaking down *Wisdom into universally useful resources for deciding well that we can never have in excess. We may call these aspects of Wisdom boundless factors of deciding well.* Taken together, the pursuits of these boundless factors form a **complex** model of deciding well. We can use this model to judge whether the problems we find “ring true” with all that we currently know about deciding well. If they do, we have found a “beautiful” problem to solve.”

was changed to:

“*We may think of the Truth as being a factor of deciding well that we can never have in excess. We may call such factors boundless factors of deciding well.*”

“The process of deciding well calls for refining the process of deciding well. To refine this process well, we need a means of breaking it down into wieldier problems. One way involves breaking down *the process of deciding well into the processes of pursuing the boundless factors of deciding well.* Taken together, the pursuits of these boundless factors form a *multiple-frame* model of deciding well. We can use this **complex** model to judge whether the problems we find “ring true” with all that we currently know about deciding well. If they do, we have found a “beautiful” problem to solve.”

Appendix B, Temporal Details, first paragraph, footnote, last two sentences

“*Today, these tools fit so neatly into the Toyota system that they might have emerged from it. In the near future, additive manufacturing tools (3D printers) will begin to replace traditional tools. As they do, Toyota factories will become even leaner.*”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

were changed to:

“It should accommodate additive manufacturing tools and other new technology as easily.”

Appendix C, introduction, last paragraph, footnote

“A bottom-up way of trying to understand the meaning of a work of art is to try to understand the worldview of the artist. In the case of the decoration of the room we now call the Stanza della Segnatura, an immediate problem we face in doing so is knowing who the artists were. The grotesque bands, roundels, and papal symbol in the ceiling contain the general plan for the work. Given that others painted these before Raphael received his commission to complete the work, no one can say with certainty who the author or authors of the plan were. In her scholarly work *Raphael’s Stanza della Segnatura, Meaning and Invention* (Cambridge, England: Cambridge University Press, 2002), Christiane Joost-Gaugier speculates that it was the polymath Tommaso Inghirami. A top-down way of trying to understand the meaning of a work of art is to try to understand the work relative to current beliefs about the world. This appendix uses boundlessly pragmatic variations of these two means. The first two sections concern the meaning of the Stanza della Segnatura based on what Inghirami and those around him likely knew about deciding well. The last section concerns the meaning of the work based on what we currently know about deciding well using the multiple-frame approach.”

was changed to:

“The key to understanding the Stanza della Segnatura is its ceiling, which was well underway before Raphael received his commission to complete the work. In her scholarly work *Raphael’s Stanza della Segnatura, Meaning and Invention* (Cambridge, England: Cambridge University Press, 2002), Christiane Joost-Gaugier speculated that Tommaso Inghirami was its chief designer. From the boundless view, we may base our interpretations of art either on what its creators knew or on what we currently know about deciding well. The first two sections of this appendix uses the former and the third uses the latter.”

Appendix C, Black Clouds in Theology, fourth paragraph, second sentence

“From this view, we ought to judge our beliefs by how useful they are in pursuing Wisdom.”

was deleted.

Merged paragraph with the second paragraph.

Appendix C, Black Clouds in Theology, last paragraph

“From the boundless view of deciding well, which is an imaginary view of the room as a whole, this contradiction concerns the problem of when we ought to use bounded models of the world to help us find problems to solve. We ought to do so only when the added benefit

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

of using the boundless model of deciding well is not worth the extra cost of using it. The wiser we are, the less frequently this happens.”

was moved to the end of the **A Boundlessly Pragmatic View** and changed to:

“**The black clouds in theology** concern the problem of when we ought to use bounded models of the world to help us find problems to solve. We ought to do so only when the added benefit of using the boundless model of deciding well is not worth the extra cost of using it. The wiser we are, the less frequently this happens.”

Appendix C, A Boundlessly Pragmatic View, title

Changed title to “**A Boundless View of the Whole.**”

Changes in Version 2013.07.16

Entire document (Word version)

Added appendix title to all footnotes referencing appendices (5 occurrence). Removed section titles immediately following chapter or appendix title from all chapters and appendices. Renumbered Table of Contents. These two changes make the Word version more like the Kindle version.

Chapter 1, *Ever More Complete Multiple-Frame Models*, second paragraph, first sentence

“Deciding well calls for us to fit our beliefs together based on **the** symmetry of deciding well.”

was changed to:

“**Pursuing any boundless factor well calls for us to decide well, which in turn calls for us to pursue all boundless factors well. For example, pursuing the Truth calls for us to decide well, which in turn calls for us to pursue Happiness. Similarly, pursuing Happiness calls for us to decide well, which in turn calls for us to pursue the Truth.** Deciding well calls for us to fit our beliefs together based on **this** symmetric structure of deciding well.”

Chapter 4, *Academic Fields*, fourth paragraph, footnote

In the Kindle version, promoted the endnote to a parenthesized sentence in the body of the text:

“(For more about game theory and biological evolution, see the chapter on competing well.)”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

In other versions, changed “**seventh** chapter” to “chapter **on competing well**” in the first sentence.

Chapter 5, *The Explicit Experiment*, second paragraph

Removed quotation marks from block quote.

Chapter 6, Pursuing Eternal Oneness, last paragraph

Changed “**Religions that help us live well**” to “**Worldly** religions” in the second and last sentences (2 occurrences).

Chapter 7, *E-M Theory*, first paragraph

Changed “**for six years.**” to “.” in the third sentence.

Changed “**a widely used manual** on aerial combat” to “**the first text** on aerial combat **tactics, which became the tactics manual for air forces around the world**” in the fourth sentence.

Chapter 7, *E-M Theory*, second paragraph

Changed “inferior” to “**often** inferior” in the second sentence.

Changed “**people**” to “**pilots**” and “**they**” to “**engineers**” in the first sentence.

Chapter 7, *Boyd’s Grand Strategy*, last paragraph, footnote, end

Added the sentence:

“**For more about sophistry and its relation to philosophy, see Appendix C (Renaissance Art).**”

Appendix C, *On the Philosophy Wall*, first paragraph

Changed “reasoning” to “**two-part** reasoning” in the last sentence.

Appendix C, *On the Jurisprudence Wall*, last paragraph

Changed “to learn” to “**to become people by choosing** to learn” in the last sentence.

Changes in Version 2013.07.22

Chapter 7, *Boyd’s Grand Strategy*, last paragraph, footnote, first three sentences

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Boyd saw patterns in the way we compete to live well. He wanted to explain these patterns using a decision-cycle model that included learning-by-doing. Regrettably, he based his model on modern interpretations of biological evolution, quantum mechanics, and Gödel’s incompleteness theorems. We see the resulting sophistry most clearly in his essay *Destruction and Creation*. For more about sophistry and its relation to philosophy, see Appendix C (Renaissance Art).”

were changed to:

“Unlike the strategic decision-cycle model put forth in the preface of this book, OODA loop decision-cycles do not explicitly include learning from experience. Boyd addressed this limitation by adding learning to the OODA-loop orientation step. This solution allowed him to apply his analysis on all problem scale levels that do not consider changing the OODA loop itself, an action he believed would violate Gödel’s incompleteness theorems. For more about Boyd’s modern-biological/modern-dialectical approach to learning, read his essay *Destruction and Creation*.”

Chapter 8, Eudaemonia, last paragraph, first footnote

Changed “citizens” to “people” in the third sentence.

Changed “reason and how it relates to governing our minds well” to “and” in the last sentence.

Appendix C, *The Role of Julius II*, third paragraph

Changed “the hourglass composites are fillers that add” to “that the hourglass composites are fillers adding” in the first sentence.

Changes in Version 2013.07.22

Chapter 3, Overcoming Constraints in Deciding Well, last paragraph

Changed “invent” to “invent or discover” and “people” to “people invent or discover” in the second sentence.

Chapter 3, The Elephant in the Room, last paragraph

Changed “for certain” to “with complete certainty” in the second sentence.

Chapter 7, OODA Loop Analysis, second paragraph, eighth and ninth sentences

“Further, it gave them more options. Unlike American P-38 pilots fighting against Japanese pilots in slower, but more maneuverable Zero fighter planes a decade earlier, F-86 pilots fighting MiG-15 pilots were not limited to a single tactic.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

were changed to:

“Further, it gave them **the time to consider how best to force their opponents to make mistakes.**”

Chapter 7, *Boyd’s Grand Strategy*, last paragraph, footnote

Changed “problem scale” to “problem-scale” in the third sentence.

Appendix C, *On the Theology Wall*, last paragraph

Changed “**In Roman Catholicism**” to “**For Roman Catholics**” in the last sentence.

Appendix C, *On the Poetry Wall*, first paragraph

Changed “**diatonic (eight-note, repeating-octave scale) melodies**” to “**an eight-note, repeating-octave scale melody**” in the third sentence.

Appendix C, *A Boundless View of the Whole*, last paragraph, last three sentences

“**The black clouds in theology concern the problem of when we ought to use bounded models of the world to help us find problems to solve. We ought to do so only when the added benefit of using the boundless model of deciding well is not worth the extra cost of using it. The wiser we are, the less frequently this happens.**”

were deleted.

Appendix C, *The Role of Julius II*, fourth paragraph

Changed “**ever more complex patterns**” to “**patterns that are ever more imaginative**” in the second sentence.

Appendix C, *The Role of Julius II*, last paragraph, second sentence

“**This is the problem of the putto that ought to stand at the center of the edge nearest to fire intruding into the realm of theology.**”

was deleted.

Changes in Version 2013.07.25

Appendix C, *Black Clouds in Theology*, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “Celestial” to “From this artistic view of the view of art, celestial” in the third sentence.

Changed “some people” to “people perceive” in the fourth sentence.

Changed “Celestial” to “From the artistic view of the view of philosophy, celestial” in the last sentence.

Appendix C, *The Role of Julius II*, second paragraph

“Reinforcing the claim that Julius II ought to be an enlightened jurist , a supporter of bringing ever more Wisdom into the world, are two subtle references to Julius II in the ceiling. The more prominent consists in the twelve wedge-shaped images of his family coat of arms, three around each of the four squares. The variety of sizes and shapes of these twelve images suggests that they are supporting rather than major parts of the ceiling:”

[Image of Urania corner of the ceiling]

“We can easily imagine that the gold bands around the oculus, four circles, and four squares are the load-bearing parts of the ceiling structure and that the hourglass composites are fillers adding strength and resilience to the ceiling as a whole. We can even imagine that the roundels join the load-bearing parts together. At the center of each of these roundels is what appears to be a lotus blossom, a symbol of purity in an impure world. Further, the narrow bands decorated with the heraldic colors of Julius II hold the filler parts in place. The decoration on these bands is an unknotted version of the altar pattern, a symbol of pursuing Wisdom well.”

was changed to:

“Reinforcing the claim that Julius II ought to be an enlightened jurist are two subtle references to Julius II in the ceiling. The more prominent consists in the twelve wedge-shaped images of his family coat of arms, three around each of the four squares. The variety of sizes and shapes of these twelve images suggests that they are not major parts of the ceiling:”

[Image of Urania corner of the ceiling]

“We can easily imagine that the gold bands around the oculus, four circles, four squares, and lotus-blossom roundels are the load-bearing parts of the ceiling structure. Adding strength and resilience to this structure are twelve wedge and four hourglass fillers. Holding these “worldly” fillers in place are narrow bands decorated with the heraldic colors of Julius II. The decoration on these bands is an unknotted version of the altar pattern.”

Appendix C, *The Role of Julius II*, third paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “Supporting the claim that Julius II ought to be an enlightened jurist” to “The less prominent reference” in the first sentence.

Appendix C, *The Role of Julius II*, third paragraph, last two sentences

“By putting this symbol below the center of this arch rather than at the center of the arch, the authors of the decoration would have Julius II aspire to becoming an ever better jurist rather than an ever better philosopher king. By putting this symbol below the center of this arch rather than at the center of the oculus, the authors would have Julius II aspire to becoming an ever better jurist rather than ever more Christlike.”

were changed to:

“By putting this symbol below the center of this arch rather than at the center of the oculus, the authors of this room would have Julius II aspire to become an ever better jurist rather than ever more Christlike.”

Appendix C, *The Role of Julius II*, fourth paragraph

Changed “reason why the authors would limit the aspirations of Julius II” to “reason for this” in the first sentence.

Changed “decoration of the bands in the load-bearing structure” to “decorative bands of the imaginary load-bearing structure” in the first sentence.

Changed “in our mind’s eye patterns that are ever more imaginative” to “imaginative patterns in our mind’s eye” in the second sentence.

Changed “load-bearing structure in the ceiling” to “structure” in the last sentence.

Appendix C, *The Role of Julius II*, last paragraph

“A great danger in pursuing this aspect of enlightenment is confusing beautiful patterns with patterns useful in deciding well. We ought to judge these patterns by how well they ring true with everything we currently know about deciding well. We then ought to test those that ring true against experience. The fact that some patterns from our unconscious mind are useful in deciding well does not mean that all patterns from our unconscious mind are useful in deciding well.”

was changed to:

“A great danger in pursuing this aspect of enlightenment is confusing patterns that ring true with what we currently believe with patterns that are truly useful in deciding well. We ought to judge patterns by how well they ring true with everything we currently know about deciding well. We then ought to test those that ring true against experience.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, *Apollo and Marsyas*, first paragraph

Changed “an ever better philosopher king or ever more Christlike” to “ever more Christlike” in the first sentence.

Changed “was given” to “had” in the third to last sentence.

Changes in Version 2013.07.27

Chapter 3, introduction, last paragraph, footnote

“² For more about the relation between beauty and enlightenment, see Appendix C (Renaissance Art).”

was deleted.

Chapter 3, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, fourth paragraph, end

Added the footnote:

“⁸ This interpretation of quantum mechanics contradicts physicist John Bell’s claim that if hidden variables that explain entanglement exist, they are not local. Decades of experiments have failed to disprove this claim. Disproving it would damage the boundlessly pragmatic argument for free will, which depends on the claim that the existence of free will rings true with all that we currently know about pursuing the boundless end of deciding well.”

Chapter 7, *Boyd’s Grand Strategy*, last paragraph, footnote

Changed “itself, an action he believed would violate Gödel’s incompleteness theorems” to “itself. Applying learning to the OODA loop itself would expose the incompleteness of his decision-cycle theory” in the third sentence.

Appendix C, *The Forgotten Role of Octagons*, second paragraph

Changed “From the boundless view, the” to “The” in the fifth sentence.

Appendix C, *The Forgotten Role of Octagons*, last paragraph

Changed “the boundless view” to “a Roman Catholic view” in the last sentence.

Changed “the means of learning ever more about the world (Wisdom)” to “Holy Wisdom (*Hagia Sophia/Logos*)” in the last sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, Black Clouds in Theology, first paragraph

Changed “**morning twilight**” to “**dawn**” in the last sentence.

Changes in Version 2013.08.06

Preface, eighth paragraph

Changed “as **parts of**” to “as” in the second sentence.

Chapter 1, Choosing Frames Well, first paragraph, footnote

Changed “**boundless** concept” to “concept” in the second sentence.

Chapter 1, *Useful Frames*, entire section

“**Useful Frames**”

Addressing the problem of choosing frames well by deciding well calls for understanding what makes frames useful in deciding well. Useful frames are frames that help us achieve our ends. Some ends concern events. Because events have bounds in time, we may call these **bounded ends**. Winning a basketball game is a **bounded** end. Other ends concern processes. Because processes have no bounds in time, we may call these **boundless ends**. Playing basketball well is a **boundless** end.

“In pursuing the **boundless** end of deciding well, we benefit from frames that help us solve problems that have **bounded** ends. We may call these **bounded frames**. We also benefit from frames that help us find problems to solve. We may call these **boundless frames**.”

“**Bounded** and **boundless** frames differ in their concepts of *excellence in means*. From a **bounded** frame, excellence in means is excellence in solving problems. We may call this **efficiency**. We base this concept of excellence in means on what we know and on what we may learn *that is useful for solving the bounded problem we have chosen to solve*. A formal decision *event* consists of formulating solutions to the given problem, evaluating these solutions, choosing a solution, and implementing the chosen solution.

“In contrast, from a **boundless** frame, excellence in means is not only **excellence in solving problems**, but also excellence in choosing problems to solve. We may call excellence in choosing problems to solve **effectiveness**.⁶ We base this concept of excellence in means on what we know and what we may learn *that is useful in addressing the boundless problem we have chosen to address*. A formal decision *process* is the endlessly repeating cycle of (1) finding a **bounded** problem to solve that appears to be in line with our **boundless** end, (2) formulating various solutions to this problem, (3) evaluating these solutions, (4) choosing a solution, (5) implementing the chosen solution, and (6) learning from the experience. **Given our limited knowledge relative to the infinitely large problem we face, we cannot avoid**

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

making mistakes. When we make mistakes, we embed new mistakes into, or reinforce existing mistakes in, our networks of knowledge-in-use. These networks include our markets, technologies, legal systems, languages, sciences, and cultures. If we are wise, we learn from our mistakes. If we are wise, we learn to muddle forward ever more wisely.”

was changed to:

“**Temporal and Timeless Frames**

Addressing the problem of choosing frames well by deciding well calls for understanding what makes frames useful in deciding well. Useful frames are frames that help us achieve our ends. Some ends concern events. Because events have bounds in time, we may call these *temporal ends*. Winning a basketball game is a **temporal** end. **We may call frames that help us achieve temporal ends *temporal frames*.**

“Other ends concern processes. Because processes have no bounds in time, we may call these *timeless ends*. Playing basketball well is a **timeless** end. **We may call frames that help us achieve timeless ends *timeless frames*.**

“**Temporal** and **timeless** frames differ in their concepts of *excellence in means*. From a **temporal** frame, excellence in means is *efficiency*, excellence in solving **given** problems. A formal decision *event* consists of formulating solutions to the given problem, evaluating these solutions, choosing a solution, and implementing the chosen solution.

“In contrast, from a **timeless** frame, excellence in means is not only *efficiency*, but also *effectiveness*, excellence in choosing problems to solve.⁶ A formal decision *process* is the endlessly repeating cycle of (1) finding a **temporal** problem to solve that appears to be in line with our **timeless** end, (2) formulating various solutions to this problem, (3) evaluating these solutions, (4) choosing a solution, (5) implementing the chosen solution, and (6) learning from the experience.”

Chapter 1, *The EOQ/RTS Example*, first paragraph

Changed “**bounded** and **boundless** frames” to “**temporal** and **timeless** frames” in the first sentence.

Changed “**bounded**” to “**temporal**” in the second sentence.

Changed “**boundless**” to “**timeless**” in the last sentence.

Chapter 1, *The EOQ/RTS Example*, third paragraph

Changed “**bounded**” to “**temporal**” in the first sentence.

Chapter 1, *The EOQ/RTS Example*, fourth paragraph

Changed “**boundless**” to “**timeless**” in the second sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, *Seeing Through Apparent Miracles*, third paragraph

Changed “boundless” to “timeless” in the last sentence.

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph

Changed “bounded” to “temporal” in the first sentence.

Changed “boundless” to “timeless” in the fourth sentence.

Changed “the values we use to help us decide” to “boundless frames” in the last sentence.

Chapter 1, Values, title and first three paragraphs

“Boundless Values

We have seen how the boundless concept of deciding well can help us find better temporal (temporally bounded) problems to solve. We can also use it to help us find better timeless (temporally boundless) problems to solve. This calls for distinguishing between bounded and boundless values. Bounded values are values we base on what we currently know. Boundless values are values we base on what we need to know in order to pursue boundless ends well, which, as we shall see, are aspects of the boundless end of deciding well.

“In discussing bounded and boundless values, we can avoid much tedium and confusion by capitalizing boundless values. Using this convention, we may call the boundless end of deciding well *Wisdom* and the boundless end of believing well *the Truth*. If we define ‘religion’ to mean the pursuit of linking (or re-linking) with something infinitely greater than ourselves and ‘theism’ to mean belief in the existence of the divine, this convention has religious overtones that may or may not be theistic.

“A major difference between bounded and boundless values is their source. From a bounded view of deciding well, people base their values on what they currently know. The bounded concept of deciding well does not include learning ever more about values. People must look beyond the problem at hand to find sources for their values. These outside sources include such things as theistic texts, political ideologies, and moral philosophies. In contrast, from a boundless view of deciding well, we base our values on what we need to know in order to pursue boundless ends well. We learn ever more about these values by pursuing the boundless end of believing well (the Truth).¹⁰”

“¹⁰ Note that taking a boundless view of deciding well does not call for us to abandon the study of texts. It only calls for us to interpret texts in the light of pursuing Wisdom. Note too that the change in case from the third person to the first person is not a mistake. As we shall see, we cannot separate the boundless problems we face from the boundless problems all other people face.”

were changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“**The Boundless Model**

In framing the world, we use bounds to separate what lies within the frame from what lies outside it. As we saw in the EOQ/RTS model, these bounds can blind us to finding better problems to solve. This holds true not only for temporal frames, but also for timeless ones: playing basketball well does not include swimming well.

“If we believe that thinking reasonably is the same as thinking logically, then all frames are bounded. When we reduce our sensations of the world to a logical model, we always leave something out of our model. There are no boundless frames. On the other hand, if we believe that thinking reasonably is more than thinking logically, we may combine timeless frames to form a reasonable model of deciding well that when applied to itself an infinite number of times leaves nothing out. As aspects of this boundless model, these timeless frames are boundless.

“In discussing **the ends of boundless frames**, we can avoid much tedium and confusion by capitalizing **them**. Using this convention, we may call the boundless end of deciding well *Wisdom* and the boundless end of believing well *the Truth*. If we define ‘religion’ to mean the pursuit of linking (or re-linking) with something infinitely greater than ourselves and ‘theism’ to mean belief in the existence of the divine, this convention has religious overtones that may or may not be theistic.¹⁰

“**The Truth and Wisdom**

We learn ever more about pursuing the boundless end of deciding well (Wisdom) by pursuing the boundless end of believing well (the Truth).”

¹⁰ We may think of these boundless ends as values. A major difference between bounded and boundless values is their source. From a **modern** view of deciding well, people base their values on what they currently know. The **modern** concept of deciding well does not include learning ever more about values. People must look beyond the problem at hand to find sources for their values. These outside sources include such things as theistic texts, political ideologies, and moral philosophies. In contrast, from **the** boundless view of deciding well, we base our values on what we need to know in order to pursue **the boundless end of deciding well (Wisdom)**. Taking a boundless view of deciding well does not call for us to abandon the study of texts. It only calls for us to interpret texts in the light of pursuing Wisdom. Note that the change in case from the third person to the first person is not a mistake. **We** cannot separate the boundless problems we face from the boundless problems all other people face.”

Chapter 1, The Truth and Wisdom, fourth paragraph, footnote

Changed “**thoroughly bounded**” to “**temporal**” in the last sentence.

Chapter 1, The Truth and Wisdom, fifth paragraph

Changed “bounded” to “**modern**” in the first sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “a boundless view” to “the boundless view of believing well” and “we pursue” to “end of believing well (the Truth)” in the third sentence.

Chapter 3, *Contemplating the Way Forward*, third paragraph

Changed “boundless” to “timeless” in the last sentence.

Chapter 3, *Contemplating the Way Forward*, last paragraph

Changed “boundless” to “timeless” in the last sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, last paragraph, footnote

Changed “boundless” to “timeless” in the last sentence.

Chapter 3, *Public Order*, last paragraph

Changed “bounded (current)” to “current” in the fifth sentence.

Changed “bounded public order” to “current public order” in the fourth and fifth sentences.

Changed “fabric of civilization, the interwoven networks” to “networks” in the fifth sentence.

Chapter 3, *A Boundlessly-Pragmatic Interpretation of Quantum Mechanics*, seventh paragraph

“To decide well, we need not only bounded descriptions of the world to help us solve given problems, but also boundless descriptions of the world to help us find better problems to solve. The complex approach to deciding well put forth in this work provides us not only with bounded descriptions of the world to help us solve given problems, but also with coherent sets of boundless descriptions of the world to help us find better problems to solve. These multiple-frame models concern not the world as we currently find it, but rather the world as we may form it.”

was deleted.

Chapter 4, *Self-Similarity*, last paragraph

Changed “knowledge-in-use” to “knowledge-in-use in our markets, technologies, legal systems, languages, and cultures” in the last sentence.

Chapter 4, *Academic Fields*, first paragraph

Changed “boundless” to “timeless” in the third sentence.

Chapter 4, *Academic Fields*, second paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “**bounded** categories” to “categories” in the fourth sentence.

Chapter 4, *Refining Finding Problems to Solve*, first paragraph

Changed “; **that is, into our markets, technologies, legal systems, languages, and cultures.**” to “.” in the second sentence.

Chapter 5, *The Explicit Experiment*, second paragraph

Changed “**boundless** experiment” to “**political** experiment” in the fourth sentence.

Chapter 5, *The Explicit Experiment*, last paragraph, footnote

Changed “**boundless** political experiment” to “political experiment” in the first sentence.

Chapter 5, *Pursue Boundless, not Bounded Order*, title

Changed title to “*Pursue Boundless, not Current Order.*”

Chapter 5, *Pursue Boundless, not Current Order*, first paragraph

Changed “**bounded**” to “**current**” in the second and third sentences (2 occurrences).

Changed “civilization **as a whole is threatened**” to “**turbulence threatens** civilization” in the second sentences.

Chapter 6, introduction, first paragraph

Changed “**boundless**” to “**timeless**” in the last sentence.

Chapter 6, Being Needs, first paragraph

Changed “**boundless**” to “**timeless**” in the second sentence.

Chapter 6, *Pursuing Eternal Oneness*, first paragraph

Changed “**boundless**” to “**timeless**” in the second sentence.

Chapter 7, *OODA Loop Analysis*, third paragraph

Changed “**boundless**” to “**timeless**” in all (3 occurrences).

Chapter 7, *Boyd's Grand Strategy*, last paragraph

Changed “view” to “**timeless view**” in the last sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 7, The Scope of Biological Evolution, last paragraph

Changed “a boundless view” to “the boundless view” in the last sentence.

Chapter 8, introduction, fourth paragraph

Changed “boundless” to “timeless” in all (5 occurrences).

Chapter 8, introduction, fifth paragraph

Changed “pursuing the boundless end of deciding well by pursuing the boundless factors of deciding well” to “pursuing the boundless end of deciding well” in the first sentence.

Changed “(coherent sets of) single-frame” to “multiple-frame” in the third sentence.

Chapter 8, introduction, sixth paragraph

Changed “any group of these” to “these” in the third sentence.

Changed “stop” to “halt” in the last sentence.

Chapter 8, introduction, sixth paragraph, last footnote

Changed “boundless” to “timeless” in the first three sentences (2 occurrences).

Chapter 8, Eudaemonia, first paragraph

Changed “Pursuing the boundless end of deciding well using the boundless approach” to “Pursuing the boundless end of deciding well” in the first sentence.

Appendix C, introduction, last paragraph, footnote, last two sentences

“From the boundless view, we may base our interpretations of art either on what its creators knew or on what we currently know about deciding well. The first two sections of this appendix use the former and the third uses the latter.”

were changed to:

“The inspiration to consider the decoration of the room as a whole, including the floor, came from this book.”

Appendix C, The Forgotten Role of Octagons, last paragraph, last sentence

“From a Roman Catholic view, this Tantalean image represents the mission of learning ever more about both the world and Holy Wisdom (*Hagia Sophia/Logos*).”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

was changed to:

“From the boundless view, this Tantallean image represents the mission of learning ever more about both the world and Wisdom.”

Appendix C, Black Clouds in Theology, first paragraph, first two sentences

“From a modern view, there exists an internal contradiction within the Roman Catholic pursuit of Holy Wisdom. We can see the metaphorical storm this conflict creates in the black clouds underlying the figure of Theology.”

were changed to:

“There exists a dispute within the Roman Catholic pursuit of Holy Wisdom. We can see the metaphorical storm this dispute creates in the black clouds underlying the figure of Theology.”

Appendix C, Black Clouds in Theology, second paragraph

Changed “contradiction” to “dispute” in the first sentence.

Appendix C, Black Clouds in Theology, last paragraph, first four sentences

“In the theology fresco, this contradiction concerns a conflict between art and philosophy. We can see this conflict in the celestial figures in the upper left of the fresco. From the view of art, people are the measure of all things, of the existence of the things that are and the non-existence of the things that are not. From this artistic view of the view of art, celestial beings are as realistically portrayed as the historical figures in the philosophy fresco.”

were changed to:

“In the theology fresco, this dispute concerns a conflict between poetry and philosophy. We can see this conflict in the celestial figures in the upper left of the fresco. From the view of poetry, people are the measure of all things, of the existence of the things that are and the non-existence of the things that are not. Celestial beings appear to be as real as the historical figures in the philosophy fresco.”

Appendix C, Black Clouds in Theology, last paragraph

Changed “From the artistic view of the view of philosophy, celestial” to “Celestial” in the last sentence.

Appendix C, On the Poetry Wall, first paragraph

Changed “this octagon” to “this” in the first sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, A Boundless View of the Whole, first paragraph, footnote

“⁸The inspiration to look not only at the ceiling and walls but also at the floor came from *Raphael’s Stanza della Segnatura, Meaning and Invention.*”

was deleted.

Changes in Version 2013.08.07

Chapter 1, *The Truth and Wisdom*, second to last paragraph

“We may think of the Truth as being a factor of deciding well that we can never have in excess. We may call such factors *boundless factors of deciding well.*”

was deleted.

Chapter 1, *The Truth and Wisdom*, last paragraph, second sentence

“One way involves breaking down the process of deciding well into the processes of pursuing **the boundless factors of deciding well.**”

was changed to:

“One way involves breaking down the process of deciding well into the processes of pursuing **universally useful knowledge resources that we can never have in excess. We may call these knowledge resources *boundless factors of deciding well.* The boundless end of believing well (the Truth) is one such boundless factor.**”

Chapter 3, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, last paragraph

Changed “certainty equivalent” to “**discounted** certainty equivalent” in all (2 occurrences).

Chapter 3, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, last paragraph, footnote, end

Added the sentences:

“Discounting is a method of accounting for the time value of (the use of) money. In our age of low-cost computing, the best means of discounting certainty equivalents uses a yield curve rather than a single interest rate.”

Appendix C, *On the Jurisprudence Wall*, first paragraph

Changed “**everyday** living” to “living **well**” in the fourth sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Added “**the corner touching the philosophy wall,**” to the fifth sentence.

Added “**the corner touching the theology wall,**” to the last sentence.

Changes in Version 2013.08.08

Chapter 1, Choosing Frames Well, last paragraph, footnote

Changed “**Patterns**” to “**Forms**” in the last sentence.

Chapter 1, *Steps for Building Multiple-Frame Models*, first paragraph

Moved footnote to last section of preceding subsection.

Changed “**three**” to “**four**” in the first sentence.

Changed “**three** steps” to “**four** steps” in the first sentence.

Added the following sentence to the end of the paragraph:

“**The last is reconciling the model as best as we can, given our current ignorance of not only the current state of the world, but also of all possible future states of the world.¹⁴**”

“¹⁴ **More accurately, this step concerns reconciling these frames as best as we can do given our current ignorance of not only the current quantum state of the world, but also all future quantum states of the world. Our ignorance includes not knowing whether time is truly absolute, relativistic, or something else.**”

Appendix A, title

Changed title to “**Science of Forms.**”

Appendix A, Indispensable Patterns, title

Changed “**Patterns**” to “**Forms**” in the title.

Appendix A, Indispensable Forms, last paragraph

Changed “patterns” to “**forms (patterns)**” and “*science of patterns*” to “*science of forms*” in the first sentence.

Changed “a **pattern** problem” to “an **information** problem” in the second sentence.

Appendix C, The Forgotten Role of Octagons, second to last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “fifth element” to “**mysterious** fifth element” in the first sentence.

Moved paragraph (including photograph) to the end of the section.

Changes in Version 2013.08.10

Preface, fourth from the last paragraph

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

Chapter 1, *The Truth and Wisdom*, sixth paragraph

Changed “modern view” to “modern view **of believing well**” in the first sentence.

Changed “boundless view of **believing**” to “boundless view of **deciding**” in the third sentence.

Chapter 1, *The Truth and Wisdom*, last paragraph

Changed “**this complex** model” to “**these multiple-frame** models” in the second to last sentence.

Chapter 1, *Ever More Complete Multiple-Frame Models*, last paragraph

Changed “**multiple-frame** “view” of this approach” to “view of this **boundless** approach **to deciding well**” in the last sentence.

Appendix A, introduction, second to last paragraph, third and fourth sentences

“To do so, **we modify the method that displays objects with character Y. Specifically,** we replace the function that replaces the rightmost vertex and sides with a function that replaces all points to the right of the center of the circumscribing circle.”

were changed to:

“To do so, we replace the function that replaces the rightmost vertex and sides with a function that replaces all points to the right of the center of the circumscribing circle.”

Appendix A, introduction, first paragraph, second sentence

“**We are given the first series of two objects and the first object in the second series:**”

was deleted. (Period changed to a colon in the first sentence.)

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix A, The Big Picture, second paragraph

Changed “to be found by” to “to make ourselves known to” in the fourth sentence.

Appendix C, *The Role of Julius II*, second paragraph

Changed “bands around the oculus, four circles, four squares, and lotus-blossom roundels” to “lotus-blossom roundels and bands around the oculus, four circles, four squares, and arched walls” in the fourth sentence.

Changes in Version 2013.08.12

Chapter 2, Taxation, first paragraph

Changed “live” to “live well” in the sixth sentence.

Changed “test” to “test well” in the last sentence.

Chapter 3, Contemplating the Way Forward, third paragraph

Changed “can use what we believe is the best” to “may use any” in the fourth sentence.

Chapter 3, Contemplating the Way Forward, last paragraph

Changed “ can use what we believe is the best” to “may use any” in the fourth sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, first paragraph

Changed “as mathematicians define this process” to “ ” in the first and last sentences (2 occurrences).

Chapter 3, *Overcoming Constraints in Deciding Well*, first paragraph, footnote

Added the following sentence at the beginning of the footnote:

“More accurately, we can draw some conclusions about overcoming constraints in pursuing Wisdom from the much simpler case of overcoming constraints in computing the value of π as modern mathematicians define this process.”

Chapter 3, *Overcoming Constraints in Deciding Well*, last paragraph

Changed “public approach” to “boundless approach” in the last sentence.

Chapter 3, *Three Approaches to Policy*, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “**public** approach” to “**boundless** approach” in the first sentence.

Chapter 3, *Public Order*, second paragraph

Changed “**a** modern biological approach” to “**the** modern biological approach” in the first sentence.

Chapter 3, *Public Order*, last paragraph

Changed “**a public** approach” to “**the boundless** approach” in the first sentence.

Chapter 3, *The Elephant in the Room*, last paragraph, end

Added the footnote:

“¹³ **Modern thinkers may prefer an infinitely large crane to an infinitely large elephant. In this metaphor, the higher we climb, the more we learn about what compels us to climb.**”

Chapter 4, *Refining Finding Problems to Solve*, first paragraph

Changed “**corporate** research program” to “research program” in the third sentence.

Changed “**public** research program” to “research program” in the last sentence.

Chapter 5, *A Sovereign Story for Deciding Well*, last paragraph, footnote, first sentence

“**A sovereign story for deciding well should lead to a culture that embraces thriving** in winds and surviving in gales of creative destruction.”

was changed to:

“**A civilization dedicated to deciding well calls for people who are able to thrive** in winds and survive in gales of creative destruction.”

Chapter 5, *Promote Boundless, not Current Order*, last paragraph

Changed “**destroying**” to “**unraveling**” in the second sentence.

Chapter 5, *Promote Boundless, not Current Order*, last paragraph

“**A civilization dedicated to deciding well calls for people who are able to thrive in winds and survive in gales of creative destruction.**”

was deleted.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changes in Version 2013.08.14

Preface, third paragraph

Changed “temporally-bounded” to “temporally bounded” in the block quote.

Chapter 1, The Boundless Model, title

Changed the title to “**The Practically Boundless Model.**”

Chapter 1, The Practically Boundless Model, second paragraph

“If we believe that thinking reasonably is the same as thinking logically, then all frames are bounded. When we reduce our sensations of the world to a logical model, we always leave something out of our model. There are no boundless frames. On the other hand, if we believe that thinking reasonably is more than thinking logically, we may combine timeless frames to form a reasonable model of deciding well that when applied to itself an infinite number of times leaves nothing out. As aspects of this boundless model, these frames are boundless.”

was changed to:

“In theory, we can solve the problem of bounds blinding us to finding better problems to solve by building models that only blind us to problems that we would be foolish to choose. In practice, we do not have the knowledge to build such models. However, we do have the knowledge to build self-refining models for pursuing this timeless end, which is the timeless end of deciding well.

“When used recursively an infinite number of times, a self-refining model for deciding well yields a perfectly refined model for deciding well. As a practical matter, a perfectly refined model for deciding well is boundless with respect to deciding well. For deciding well, we may think of its timeless end as a boundless end.¹⁰

“If as part of its refining process a self-refining model for deciding well breaks down the pursuit of the timeless end of deciding well into the pursuits of aspects of this timeless end, then the pursuits of these aspects would also be boundless with respect to deciding well. For deciding well, we may think of these timeless ends as boundless ends.”

“¹⁰ Consider the bubble canopy of the F-16 fighter plane. Although it has a frame, for the practical purpose of fighting well, it is frameless. This is true regardless of any other visual impediments it may have, e.g., distortions caused by manufacturing mistakes.”

Chapter 1, The Boundless Model, last paragraph

Changed “frames” to “ends” and “tedium and confusion” to “confusion” in the first sentence.

Changed “linking (or re-linking)” to “linking” in the third sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changes in Version 2013.08.15

Acknowledgments, fourth paragraph

Changed “business forms **printer**” to “business forms **company**” in the first sentence.

Changed “learning **itself**” to “learning **well**” in the last sentence.

Acknowledgments, fifth paragraph

Changed “**printing** business” to “**forms** business” in the first sentence.

Chapter 1, introduction, last paragraph

Changed “**section**” to “**chapter**” in the last sentence.

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph

Changed “boundless **frames**” to “**practically** boundless **ends**” in the last sentence.

Chapter 1, The Practically Boundless Model, second paragraph, footnote

Changed “**caused by** manufacturing **mistakes**” to “**due to current ignorance in material science and** manufacturing **engineering**” in the last sentence.

Chapter 1, *The Truth and Wisdom*, last paragraph

Changed “**the boundless end of believing well (the Truth)**” to “the Truth” in the fifth sentence.

Changed “**the boundless end of deciding well (Wisdom)**” to “Wisdom” in the sixth sentence of the footnote.

Chapter 3, *Three Approaches to Policy*, last paragraph

Changed “**the boundless end of deciding well (Wisdom)**” to “Wisdom” in the last sentence.

Appendix A, entire appendix

Changed “**patterns**” to “**forms**” in all (28 occurrences).

Appendix C, The Forgotten Role of Octagons, second paragraph

Changed “The” to “This” in the fourth sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, *On the Philosophy Wall*, first paragraph

Changed “form” to “form (pattern)” in the third sentence.

Appendix C, *On the Jurisprudence Wall*, first paragraph

Changed “the boundless end of jurisprudence (Justice)” to “jurisprudence” in the first sentence.

Appendix C, *On the Poetry Wall*, first paragraph

Changed “the boundless end of poetry (Beauty)” to “poetry (the arts)” in the first sentence.

Appendix C, *Black Clouds in Theology*, second paragraph, third sentence

Inserted the sentence:

“The putto nearest the poetry circle appears to have lost its footing.”

Appendix C, *A Boundless View of the Whole*, first paragraph

Changed “that the floor consists of a mishmash” to “the mishmash” in the fourth sentence.

Appendix C, *The Role of Julius II*, last paragraph

Changed “generate” to “form” in all (3 occurrences).

Changes in Version 2013.08.21

Chapter 1, introduction, fourth paragraph

Changed “is to learn” to “includes learning” in the last sentence.

Chapter 1, *Choosing Frames Well*, first paragraph, footnote

Changed “beings who plan and learn from their actions” to “people” in the second sentence.

Chapter 1, *Steps for Building Multiple-Frame Models*, first paragraph, footnote, last sentence

“This ignorance includes not knowing whether time is truly absolute, relativistic, or something else.”

was deleted.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 3, *Zero Public Entropy*, first paragraph

Changed “**uncertainty**” to “**inefficiency**” in the first sentence.

Chapter 3, *Zero Public Entropy*, second paragraph

Changed “**what we currently call the sciences**” to “**physics**” in the second sentence.

Chapter 2, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, last paragraph, first footnote, end

Added the following sentences:

“**Note that we may cooperate with others not only by communicating with each other, but also by following the same strategy. In deciding well, the concept of absolute time is not without use.**”

Chapter 5, introduction, last paragraph, footnote

Changed “**Roman** Emperor” to “Emperor,” “**pirate** Henry” to “**Captain** Henry,” and “crew” to “**pirate** crew” in the second sentence.

Appendix A, introduction, third to last paragraph, footnote, last sentence

“**If a problem cannot be solved, enlarge it.**”

was changed to:

“**We need to enlarge the problem.**”

Appendix A, *The Big Picture*, last block quote

Changed “decide well” to “**pursue the boundless end of deciding** well” in the last sentence of the second paragraph.

Merged the two paragraphs.

Appendix C, *A Boundless View of the Whole*, first paragraph, end

Added the footnote:

“**This is not to say that the forms contained within these rectilinear borders are completely rational. These forms represent models of the world. All models of the world include claims that we cannot prove formally.**”

Appendix C, *The Role of Julius II*, last two paragraphs

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“We can see a reason for this in the decorative bands of the imaginary load-bearing structure of the ceiling. As we enhance our talent for recognizing forms, we develop the ability to form **imaginative forms** in our mind’s eye. The authors would have us believe that this aspect of opening our unconscious minds to consciousness occurs in three stages. In the first stage, we form geometric **forms**, such as those we see in the rectilinear bottom band. In the second, we form natural **forms**, such as those in the middle floral band. In the third, we form **forms based on** images from our unconscious **mind**, such as those in the golden bands filled with grotesque images that form most of the imaginary structure.

“A great danger in **pursuing this aspect of enlightenment** is confusing forms that ring true with what we currently believe with forms that are truly useful in deciding well. **We ought to judge forms by how well they ring true with everything we currently know about deciding well. We then ought to test those that ring true against experience.**”

were changed to:

“We can see a reason for this in the decorative bands of the imaginary load-bearing structure of the ceiling. As we enhance our talent for recognizing forms, we develop the ability to form **repetitive images** in our mind’s eye. The authors would have us believe that this aspect of opening our unconscious minds to consciousness occurs in three stages. In the first stage, we form geometric **images**, such as those we see in the rectilinear bottom band. In the second, we form natural **images**, such as those in the middle floral band. In the third, we form images from our unconscious, such as those in the golden bands filled with grotesque images that form most of the imaginary **ceiling** structure. A great danger in **developing this talent/genius** is confusing forms that ring true with what we currently believe with forms that are truly useful in deciding well.”

Changes in Version 2013.08.24

Acknowledgments, second paragraph

Changed “**economic methodology**” to “**the methodology of modern economics**” in the sixth sentence.

Chapter 1, Choosing Frames Well, first paragraph, last three sentences

“Over time, we refine **these structures** by removing waste from them. **Sources of waste include terms that refer to more than one concept and pairs of concepts defined in terms of each other. We may call structures useful in reducing our sensations to concepts from which we have removed all waste that it is currently economic for us to remove frames.**”

were changed to:

“We may call these conceptual structures *frames*.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, *The EOQ/RTS Example*, first paragraph

“We can see **the difference between temporal and timeless frames** in two models for helping us to decide how often to set up machine tools. The first is the temporal *economic order quantity* (EOQ) model. The second is the timeless *rapid tool setting* (RTS) model.”

were changed to:

“**We refine frames by removing waste from them. Sources of waste include terms that refer to more than one concept and pairs of concepts defined in terms of each other. We may call structures useful in reducing our sensations to concepts from which we have removed all waste that it is currently economic for us to remove models.**

“**In keeping with our distinction between temporal and timeless frames, we may distinguish between temporal and timeless models.** We can see **this distinction** in two models for helping us to decide how often to set up machine tools. The first is the temporal *economic order quantity* (EOQ) model. The second is the timeless *rapid tool setting* (RTS) model.”

Chapter 1, *Seeing Through Apparent Miracles*, first paragraph

Changed “**fewer** material resources” to “**less** material resources” in the last sentence of the third bullet point.

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph

Changed “**ends**” to “**frames**” in the last sentence.

Chapter 1, *The Practically Boundless Model*, third paragraph

“When **used recursively** an infinite number of times, a self-refining model for deciding well yields a perfectly refined model for deciding well. **As a practical matter, a perfectly refined model of deciding well is boundless with respect to deciding well.**¹⁰For deciding well, we may think of its timeless end as a boundless end.”

was changed to:

“When **applied sequentially** an infinite number of times, a self-refining model for deciding well yields a perfectly refined model for deciding well. For deciding well, we may think of its timeless end as a boundless end.”

Moved the footnote to the end of the preceding subsection.

Chapter 1, *The Truth and Wisdom*, sixth paragraph

Changed “**deciding** well” to “**believing** well” in the third sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, *The Truth and Wisdom*, last paragraph, first three sentences

“The process of deciding well calls for refining the process of deciding well. To refine this process well, we need a means of breaking it down into wieldier problems. One way involves breaking down the process of deciding well into the processes of pursuing universally useful knowledge resources that we can never have in excess.”

were changed to:

“We can use the insight that pursuing the Truth and pursuing Wisdom form a virtuous circle to build self-refining models for deciding well. To refine the process of deciding well, we need a means of breaking it down into wieldier parts. We can do so by breaking it into the pursuits of universally useful knowledge resources that we can never have in excess.”

Chapter 1, *Steps for Building Multiple-Frame Models*, first paragraph

Changed “the model” to “the model for deciding well” in the last sentence.

Chapter 1, *Steps for Building Multiple-Frame Models*, second paragraph

Changed “three steps” to “four steps” in the first sentence.

Chapter 3, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, last paragraph, third sentence

Added the footnote:

¹² This presumes that there exist no extraterrestrial forms of life who are willing to converse with us. Given what the boundless view of deciding well tells us about modern reason, extraterrestrial intelligent life capable of communicating with us would likely find conversing with us to be no more useful than we would find conversing with bonobos. At this stage in our evolution, we ought to concern ourselves with being worthy of joining a cosmic conversation, not with the means of joining it.”

Chapter 4, *Refining Problems to Solve*, second paragraph, footnote, last sentence

“Part of this is taking responsibility for our epigenetic programming, which can affect not only our own potential but also that of our descendants.”

was deleted. (The last footnote in chapter 7 discusses epigenetic programming.)

Chapter 4, *Modern Policy Mistakes*, fourth paragraph, first footnote

Changed “fewer resources” to “less resources” in all (2 occurrences).

Chapter 5, introduction, third paragraph, footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “fewer scarce resources” to “less scarce resources” in the last sentence.

Chapter 8, Eudaemonia, last paragraph, last footnote

Identified ‘eudaemonia’ as a term (2 occurrences).

Appendix A, The Big Picture, last paragraph, end

Added the paragraph:

“Now imagine that instead of three objects in the first row, the problem on the billboard had only the first two objects. How many solutions would we provide? What does this say about us? Are we simple minded, muddle headed, or reasonable?”

Appendix B, introduction, first paragraph

Changed “fewer non-knowledge resources” to “less non-knowledge resources” in the first sentence.

Appendix C, On the Philosophy Wall, third paragraph, footnote

Changed “poetry, theology, and jurisprudence frescoes” to “theology wall” in the last sentence.

Appendix C, *The Role of Julius II*, last paragraph

“We can see a reason for this in the decorative bands of the imaginary load-bearing structure of the ceiling. As we enhance our talent for recognizing forms, we develop the ability to form repetitive images in our mind’s eye. The authors would have us believe that this aspect of opening our unconscious minds to consciousness occurs in three stages. In the first stage, we form geometric images, such as those we see in the rectilinear bottom band. In the second, we form natural images, such as those in the middle floral band. In the third, we form images from our unconscious, such as those in the golden bands filled with grotesque images that form most of the imaginary ceiling structure. A great danger in developing this talent/genius is confusing forms that ring true with what we currently believe with forms that are truly useful in deciding well.”

was reduced to a footnote and changed to:

“We can see a reason for this in the decorative bands of the imaginary load-bearing structure of the ceiling. As we enhance our talent for recognizing forms, we develop the ability to form repetitive images in our mind’s eye. The authors would have us believe that this aspect of opening our unconscious minds to consciousness occurs in three stages. In the first stage, we form geometric images, such as those we see in the rectilinear bottom band. In the second, we form natural images, such as those in the middle floral band. In the third, we form images from our unconscious, such as those in the golden bands filled with grotesque images that

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

form most of the imaginary ceiling structure. A great danger in developing this talent/genius is confusing forms that ring true with what we currently believe with forms that are truly useful in deciding well. **The authors would have Julius II judge rather than create and judge ecclesiastical forms.**”

Changes in Version 2013.08.27

Chapter 1, *The Truth and Wisdom*, seventh paragraph

Changed “**ever better**” to “**well**” in all (4 occurrences).

Chapter 1, *The Truth and Wisdom*, fifth paragraph, footnote

Changed “**bounded**” to “**temporal**” in the last sentence.

Chapter 2, entire chapter

Changed “**bounded**” to “**modern**” in the first sentence of the chapter.

Changed “**bounded**” to “**temporal**” in all (14 occurrences).

Changed “*effective*” to “*effective in deciding well*” in the last sentence of the second paragraph of the chapter.

Chapter 4, *Academic Fields*, first paragraph, last two sentences

Changed “**bounded**” to “**temporal**” in the third sentence.

Changed “**In the case of believing well**” to “**Similarly**” in the last sentence.

Chapter 4, *Refining Finding Problems to Solve*, third paragraph

Changed “**bounded**” to “**temporal**” in the second sentence.

Appendix A, *The Big Picture*, entire section

Revised initial table, reversed function labels, and added subscripts to function labels.

Appendix C, *On the Poetry Wall*, last paragraph

Changed “a **multiple-frame** strategy” to “an **esoteric** strategy” in the last sentence.

Appendix C, *On the Philosophy Wall*, third paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “reason **as rationality**” to “reason **of geometry, mathematics, and logic**” in the first sentence.

Changes in Version 2013.08.29

Preface, eleventh paragraph

Changed “in *natural science, in*” to “in” in the first sentence.

Chapter 1, The Practically Boundless Model, second paragraph

“In theory, we can solve the problem of bounds blinding us to finding better problems to solve by building models that only blind us to problems that we would be foolish to choose. In practice, we do not have the knowledge to build such models. However, we do have the knowledge to build self-refining models for pursuing this timeless end, which is the timeless end of deciding well.”

was changed to:

“In theory, we can solve the problem of bounds by building models that only blind us to problems that we would be foolish to choose. In practice, we do not have the knowledge to build such models. However, we do have the knowledge to build self-refining models for pursuing this timeless end, which is the timeless end of deciding well.”

Chapter 2, Wealth, first paragraph, end

Added the footnote:

“In thinking about what we need to live well, we need to consider the self-fulfilling aspect of the stories we use to explain our needs. If our story is that we are naked apes, we evolve as if we are naked apes. In contrast, if our story is that we are ignorant people seeking to act wisely, we will evolve as if we are ignorant people seeking to act wisely. From a modern view of science, the relevant question is which story best predicts how we will act. From the boundless view, it is which story best helps us decide well. *In explaining the world, we seek to know the world not as we find it, but rather as we may form it.*”

Chapter 4, Testing Natural Science, title

Changed title to “**Testing Boundless Pragmatism.**”

Chapter 7, The Scope of Biological Evolution, first paragraph, first two sentences

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“From the view of modern biology, living beings **cooperate in order to compete well for resources useful in living well. Those living beings** who always seek to cooperate before they seek to compete are anomalies.”

were changed to:

“ From the view of modern biology, living beings who always seek to cooperate before they seek to compete are anomalies.”

Chapter 7, The Scope of Biological Evolution, first paragraph, first two sentences

“From the boundless view, living beings **not only cooperate in order to compete well for resources useful in living well, but also compete in order to cooperate in living well. Those living beings** that seek to compete before they seek to cooperate are the special case of beings that have not yet developed the wisdom to do otherwise.”

were changed to:

“From the boundless view, living beings that seek to compete before they seek to cooperate are the special case of beings that have not yet developed the wisdom to do otherwise.”

Changes in Version 2013.08.31

Preface, third paragraph, second sentence after block quote

“These constraints concern all three steps in this decision cycle: (1) overcoming constraints in finding problems to solve helps us become ever more *effective*; (2) overcoming constraints in solving given problems helps us become ever more *efficient*; and (3) overcoming constraints in learning from experience helps us become ever *wiser* (ever more effective and efficient).”

was changed to:

“These constraints concern all three steps in this decision cycle: (1) overcoming constraints in finding problems to solve helps us become ever more **effective in deciding well**; (2) overcoming constraints in solving given problems helps us become ever more **efficient in solving given problems**; and (3) overcoming constraints in learning from experience helps us become ever wiser, ever more effective and efficient.”

Preface, eighth paragraph, block quote

Changed “**A**” to “**x**” in all (4 occurrences).

Changed “**B**” to “**y**” in all (4 occurrences).

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph

Removed italics from the fourth sentence:

“In contrast, from the timeless view of deciding well put forth in this work, we can know what we need to address unexpected problems infinitely far into the future.”

Chapter 1, The Practically Boundless Model, second paragraph

“In theory, we can solve the problem of bounds blinding us to finding better problems to solve by building models that only blind us to problems that we would be foolish to choose. In practice, we do not have the knowledge to build such models. However, we do have the knowledge to build self-refining models for pursuing this timeless end, which is the timeless end of deciding well.”

was changed to:

“In theory, we can solve the problem of bounds by building models that only blind us to problems that we would be foolish to choose. In practice, we do not have the knowledge to build such models. However, we do have the knowledge to build self-refining models for pursuing this timeless end, which is the timeless end of deciding well.”

Chapter 1, The Practically Boundless Model, second paragraph

“In theory, we can solve the problem of bounds blinding us to finding better problems to solve by building models that only blind us to problems that we would be foolish to choose. In practice, we do not have the knowledge to build such models. However, we do have the knowledge to build self-refining models for pursuing this timeless end, which is the timeless end of deciding well.”

was changed to:

“In theory, we can solve the problem of bounds by building models that only blind us to problems that we would be foolish to choose. In practice, we do not have the knowledge to build such models. However, we do have the knowledge to build self-refining models for pursuing this timeless end, which is the timeless end of deciding well.”

Chapter 1, *The Truth and Wisdom*, fourth paragraph

Removed italics from the last sentence:

“The problem with inductive reasoning concerns not only our beliefs but also the concepts underlying our beliefs.”

Chapter 3, The Elephant in the Room, last paragraph, footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “Modern **thinkers** may prefer an infinitely large crane” to “Some modern **readers** may prefer an infinitely large **construction** crane” in the first sentence.

Chapter 4, *Self-Similarity*, first paragraph

Removed italics from the last sentence:

“The distinction between efficiency and effectiveness depends on the scale of the problem we choose.”

Chapter 5, Good Policies, first paragraph, footnote

Changed “fractal” to “**non-Euclidean and** fractal” in the second sentence.

Appendix C, Black Clouds in Theology, last paragraph

Changed “**are** appear” to “appear” in the fourth sentence.

Changes in Version 2013.09.02

Chapter 8, Eudaemonia, last paragraph

Changed “reason as **the endless process of**” to “**reasoning well** as” in the second sentence.

Appendix C, *On the Philosophy Wall*, first paragraph

“The next most important octagon is that on which Plato and Aristotle stand **in** the wall **fresco** dedicated to philosophy:

[Image of Plato and Aristotle]

“In pointing up, Plato tells us to pursue Wisdom by pursuing Beauty, Wholeness, Justice, and the Truth. In holding his hand parallel to the ground, Aristotle tells us to know the world around us. **In following the advice of both Plato and Aristotle, we aspire to a more refined form of the two-part reasoning on which Plato and Aristotle stand, as represented by the square-within-an-octagon-within-a-square form (pattern) on the floor beneath their feet:**

[Image of square-within-an-octagon-within-a-square]”

was changed to:

“The next most important octagon is that on which Plato and Aristotle stand **on** the wall dedicated to philosophy:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

[Image of Plato and Aristotle]

“In pointing up, Plato tells us to pursue Wisdom by pursuing Beauty, Wholeness, Justice, and the Truth. In holding his hand parallel to the ground, Aristotle tells us to know the world around us. **The octagon is part of a symbol of the two-part reason of Plato and Aristotle, which involves finding and solving temporal problems:**

[Image of square-within-an-octagon-within-a-square]

“**In moving forward, we repeat the sequence of finding and solving temporal problems. In doing so, we refine our reason.**”

Appendix C, *On the Philosophy Wall*, second paragraph (except last image)

“**A symbol of this aspiration would combine elements of the symbol of the reasoning on which Plato and Aristotle stand with those of the symbol of pursuing Wisdom and worldly knowledge in the center of the ceiling. In his description of refining reason at the end of Book IX of *The Republic*, Plato provided us with a means of combining these elements into such a symbol. His** Socrates describes the human psyche as consisting of a hydra, a lion, and a human. Inside this human part is a psyche consisting of a hydra, a lion, and a human. Inside this human part is a psyche consisting of a hydra, a lion, and a human. And so on to infinity. Our hydra parts are ruled by desire, our lion parts by spirit, and our human parts by reason. We refine reason by having our human parts train our lion parts to control our hydra parts. A visual means of expressing this self-similarity lies beneath our feet in a crude version of a self-similar **tile form** known to Roman artisans since the late eleventh century:⁵

[Image of Sierpinski triangle]

“Using this **form** as a model, we can imagine a self-similar **form** that combines the simplicity of the square-within-an-octagon-within-a-square **form** with the dynamism of the image above the oculus:”

was changed to:

“**We can reduce the repetitive use of this symbol of the two-part reason of Plato and Aristotle to a single symbol using Plato’s self-similar metaphor of refining reason. Near** the end of Book IX of *The Republic*, **his** Socrates describes the human psyche as consisting of a hydra, a lion, and a human. Inside this human part is a psyche consisting of a hydra, a lion, and a human. Inside this human part is a psyche consisting of a hydra, a lion, and a human. And so on to infinity. Our hydra parts are ruled by desire, our lion parts by spirit, and our human parts by reason. We refine reason by having our human parts train our lion parts to control our hydra parts. A visual means of expressing this self-similarity lies beneath our feet in a crude version of a self-similar **image** known to Roman artisans since the late eleventh century:⁵

[Image of Sierpinski triangle]

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Using this **image** as a model, we can imagine a self-similar **image** that combines the simplicity of the square-within-an-octagon-within-a-square **image** with the dynamism of the image above the oculus:”

Appendix C, *On the Philosophy Wall*, third paragraph, first sentence

“Reinforcing this **form** as a symbol of refining the reason of Plato and Aristotle is the figure of Heraclitus, which visually connects the square-within-a-square-within-a-square **floor form** (reason of geometry, mathematics, and logic) to the square-within-an-octagon-within-a-square **floor form** (reason of Plato and Aristotle):”

were changed to:

“Reinforcing this **image** as a symbol of refining the reason of Plato and Aristotle is the figure of Heraclitus, which visually connects the square-within-a-square-within-a-square **symbol of endless rationality** (the reason of geometry, mathematics, and logic) to the square-within-an-octagon-within-a-square **symbol of the** reason of Plato and Aristotle:”

Appendix C, *On the Philosophy Wall*, third paragraph

Changed “**in the fresco**” to “**on this wall**” in the third sentence.

Changed “**endlessly self-similar image**” to “**symbol of reason**” in the third sentence.

Changed “**fresco**” to “**wall**” in the first sentence of the footnote.

Appendix C, *On the Theology Wall*, first paragraph

Changed “wall **fresco**” to “wall” in the first sentence.

Appendix C, *On the Poetry Wall*, first paragraph

Changed “**in the fresco**” to “**on the wall**” in the first sentence.

Changed “**fresco**” to “**wall**” in the second sentence.

Appendix C, *Black Clouds in Theology*, second paragraph, footnote, third sentence

“**The Inquisition banned this letter in all Catholic countries.**”

was deleted.

Appendix C, *Black Clouds in Theology*, last paragraph

Changed “**In the theology fresco**” to “**On the theology wall**” in the first sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “fresco” to “wall” in the second sentence.

Changed “historical figures in the philosophy fresco” to “figures on the philosophy wall” in the fourth sentence.

Appendix C, A Boundless View of the Whole, third paragraph

Changed “fresco” to “wall” in the first sentence.

Changed “fresco” to “wall” in the second sentence.

Changes in Version 2013.09.11

Preface, fourth paragraph

“In taking this boundless approach to deciding well, we use bounded models of the world to help us evaluate solutions to given problems. In bounding our models of the world, we exclude what happens outside the bounds of our models from our models. In effect, we presume to know more than we can ever possibly know in order to build logically consistent models of the world that help us predict well within given domains.”

was deleted.

Preface, new fourth paragraph, first two sentences

“In taking this boundless approach, we also use a boundless model of the world of the world to help us find problems to solve. The most basic problem we face is the problem of whether the problem we believe is best is truly best.”

were changed to:

“The most basic problem we face in finding temporally-bound problems to solve is the problem of knowing whether the problem we believe is best is truly best.”

Preface, new sixth paragraph

Changed “aspects” to “facets” in the third sentence.

Preface, new seventh paragraph

“Underlying this complex approach to deciding well is a concept of reason based on beauty as well as logic. The claim that we ought to replace our current concept of reason calls for extraordinary evidence. But what qualifies as evidence? From the boundless view of

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

believing well, we ought to choose the concept of reason that rings the truest with all that we currently know about believing well ever more wisely. We do so by acting as if it is best.”

was deleted.

Preface, last paragraph

Changed “pursue the boundless end of believing well” to “believe well” in the first sentence.

Chapter 1, *The EOQ/RTS Example*, third paragraph

Changed “most efficient” to “best” in the ninth sentence.

Chapter 1, The Practically Boundless Model, third paragraph

Changed “For deciding well, we” to “We” in the last sentence.

Chapter 1, The Practically Boundless Model, fourth paragraph

“If as part of its refining process a self-refining model for deciding well breaks down the pursuit of the boundless end of deciding well into the pursuits of aspects of this timeless end, then the pursuits of these aspects would also be boundless with respect to deciding well. For deciding well, we may also think of these timeless ends as boundless ends.”

was merged with the preceding paragraph and changed to:

“If such a model for deciding well refines itself by breaking down the pursuit of the boundless end of deciding well into the pursuits of facets of this boundless end, then the pursuits of these facets would also be boundless. We may also think of these facets as boundless ends.”

Chapter 1, *The Truth and Wisdom*, last paragraph

Changed “a multiple-frame¹⁴ model” to “multiple-frame¹⁴ models” in the sixth sentence.

Added the following sentences to the end of the footnote:

“From the view of the process of deciding well, we find this unity in the relations between the boundless factors of deciding well. From the view of the boundless end of deciding well, we find it in the relations of the facets of the boundless end of deciding well (Wisdom). As we shall see in the third chapter, this distinction corresponds to the distinction between the timeless and transcendental ends of deciding well.”

Chapter 2, introduction, last paragraph

Changed “efficient” to “efficient in solving given problems” in the first sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

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

Changed “*the world as it ought to be*” to “*how we ought to live*” in the last sentence in the footnote.

Chapter 2, *Pleasure and Pain*, fourth paragraph, last two sentences

“This is good *in that* we *can learn to find* pleasure in activities that are good for us, such as eating healthy foods. *It is bad in that* we *also can* find pleasure in things that are bad for us or for others, such as masochistic or sadistic acts.”

were changed to:

“This is good *when* we find pleasure in activities that are good for us, such as eating healthy foods, *but bad when* we find pleasure in things that are bad for us or for others, such as masochistic or sadistic acts.”

Chapter 2, *Pleasure and Pain*, sixth paragraph

Changed “basic needs” to “*most basic needs*” and “*higher*” to “*less basic*” in the fourth sentence.

Chapter 3, introduction, first paragraph

“*Deciding well using the boundless approach calls for us to contemplate how well the problems we find ring true with all that we currently know about deciding well. If a problem rings true, then we have found a beautiful problem to solve.*”

was deleted.

Chapter 3, introduction, new first paragraph

Changed “boundless frame” to “*practically boundless frame*” and “contemplating well and *Beauty*” to “*the process of contemplating well and the end of contemplating well*” in the first sentence.

Chapter 3, *Public Entropy*, first paragraph

Changed “*inefficiency in heat engines*, disorder in physical systems, and inefficiency in information processing” to “disorder in physical systems *and* inefficiency in *heat engines and* information processing” in the first sentence.

Chapter 3, *Public Entropy*, third paragraph, footnote

Changed “problem” to “*exoteric/esoteric* problem” in the last sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 3, *A Boundless Interpretation of Quantum Mechanics*, fourth paragraph, footnote, last sentence

“Disproving it would damage the boundlessly pragmatic argument for free will, which depends on the claim that the existence of free will rings true with all that we currently know about pursuing the boundless end of deciding well.”

was changed to:

“Note that we can neither prove nor disprove that we have free will. However, if claim that it exists rings true with all that we currently know about deciding well, we ought to put our faith in its existence.”

Chapter 3, *A Boundless Interpretation of Quantum Mechanics*, sixth paragraph, first sentence

“From the boundless view, there is a fourth class, within which the world consists of a past, a present, and a practically infinite number of possible futures.”

was changed to:

“From the boundless view, there is a fourth class. A defining feature of this class is the belief that the world consists of a past, a present, and a practically infinite number of possible futures.”

Chapter 3, *A Boundless Interpretation of Quantum Mechanics*, sixth paragraph, last two sentences

“In this class, we relate the strange behaviors of objects on the quantum level to everything we believe we know about deciding well. As we shall see in the next chapter, this rings true with Einstein’s call for physicists to think critically about not only physics, but also everyday thinking.”

were moved to the end of the section as a new paragraph and changed to:

“From the boundless view, we relate the strange behaviors of objects on the quantum level to everything we believe we know about deciding well. As we shall see in the next chapter, this rings true with Einstein’s call for physicists to think critically about not only physics, but also everyday thinking.”

Chapter 4, introduction, last two paragraphs

“We use descriptions of the world to predict. A prediction is knowledge of what is apt to happen. Predictions help us to assign probabilities to uncertain events, which helps us to evaluate alternatives. We refine the descriptions that we use to predict by how well they help

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

us predict. **Members of the set of refined descriptions that help us predict help us become more efficient.**

“We also use descriptions of the world to explain the world. An explanation is knowledge of why things happen as they do. Explanations help us to understand how our actions may change the world, which helps us to formulate alternatives. We refine the descriptions that we use to explain by how well they help us find problems to solve. **Members of the set of refined descriptions that help us explain help us become more effective.**”

were changed to:

“We use descriptions of the world to predict. A prediction is knowledge of what is **likely** to happen. Predictions help us to assign probabilities to uncertain events, which helps us to evaluate alternatives. We refine the descriptions that we use to predict by how well they help us predict.

“We also use descriptions of the world to explain the world. An explanation is knowledge of why things happen as they do. Explanations help us to understand how our actions may change the world, which helps us to formulate alternatives. We refine the descriptions that we use to explain by how well they help us find problems to solve.”

Chapter 4, *Self-Similarity*, first paragraph

Changed “**Again, we**” to “**We**” in the first sentence.

Chapter 4, *Self-Similarity*, second paragraph

“On any given level of abstraction, we can describe the relations between events, but not the causes of events. To explain the causes of events, we need to view the world from a lower level of abstraction. On the lowest level of abstraction, there exist no lower levels of abstraction from which to explain. From the view of people who believe that quantum mechanics is the lowest level of abstraction, searching for models that explain the behavior of objects on the level of quantum mechanics is foolish. In contrast, from the boundless view, we ought to search lower levels for models that explain causation on the level of quantum mechanics *wisely*. More than one explanation may fit what we can sense.² We ought to choose the explanation that best helps us decide well.”

“² In philosophical terms, (theory-laden) facts underdetermine theories that we use to explain causation.”

was reduced to a footnote to the first paragraph and changed to:

“² On any given level of abstraction, we can describe the relations between events, but not the causes of events. To explain the causes of events, we need to view the world from a lower level of abstraction. On the lowest level of abstraction, there exist no lower levels of abstraction from which to explain. From the view of people who believe that quantum

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

mechanics is the lowest level of abstraction, searching for models that explain the behavior of objects on the level of quantum mechanics is foolish. In contrast, from the boundless view, we ought to search lower levels for models that explain causation on the level of quantum mechanics *wisely*. More than one explanation may fit what we can sense. **In philosophical terms, (theory-laden) facts underdetermine theories that we use to explain causation.** We ought to choose the explanation that best helps us decide well.”

Chapter 4, *Self-Similarity*, last paragraph

Changed “*in our markets*” to “, *into our markets*” in the last sentence.

Chapter 5, *The Explicit Experiment*, second paragraph, footnote, last sentence

“Franklin’s famous reply to the woman who asked him what the secret meetings that we now call the Constitutional Convention produced (“A republic, if you can keep it”) **rings true with the belief that Franklin made this crucial change.**”

was changed to:

“**This rings true with** Franklin’s famous reply to the woman who asked him what the secret meetings that we now call the Constitutional Convention produced: “A republic, if you can keep it.””

Chapter 7, *OODA Loop Analysis*, last paragraph

Changed “Operation Desert Storm” to “Operation Desert Storm, **the 1991 campaign to remove Iraqi troops from Kuwait**” in the first sentence.

Chapter 8, introduction, first paragraph

“**Pursuing ends well calls for us to overcome our ignorance of the world. This ignorance takes the form of poor predictions and explanations of causation. Poor predictions hinder us from solving given problems well. Poor explanations hinder us from finding problems to solve well.**”

was deleted.

Chapter 8, introduction, new second paragraph, fourth sentence

“**Excellence in solving given bounded problems calls for logically consistent models.**”

was deleted.

Chapter 8, introduction, new third paragraph, third and fourth sentences

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Excellence in finding problems calls for defining our chosen timeless end and the means of pursuing it in terms of each other. If these two objects were not ambiguous, there would be no room for better approximates of them.”

were deleted.

Chapter 8, introduction, new fourth paragraph, third sentence

“Excellence in finding problems to solve calls for multiple-frame models that are ambiguous with respect to the boundless ends of all boundless factors of deciding well and the means of pursuing these ends.”

was deleted.

Chapter 8, introduction, last paragraph

Changed “believing well ever more wisely” to “deciding well” in the second sentence.

Chapter 8, Complete Reason, first paragraph, second sentence

“We can never prove a set of rules for pursuing the Truth to be both logically consistent and complete.⁴”

⁴ Consider the following claims: (1) for any set of rules for pursuing the Truth, we will either discover or never discover the Truth; (2) if we discover the Truth, we prove that the set of rules is complete; (3) if we never discover the Truth, we never prove that the set of rules is complete; and (4) pursuing the Truth is an endless process. From these four claims, it follows that we can never prove a set of rules for pursuing the Truth to be both logically consistent and complete. If we discover the Truth, we prove false the claim that pursuing the Truth is an endless process. If we never discover the Truth, we never prove that the set of rules is complete.”

was changed to:

“We can never prove a set of rules for pursuing the Truth to be complete.”

Chapter 8, Complete Reason, first paragraph, footnote

Changed “approach” to “approach to deciding well” and “decide well” to “decide well” in the third sentence.

Chapter 8, Eudaemonia, first paragraph, second and third sentences

“By themselves, these frameworks are useless. We make them useful by adding to them what we currently believe we know about pursuing the boundless factors of deciding well.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

were deleted.

Appendix A, introduction, second paragraph

Changed “third object” to “third object **in the bottom row**” in the third sentence.

Changed “third object” to “third object **in the top row**” in the last sentence.

Appendix A, introduction, seventh paragraph

Changed “**(bounded)** results” to “results” in the fifth sentence.

Changed “This” to “This **“temporal” approach**” in the last sentence.

Appendix C, *On the Philosophy Wall*, second paragraph

Changed “**image** with the dynamism of **the image above the oculus**” to “**form** with the dynamism of **Plato and Aristotle walking across a series of these forms**” in the last sentence.

Appendix C, *On the Poetry Wall*, last paragraph

Changed “**as a whole** depicts an esoteric strategy for **pursuing** Holy Wisdom” to “depicts an esoteric strategy for **bringing ever more** Holy Wisdom **into the world**” in the last sentence.

Changes in Version 2013.09.18

Acknowledgments, second paragraph, last sentence

“I finally gave Gordon his paper, “Wealth in the Information Age, A Humanistic Approach to Economics,” seventeen years late.”

was changed to:

“Today, I recognize the source of this failure as dread of thinking deeply about the whole of space-time, which calls for overturning modern explanations of the world.”

Acknowledgments, fifth paragraph

“After selling my interest in the forms business in 1985, I decided to explore an idea I had about how to improve learning in financial analysis. **Fortunately**, the object-oriented software tools I needed to write an interactive compiler based on this idea were not yet available. While waiting for these tools to become available, and stable, I had much time to revisit the modern economic problem of learning. **This took me to** the Santa Fe Institute, where I made friends with two seekers of larger truths. Howard Sherman introduced me to Albert

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Einstein’s theory of knowledge. W. Brian Arthur suggested that I write a book “from the heart.” Writing what evolved into this book became a higher priority than selling the financial analysis language, which has too little of the sweet pretense of certainty for modern tastes.”

was changed to:

“After selling my interest in the forms business in 1985, I decided to explore an idea I had about how to improve learning in financial analysis. The object-oriented software tools I needed to write an interactive compiler based on this idea were not yet available. While waiting for these tools to become available, and stable, I had much time to revisit the modern economic problem of learning. In 1992, I gave Gordon Douglass the term paper I was unable to write seventeen years earlier, “Wealth in the Information Age, A Humanistic Approach to Economics.” This became the basis for a paper that I delivered to the International Schumpeter Society conference in Athens a year later. A little more than a year after that, I joined the Santa Fe Institute Business Network, where I made friends with two seekers of larger truths. Howard Sherman introduced me to Albert Einstein’s theory of knowledge. W. Brian Arthur suggested that I write a book “from the heart.” Writing what evolved into this book became a higher priority than selling the financial analysis language, which has too little of the sweet pretense of certainty for modern tastes.”

Chapter 1, *The Truth and Wisdom*, second paragraph

Changed “provides” to “provided” in the first sentence.

Chapter 1, *The Truth and Wisdom*, fourth paragraph

Changed “provides” to “provided” in the first sentence.

Chapter 1, *Steps for Building Multiple-Frame Models*, first paragraph

Changed “, given our ignorance of not only the current state of the world, but also all possible future states of the world.” to “.” in the last sentence.

Chapter 1, *Ever More Complete Multiple-Frame Models*, third paragraph

Changed “to work well” to “to live and work well” in the first sentence.

Changed “provide” to “provided” in the second sentence.

Chapter 3, introduction, second paragraph

Changed “joining” to “linking” in the first sentence.

Chapter 4, introduction, first paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “tells” to “told” in the first sentence.

Appendix A, introduction, second paragraph

Changed “three objects” to “the following three objects” in the first sentence.

Appendix B, *Inducing the Creation of Knowledge*, third paragraph

Changed “machines” to “WIP inventory, machines” in the second sentence.

Appendix C, A Boundless View of the Whole, second paragraph

Changed “, as opposed to the world as we may form it.” to “.” in the first sentence.

Changed “, as opposed to parts of the world as we currently find them.” to “.” in the second sentence.

Appendix C, *The Role of Julius II*, last paragraph, footnote

Changed “this” to “why the authors would have Julius II judge rather than create and judge ecclesiastical forms” in the first sentence.

Deleted the last sentence: “The authors would have Julius II judge rather than create and judge ecclesiastical forms.”

Changes in Version 2013.09.20

The following edits were recommended by Patrika Vaughn:

Acknowledgments, second paragraph

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

Acknowledgments, third paragraph

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

Acknowledgments, last paragraph

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

Preface, sixth through second to the last sentences

Changed “,” to “” in the first sentence. (Removed commas after chapter name.)

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, *The EOQ/RTS Example*, sixth paragraph, third through fifth sentences

“They also reduce scrap. **W**hen production team members set up wrongly, they need to scrap **fewer parts**. Short setup times even enhance learning. **I**t is much easier for team members to remember what they did wrong three hours ago than what they did wrong three weeks ago.”

were changed to:

“They also reduce scrap: **w**hen production team members set up wrongly, they scrap **smaller batches**. Short setup times even enhance learning: **i**t is much easier for team members to remember what they did wrong three hours ago than what they did wrong three weeks ago.”

Chapter 1, *Ever More Complete Multiple-Frame Models*, third paragraph, footnote

Changed “**that** species” to “**what** species” in the third sentence.

Chapter 2, *Tools for Pursuing Pleasure and Joy*, third paragraph

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

Chapter 3, *Public Entropy*, first paragraph, footnote

Changed “and alternative to” to “**(and alternative to)**” in the last sentence.

Chapter 4, introduction third paragraph, last two sentences

“**W**e refine worldly knowledge by weeding out all worldly knowledge that we cannot express in **words or symbols**. What remains is the set of all descriptions of the world.”

were changed to:

“**I**n analyzing the world, **w**e refine worldly knowledge by weeding out all worldly knowledge that we cannot express in **concepts**. What remains is the set of all **conceptual** descriptions of the world.”

Chapter 4, introduction, third paragraph

Changed “descriptions” to “**conceptual** descriptions” in the first sentence.

Chapter 4, introduction, last paragraph

Changed “descriptions” to “**conceptual** descriptions” in the first sentence.

Chapter 7, *A Normal Anomaly*, second paragraph

Changed “philosopher **of science**” to “philosopher-**scientist**” in the first sentence.

Changes in Version 2013.09.21

Acknowledgments, second paragraph, footnote, seventh sentence

“I did not realize that I had stumbled into the economic equivalent of Georg Cantor’s continuum hypothesis.”

was deleted.

Chapter 1, The Practically Boundless Model, last paragraph

Changed “the divine” to “a divinity or divinities” in the last sentence.

Chapter 2, introduction, last paragraph, footnote

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

Chapter 3, The Elephant in the Room, first paragraph, footnote, first sentence

Inserted the following after the first sentence:

“Allowing for the possibility of physical laws and constants other than those of our universe would yield even longer odds.”

Chapter 5, Good Policies, first paragraph, footnote

Changed “geometry” to “geometries” in the second sentence.

Chapter 5, *Promote Savings for Welfare*, last paragraph

Changed “a safety net program” to “safety net programs” and “material resources” to “resources” in the sixth sentence.

Changed “.” to “to compete against government safety net programs.” in the last sentence.

Appendix A, introduction, third paragraph

Changed “geometry” to “Euclidean geometry” in the second sentence.

Appendix A, introduction, x paragraph

Changed ““temporal”” to “superficial” in the second sentence.

Appendix A, Indispensable Forms, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “*the science of forms*” to “**the science of forms**” in the first sentence.

Changed “**When confronted with more than one solution to an information problem**, we choose the solution that appears” to “**In pursuing this knowledge, we choose the solutions to problems** that appear” in the second sentence.

Changed “**it is**” to “**they are**” in the third sentence.

Appendix C, The Forgotten Role of Octagons, first paragraph

Changed “the **D**ivine” to “the **d**ivine” in the first sentence.

Appendix C, A Boundless View of the Whole, last paragraph

Changed “**and**” to “**or**” in the third (second to last) sentence.

Changed “gesture or gaze upward **toward**” to “**gaze** or **gesture** toward **Holy**” in the last sentence.

Appendix C, *The Role of Julius II*, first paragraph

Changed “Wisdom” to “**Holy** Wisdom” in the last sentence.

Changes in Version 2013.09.28

Acknowledgments, second paragraph, end

Added the paragraph:

“The first two were sons of bankers from Grinnell, Iowa, a “new Jerusalem” shaken by the scandalous collapse of its most trusted bank in 1904: John Huntington Harris pointed out people and habits worth imitating. He also expressed great contempt for people who too readily reduced the world to numbers without considering the usefulness of these numbers, a habit he acquired while rising through the ranks of the Organizational Planning and Statistical Control Divisions of the Army Air Force Management Control Directorate during the Second World War. Wilfred “Mac” McNeil told me parables based on his experiences as special assistant for financial matters to the first secretary of the Department of Defense and comptroller under its next five secretaries. Both knew that the way forward that can be told is not the best way forward. Accordingly, they put more stock in character and culture than most of their contemporaries did.”

Acknowledgments, new third paragraph

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

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “failure” to “problem” and “, which calls for overturning modern explanations of the world” to “.” in the last sentence.

Acknowledgments, new fourth paragraph

Changed “The next four were” to “Following these were four” in the first sentence.

Acknowledgments, new fifth paragraph

Changed “1980s,” to “1980s” in the first sentence.

Changed “act and learn” to “decide (act and learn)” in the third sentence.

Acknowledgments, last paragraph

“The last three were sons of bankers from Grinnell, Iowa, a “new Jerusalem” shaken by the scandalous collapse of its most trusted bank in 1904: Wilfred McNeil told me parables based on his experiences as special assistant for financial matters to the first secretary of the Department of Defense and comptroller under its next five secretaries. George Bach took a Socratic approach. John Harris pointed out people and habits worth imitating. He also expressed great contempt for people who too readily reduced the world to numbers without considering the usefulness of these numbers, a habit he acquired while rising through the ranks of the Organizational Planning and Statistical Control Divisions of the Army Air Force Management Control Directorate during the Second World War. All three knew that the way forward that can be told is not the best way forward. In this work, I describe a strategy for learning how to tell ever more about the best way forward.”

was changed to:

“For the last eighteen years I have listened to what many thoughtful people had to say about the best way forward. All of these people framed their arguments on what they believed to be facts about the world. In contrast, logician Kurt Gödel believed that it was possible to base such arguments on a reasonable approach to believing well, which he called an *a priori* approach to science. In this little book, I argue that such an approach is the best way to tell ever more about the best way forward, but only if it is self-referential, self-similar, and superrational.”

Chapter 4, *Self-Similarity*, last paragraph

Changed “and cultures” to “cultures, and characters” in the last sentence.

Appendix A, introduction, second to last paragraph, footnote

Changed “degenerate polygons (apeirogons, digons, and monogons)” to “apeirogons and other degenerate polygons (digons and monogons)” in the last sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix A, The Big Picture, third paragraph

Added the fifth and sixth terms to the circle sequence in order to match the six-term polygon sequence.

Appendix A, Indispensable Forms, first paragraph

Added the footnote:

“⁴ This is a matter of weeding out less beautiful forms that accomplish the same function in deciding well as other forms. For example, in the introductory section of this appendix we weeded out the regular/irregular means of describing objects (R8, I7, R7, I6, R6, I5, R5, I4, R4, I3, R3) because it was less beautiful than the no-transform/yes-transform means (N8, Y8, N7, Y7, N6, Y6, N5, Y5, N4, Y4, N3).”

Appendix C, *On the Jurisprudence Wall*, first paragraph

Changed “wisely” to “**ever more** wisely” in the fifth sentence.

Changes in Version 2013.10.14

Entire document

Removed superfluous commas from “not only... but also” constructions (27 occurrences).

Acknowledgments, third paragraph

Changed “century, **he**” to “century **Fred**” and “pushed” to “**gently** pushed” in the second sentence.

Acknowledgments, third paragraph, last sentence

“**Today, I recognize the source of this problem as dread of thinking deeply about the whole of space-time.**”

was deleted.

Acknowledgments, last paragraph

“For the last eighteen years I have listened to what many thoughtful people had to say about the best way forward. All of **these people framed** their arguments on what **they believed to be** facts about the world. In contrast, logician Kurt Gödel believed that it was possible to base such arguments on a reasonable approach to believing well, **which he called an *a priori* approach to science**. In this little book, I argue that such an approach is the best way to tell

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

ever more about the best way forward, but only if it is self-referential, self-similar, **and** superrational.”

was changed to:

“For the last eighteen years I have listened to what many thoughtful people had to say about the best way forward. All of **them based** their arguments on **claimed** facts about the world, **on apparently solid bedrock**. In contrast, logician Kurt Gödel believed that it was possible to base such arguments on a reasonable approach to believing well, **on a floating foundation**. In this little book, I argue that such an “*a priori*” approach is the best way to tell ever more about the best way forward, but only if it is self-referential, self-similar, superrational, **and boundless**.”

Preface, first paragraph

Changed “**in order to take**” to “**and took**” in the second sentence.

Preface, third paragraph

Changed “effective and efficient” to “effective **in deciding well** and **ever more efficient in solving given problems**” in the second to last sentence.

Preface, seventh paragraph, first sentence

“**To** address this universal problem well **we need to** consider the knowledge resources that we **require** to address it well.”

was changed to:

“**Addressing** this universal problem well **calls for** considering the knowledge resources that we **need** to address it well.”

Preface, seventh paragraph

Removed commas from the last two sentences.

Chapter 1, *Temporal and Timeless Frames*, last paragraph, first footnote

Changed “problem, speaking of efficiency without specifying **a problem scale**” to “problem **we choose**, speaking of efficiency without specifying **the** problem” in the first sentence.

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph

Changed “**practically** boundless **frames**” to “boundless **ends**” in the last sentence.

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph, footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“¹⁰ Consider the bubble canopy of the F-16 fighter plane. Although it has a frame, for the purpose of fighting well, it is frameless. This is true regardless of any other visual impediments it may have, e.g., distortions due to current ignorance in material science and manufacturing engineering.”

was moved to the third paragraph of the next section and changed to:

“¹⁰ In accordance with the reasonable concept of completeness put forth in the last chapter, we may also call the timeless end of deciding well a *reasonably* boundless end.”

Chapter 1, The Practically Boundless Model, title

Changed title to “**The Boundless Model of Deciding Well**.”

Chapter 1, The Boundless Model of Deciding Well, third paragraph

Changed “model **for** deciding well” to “model **of** deciding well” in all (3 occurrences).

Chapter 1, *The Truth and Wisdom*, last paragraph

Changed “models **for** deciding well” to “models **of** deciding well” in the first sentence.

Chapter 1, *Steps for Building Multiple-Frame Models*, first paragraph

Changed “model **for** deciding well” to “model **of** deciding well” in the last sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, second paragraph

Changed “**the engineering approach to overcoming constraints**” back to “*the engineering approach to overcoming constraints*” in the last sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, third paragraph

Changed “**the modern biological approach to overcoming constraints**” back to “*the modern biological approach to overcoming constraints*” in the last sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, third paragraph, footnote, last two sentences

“Following this line of thinking, **refining the process of computing the value of π (well) is part of the process of computing the value of π (well)**. Further, the timeless end of computing π (well) is a complex structure of knowledge rather than a simple number.”

were changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Following this line of thinking, the timeless end of computing π (well) is a complex structure of knowledge rather than a simple number.”

Chapter 3, *Public Entropy*, last paragraph, last sentence

“We can begin using this concept of public entropy to remove waste from our belief systems by more tightly linking quantum mechanics to deciding well.”

was promoted to a paragraph and changed to:

“We can begin using this concept by more tightly linking quantum mechanics to deciding well.”

Chapter 3, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, fourth paragraph, footnote, last two sentences

“Note that we can neither prove nor disprove that we have free will. However, if the claim that it exists rings true with all that we currently know about deciding well, we ought to put our faith in its existence.”

were deleted.

Chapter 3, *The Elephant in the Room*, last paragraph, footnote

“¹⁴ Some modern readers may prefer an infinitely large construction crane to an infinitely large elephant. In this metaphor, the higher we climb, the more we learn about what compels us to climb.”

was deleted.

Chapter 4, *Refining Finding Problems to Solve*, third paragraph, seventh and eighth sentences

“For example, we can look for trading problems that give rise to the uneven flow of resources. The uneven flow of resources wastes time and other resources.”

were changed to:

“For example, we can look for trading problems that give rise to the uneven flow of resources, which wastes time and other resources.”

Chapter 6, *Pursuing Eternal Oneness*, first paragraph

Changed “eternal mystical oneness” to “eternal oneness” in all (2 occurrences).

Chapter 6, *Pursuing Eternal Oneness*, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Some means to experiencing mystical oneness conserve scarce resources **by sacrificing safety or health**. Religions that help us live well include beliefs to check these extreme means. One example is the Hindu belief **that we have as many lifetimes as it takes to experience mystical union**. Another is the Catholic belief **that we can attain eternal mystical oneness during an existence after life known as purgatory**. **Worldly religions balance emotional and reasonable means to experiencing mystical oneness during life.**”

was changed to:

“Some means to experiencing mystical oneness **sacrifice safety or health in order to** conserve scarce resources. Religions that help us live well include beliefs to check these extreme means. One example is the Hindu belief in **as many lifetimes as it takes to achieve eternal oneness**. Another is the Catholic belief **in life after death in which to achieve eternal oneness.**”

Chapter 7, *An Extraordinary Anomaly*, last paragraph

“**In playing the boundless game of deciding well, we judge actions by how well they ring true with all that we currently know about deciding well and people by the content of their character as revealed by their actions.**”

was deleted.

Chapter 7, *OODA Loop Analysis*, second paragraph, last sentence

“**This made them appear more unpredictable and threatening to their opponents.**¹⁰”

“¹⁰ **Boyd, J., *Patterns of Conflict*, 2005 Defense in the National Interest revision, slide #5. This slide presentation is available online in the Boyd archive section of Project White Horse, < <http://www.projectwhitehorse.com/boydsarchive.htm>> (2 July 2013).**”

was deleted.

Chapter 7, *OODA Loop Analysis*, fourth paragraph, end (of *Patterns of Conflict* block quote)

Added the footnote:

“¹⁰ **Boyd, J., *Patterns of Conflict*, 2005 Defense in the National Interest revision. This slide presentation is available online in the Boyd archive section of Project White Horse, < <http://www.projectwhitehorse.com/boydsarchive.htm>> (2 July 2013).**”

Chapter 7, *Boyd's Grand Strategy*, first paragraph, first footnote

“¹² **Boyd, J., *Patterns of Conflict*, 2005 Defense in the National Interest revision, slide #144. This slide presentation is available online in the Boyd archive section of Project White Horse, < <http://www.projectwhitehorse.com/boydsarchive.htm>> (2 July 2013).**”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

was changed to:

“¹² Boyd, J., *Patterns of Conflict*, slide #144.”

Chapter 7, *Boyd's Grand Strategy*, last paragraph, last sentence

“From **this timeless** view, **boundless factors of deciding well are nothing more than figments of our imagination.**”

was changed to:

“From **the boundless** view, **Boyd’s grand strategy is bounded, hence incomplete.**”

Chapter 8, introduction, fourth paragraph

Changed “**Reason**” to “**boundless pragmatism**” in the last sentence.

Chapter 8, introduction, second to last paragraph, footnote

Changed “**Reasonable**” to “**boundlessly pragmatic**” in all (2 occurrences).

Chapter 8, introduction, last paragraph

Changed “**Reasonable**” to “**boundlessly pragmatic**” in the third sentence.

Deleted the last sentence: “**We do so by putting our faith in Reason.**”

Chapter 8, Complete Reason, title

Changed title to “**Completeness.**”

Chapter 8, Completeness, first paragraph

Changed “**Reason**” to “**boundless pragmatism**” in the last sentence.

Chapter 8, Eudaemonia, second paragraph

Changed “**fully aware**” to “**directly aware**” in the third sentence.

Changed “aware” to “**directly aware**” in the fourth sentence.

Changed “aware” to “**directly aware**” in the last sentence.

Chapter 8, Eudaemonia, last paragraph

Changed “**The boundless approach to deciding well**” to “**Deciding well**” in the first sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 8, Eudaemonia, last paragraph, first footnote, first sentence

“Plato also provided us with a bounded view of governing our minds well **in likening governing our minds well to governing ourselves well.**”

was changed to:

“**In likening governing our minds well to governing ourselves well,** Plato also provided us with a bounded view of governing our minds well.”

Chapter 8, Eudaemonia, last paragraph, last footnote

Changed “**Reason**” to “**Wisdom**” in the third sentence.

Appendix A, introduction, third to last paragraph, footnote, all three sentences

“**Under** our first scheme for representing objects, which we based on how objects appeared, this sequence (**R8, I5, R7, I6, R6, I5, R5, I4, R4, I3, R3**) makes little sense. To find a deeper pattern within this pattern, we need to start the sequence with a polygon of more than eight sides. We need to enlarge the problem.”

were changed to:

“**Note that if we used** our first scheme for representing objects, which we based on how objects appeared, this sequence **would** make little sense: **R8, I5, R7, I6, R6, I5, R5, I4, R4, I3, R3**. To find a deeper pattern within this pattern, we **would** need to start the sequence with a polygon of more than eight sides. We **would** need to enlarge the problem.”

Appendix A, introduction, second to last paragraph, footnote, last two sentences

“Note that this analysis ignores **apeirogons, and other** degenerate polygons (**digons and monogons**). Including them here would add little to our understanding of the relation between mathematics and science.”

were changed to:

“**We may choose to approach the programming problem that this infinity creates either algebraically or geometrically. If we approach this problem algebraically, we must create a new class (to hold infinities as well as integers) and a method for subtracting (or decrementing by one) for this new class. If we approach this problem geometrically, we must expand our internal language to handle circles. In this analysis, we take the geometric approach. Note that this analysis ignores degenerate polygons and non-Euclidean geometries. Including them here would add little to our understanding of the boundlessly pragmatic relation between mathematics and science.**”

Appendix A, Indispensable Forms, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “most useful” to “most useful **to us**” in the last sentence.

Appendix B, *Smoothing Flows*, last two paragraphs

Merged the last two paragraphs.

Appendix B, *Machine Tools*, first paragraph

Changed “three ends: (1) automation; (2) fool proofing; and (3) rapid tool setting” to “three **basic** ends: automation, fool proofing, and rapid tool setting” in the last sentence.

Appendix B, *Machine Tools*, second paragraph

“From the view of modern economics and management science, factories are great machines in which people are interchangeable parts. The goal is *efficient* production. From the boundless view, factories are learning organisms in which people are the most important part, the part that learns. The goal is *wise* (ever more efficient and effective) production. Toyota **has** a boundless view of **automating tasks**. Rather than trying to get the most out of each machine tool, **it tries** to get the most out of each full day’s work. A full day’s work is the effort a team member can put forth over a long period without ill effect.”

was changed to:

“From the **temporal** view of modern economics and management science, factories are great machines in which people are interchangeable parts. The goal is *efficient* production. From the boundless view, factories are learning organisms in which people are the most important part, the part that learns. The goal is *wise* (ever more efficient and effective) production. Toyota **production teams take** a boundless view of **automation**. Rather than trying to get the most out of each machine tool, **they try** to get the most out of each full day’s work. A full day’s work is the effort a team member can put forth over a long period without ill effect.”

Appendix B, *Rapid Tool Setting*, title

Deleted title, which effectively merged this subsection with the *Machine Tools* subsection.

Appendix C, *The Forgotten Role of Octagons*, fourth paragraph

Changed “**the boundless ends of** poetry (**Beauty**) and philosophy (**the Truth**)” to “poetry and philosophy” in the first sentence.

Appendix C, *On the Philosophy Wall*, first paragraph, second through last sentences

“In pointing up, Plato tells us to pursue **Wisdom by pursuing Beauty, Wholeness, Justice, and the Truth**. In holding his hand parallel to the ground, Aristotle tells us to know the world **around us**. The octagon is part of a symbol of the two-part reason of Plato and Aristotle, **which involves finding and solving temporal problems:**”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

were changed to:

“In pointing up **while walking forward**, Plato tells us to pursue **the boundless ends of poetry, philosophy, jurisprudence, and theology**. In holding his hand parallel to the ground **while standing flat-footed**, Aristotle tells us to know the world **as it currently is**. The octagon is part of a symbol of the two-part reason of Plato and Aristotle:”

Appendix C, *On the Philosophy Wall*, second paragraph, first sentence

Changed “this symbol **of the two-part reason of Plato and Aristotle**” to “this symbol” in the last sentence.

Appendix C, *On the Philosophy Wall*, second paragraph, last two sentences

“**In moving forward, we repeat the sequence of finding and solving temporal problems. In doing so, we refine our reason.**”

were deleted.

Appendix C, *On the Theology Wall*, first paragraph, last two sentences

“Pursuing the truth about this element calls for us to pursue the boundless end of deciding well, which **in turn calls for us to pursue the truth about this mysterious element**. For Roman Catholics, **the boundless end of deciding well** is Holy Wisdom (*Hagia Sophia/Logos*).”

were changed to:

“Pursuing the truth about this element calls for us to pursue the boundless end of deciding well, which **for Roman Catholics** is Holy Wisdom (*Hagia Sophia/Logos*).”

Appendix C, *On the Poetry Wall*, first paragraph

Changed “world” to “world **by pursuing the boundless ends of poetry, philosophy, jurisprudence, and theology**” in the last sentence.

Changes in Version 2013.10.15

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph

Changed “boundless **frames**” to “boundless **models of deciding well**” in the last sentence.

Chapter 1, *The Boundless Model of Deciding Well*, title

Changed title to “**Boundless Models of Deciding Well**.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 4, *Academic Fields*, fourth paragraph

“The true sciences would include all fields that aim directly at the Truth. Unlike the natural sciences, the true sciences would not **imply that the beliefs and actions of people are not a part of nature. For example, we would not** exclude **game theory** from biological evolution.”⁵”

“⁵ For more about **game theory** and biological evolution, see the chapter on competing well.”

was changed to:

“The true sciences would include all fields that aim directly at the Truth, **which are all that aim at explaining what holds true for the whole of space-time**. Unlike the natural sciences, the true sciences would not exclude **human cultural evolution** from biological evolution.”⁵”

“⁵ For more about **this**, see the chapter on competing well.”

Appendix C, *The Forgotten Role of Octagons*, third paragraph, last sentence

“**From the boundless view**, this Tantalean image represents the mission of learning ever more about **both the world** and Wisdom.”

was changed to:

“**This** Tantalean image represents the mission of learning ever more about the **mysterious fifth element** and Wisdom.”

Appendix C, *On the Poetry Wall*, first paragraph

Changed “two-part reason” to “**the** two-part reason **of Plato and Aristotle**” in the last sentence.

Appendix C, *Black Clouds in Theology*, last paragraph

Changed “poetry and **philosophy**” to “poetry **not grounded in deciding well (sophistic art)** and **poetry grounded in deciding well (philosophical art)**” in the first sentence.

Changed “**poetry**” to “**sophistic art**” in the third sentence.

Changed “**philosophy**” to “**philosophical art**” in the fifth sentence.

Changes in Version 2013.10.16

Chapter 1, *The EOQ/RTS Example*, sixth paragraph

Changed “wrong” to “**that turned out to be** wrong” in the fourth sentence (2 occurrences).

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, *The EOQ/RTS Example*, seventh paragraph, second and third sentences

“In contrast, American firms were mass-producing trucks. A Toyota supervisor named Taiichi Ohno knew that his firm would never be able to compete by making trucks in the same way as American firms did.”

were changed to:

“A Toyota supervisor named Taiichi Ohno knew that his firm would never be able to compete against mass-producing American firms by making trucks the same way they did.”

Chapter 1, *Steps for Building Multiple-Frame Models*, fourth paragraph

Changed “a second boundless factor of deciding well” to “the pursuit of the Truth” and “the boundless factors of deciding well” to “Wisdom and Truth” in the first sentence.

Chapter 1, *Steps for Building Multiple-Frame Models*, last paragraph

“As we shall see, it helps us find not only conflicts but also holes in our belief systems.”

was deleted.

Changes in Version 2013.10.18

Acknowledgments, third paragraph

Removed comma from the sixth sentence.

Changed “solve this problem” to “understand this apparent conflict between the truth and wisdom” in the ninth sentence.

Chapter 1, *Boundless Models of Deciding Well*, first paragraph

Changed “playing basketball well does not include swimming well” to “allocating resources well (given a fixed stock of knowledge) does not include learning well” in the last sentence.

Chapter 2, *A Grander Virtuous Circle*, first paragraph

Changed “Good products,” to “Good products, particularly good intellectual tools,” in the fourth sentence.

Chapter 3, introduction, first paragraph

Changed “practically boundless model” to “boundless model” in the first sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 3, Contemplating the Way Forward, second paragraph

Changed “process that halts when there are fewer than six marbles in the bag” to “program” in the sixth sentence.

Changed “process” to “program” and “first three steps” to “process” in the seventh sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, first paragraph, footnote, first three sentences

“More accurately, we can draw some conclusions about overcoming constraints in pursuing Wisdom from the much simpler case of overcoming constraints in computing the value of π as modern mathematicians define this process. From the view of modern mathematics, π is *computable*, which is to say that we can program a Turing machine, an abstract computing machine that does nothing more than follow rules, to compute π to any number of decimal places. In contrast, from the boundless view, π is computable in theory, but not in practice.”

were changed to:

“From the view of modern mathematics, π is *computable*, which is to say that we can program a Turing machine, an abstract computing machine that does nothing more than follow rules, to compute π to any number of decimal places. Recursive programs for calculating the value of π halt when they reach a given level of effort or accuracy, not the value of π . From the boundless view, π is computable in theory, but not in practice.”

Chapter 3, *Overcoming Constraints in Deciding Well*, last paragraph, footnote, fourth through last sentences

“From the multiple-frame view, it takes us from the realm of mathematics to the realm of (self-referential) science. We best address the problem of computing π (well) by pursuing the boundless end of deciding well. Following this line of thinking, the timeless end of computing π (well) is a complex structure of knowledge rather than a simple number.”

were changed to:

“From the boundless view, it takes us from the realm of mathematics to the realm of the science of deciding well. We best address the problem of computing π well by pursuing the boundless end of deciding well. Following this line of thinking, the timeless end of computing π well is a complex structure of knowledge rather than a simple number.”

Chapter 3, *Public Entropy*, fourth paragraph, third and fourth sentences

“At the limit of the former, relations become logical. At the limit of the latter, links become rigid.”

were deleted.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 3, *Public Entropy*, last paragraph

Merged this paragraph with the preceding paragraph.

Appendix A, introduction, seventh paragraph

Changed “This” to “As we shall see, this” in the last sentence.

Appendix A, introduction, ninth paragraph, footnote, last two sentences

“To find a deeper pattern within this pattern, we would need to start the sequence with a polygon of more than eight sides. We would need to enlarge the problem.”

were deleted.

Appendix A, The Big Picture, answer

Simplified answer by incorporating the second (alignment) function into the notation for a regular convex polygon.

Changes in Version 2013.10.21

Acknowledgments, last paragraph

Changed “All” to “Most” in the second sentence.

Changed “superrational, and boundless” to “and superrational” in the last sentence.

Chapter 1, Boundless Models of Deciding Well, first paragraph

Changed “use bounds to separate” to “separate” in the first sentence.

Chapter 1, *The Truth and Wisdom*, last paragraph, footnote, last three sentences

“From the view of the *process* of deciding well, we find this unity in the relations between the boundless factors of deciding well. From the view of the *boundless end* of deciding well, we find it in the relations of the facets of the boundless end of deciding well (Wisdom). As we shall see in the third chapter, this distinction corresponds to the distinction between the timeless and transcendental ends of deciding well.”

were deleted.

Chapter 4, *Modern Policy Mistakes*, third paragraph, footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “gather” to “**ought to** gather” in the first sentence.

Changed “gather” to “**ought to** gather” in the last sentence.

Chapter 6, Einstein’s Twin Warnings, first paragraph

Changed “reason” to “[**modern**] reason” in the fifth sentence of the Einstein quote.

Chapter 8, Completeness, entire section

“**Completeness**

We may call a set of rules for pursuing the Truth that contains all of the rules we need for pursuing the Truth *complete*. We can never prove a set of rules for pursuing the Truth to be complete. This does not mean that we ought not to pursue the Truth. In theory, we collectively ought to pursue the Truth using the set of all possible rules for pursuing the Truth, which includes all possible rules for refining the set of all possible rules for pursuing the Truth. We may call such a set of rules *reasonably complete*. So conceived, the rules of boundless pragmatism appear to be reasonably complete.⁴”

“⁴ Consider the completeness of W. V. O. Quine’s holistic approach to believing well: Our concept of completeness concerns the supply side of the market for tools for helping us believe well. We find conflicts in our belief systems. *The philosophy of science is philosophy enough*. Now consider the completeness of the multiple-frame approach to deciding well: Our concept of completeness concerns the supply and demand sides of the market for tools for helping us decide well. We find holes as well as conflicts in our belief systems, e.g., we see that Quine’s philosophy is too narrow (Morton White’s problem) and that it lacks a normative element (Jaegwon Kim’s problem). *The science of science is philosophy enough if and only if it includes pursuing all boundless factors of deciding well.*”

was deleted.

Chapter 8, Eudaemonia, title and first paragraph

“**Eudaemonia**

Pursuing the boundless **end of** deciding well involves building superrational frameworks for supporting our current beliefs. Missing from this **structure** is a means of understanding constraints on our ability to receive and process information unconsciously. To decide well, we need to consider these constraints. Both as humans and as people living with humans, we need to consider the human condition.”

were changed to:

“**The** boundless **approach to** deciding well involves building superrational frameworks for supporting our current beliefs. Missing from this **approach as described to this point** is a means of understanding constraints on our ability to receive and process information

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

unconsciously. To decide well, we need to consider these constraints. Both as humans and as people living with humans, we need to consider the human condition.”

Chapter 8, second to last paragraph

Changed “minds (psyches/souls)” to “minds” in the first sentence.

Chapter 8, last paragraph, first sentence

“Deciding well calls for us to reason well.”

was deleted.

Appendix A, introduction, second paragraph, last sentence

“From the view of the modern IQ test designers, the third object in the top row appears to be an *anomaly*, an object that conflicts with their current beliefs about the world.”

was deleted.

Appendix A, introduction, fourth paragraph

Changed “an octagon that has a vertex on the rightmost point of its circumscribing circle” to “a “vertex-right-aligned” octagon” in the last sentence.

Appendix A, introduction, sixth paragraph

Changed “appear to us” to “appear” in the first sentence.

Appendix A, introduction, ninth paragraph

Changed “an octagon that has a vertex on the rightmost point of its circumscribing circle” to “a vertex-right-aligned octagon” in the fourth sentence.

Appendix A, Indispensable Forms, last paragraph, last sentence

“We presume that the most useful tools to us in deciding well are the most likely to be indispensable to deciding well.”

was changed to:

“We presume that the most useful tools are the most likely to be indispensable.”

Appendix C, On the Philosophy Wall, last paragraph, footnote

Changed “theology wall” to “other three walls” in the last sentence.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, A Boundless View of the Whole, fourth paragraph, first two sentences

Changed “both mindsets at work in the gestures” to “these two mindsets personified in the figures” in the first sentence.

Changed “both at work” to “them” in the second sentence.

Changes in Version 2013.10.24

Acknowledgments, last paragraph

Changed “Most of them” to “The best” in the second sentence.

Added the new last sentence:

“Such a boundless approach can provide us with a way forward that rings truer with all that we currently know about deciding well.”

Chapter 1, Boundless Models of Deciding Well, first paragraph

Changed “can” to “tend to” in the second sentence.

Changed “(given a fixed stock of knowledge)” to “using a fixed stock of knowledge” in the last sentence.

Chapter 1, Boundless Models of Deciding Well, last paragraph

Changed “these boundless ends” to “boundless ends” in the first sentence.

Chapter 2, Trade, last paragraph, last sentence

“These structures include both geographical clusters, such as Silicon Valley, and entire sectors, notably the financial sector.”

was changed to:

“These structures currently include geographical clusters, such as Silicon Valley and the City of London. In time, they will include entire sectors.”

Chapter 4, Academic Fields, fourth paragraph

Changed “aim at explaining” to “seek to explain” in the first sentence.

Chapter 4, Academic Fields, fifth paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “Truth” to “truth” in the last sentence.

Chapter 6, *Pursuing Eternal Oneness*, second paragraph

Changed “a life” to “purgatory, a life” in the last sentence.

Chapter 7, *The Scope of Game Theory*, first paragraph, ninth and tenth sentences

“He told them that defectors would always receive at least as much money as everyone else (hence would never be a “loser”), but that they should aim at getting as much money as possible rather than being a “winner.” He also told them that the ideal situation for any one player would be to be the single defector, in which case he or she would make \$95 (19 x \$5) and each of the others would make \$54 (18 x \$3 + 1 x \$0).”

were changed to:

“He also told them that they should aim at getting as much money as possible rather than being a “winner.””

Chapter 8, introduction, seventh paragraph

Changed “living” to “living and working” in the last sentence.

Changes in Version 2013.10.28

Chapter 1, *The EOQ/RTS Example*, fifth paragraph

Changed “pricing” to “evaluating” in the fourth sentence.

Chapter 1, *The Truth and Wisdom*, fourth paragraph

Changed “the Europeans” to “Europeans” in all (4 case-insensitive occurrences).

Chapter 4, *Modern Policy Mistakes*, fourth paragraph, fifth through seventh sentences

“In deciding imperfectly, we create turbulence in the flow of economic resources. If this were all we did in deciding imperfectly, the amount of turbulence would tend toward a “natural” level.⁹ We also embed mistakes into, or reinforce mistakes in, our networks of knowledge-in-use.”

was changed to:

“Deciding imperfectly creates turbulence in the flow of economic resources. If this were all deciding imperfectly did, the amount of turbulence would tend toward a “natural” level.⁹”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

However, it also embeds mistakes into, or reinforces mistakes in, our networks of knowledge-in-use.”

Appendix A, The Big Picture, last paragraph

Italicized the first sentence:

“Now imagine that instead of three objects in the first row, the problem on the billboard had only the first two objects.”

Appendix C, On the Philosophy Wall, first paragraph

Reversed the two images.

“In pointing up while walking forward, Plato tells us to pursue the boundless ends of poetry, philosophy, jurisprudence, and theology. In holding his hand parallel to the ground while standing flat-footed, Aristotle tells us to know the world as it currently is. The octagon is part of a symbol of the two-part reason of Plato and Aristotle:”

was changed to:

“This octagon is part of a symbol of the two-part reason of Plato and Aristotle. In pointing up to the ceiling while walking forward, Plato tells us to pursue the boundless ends of poetry, philosophy, jurisprudence, and theology. In holding his hand parallel to the ground while standing flat-footed, Aristotle tells us to rationalize the current state of the world:”

Appendix C, On the Philosophy Wall, second paragraph

Changed “the repetitive use of this symbol” to “the repetitive use of this symbol of two-part reason” in the first sentence.

Appendix C, On the Philosophy Wall, last paragraph

Changed “reason” to “refining the reason of Plato and Aristotle” in the fifth sentence.

Appendix C, On the Poetry Wall, last paragraph, end

Added the sentence:

“As such, it is also a strategy for addressing the problem of calculating the value of π ever more wisely, hence of squaring a circle ever more wisely.”

Appendix C, A Boundless View of the Whole, last paragraph

Changed “church on earth” to “church on earth as currently understood by these church doctors” in the third sentence.

Changes in Version 2013.10.31

Acknowledgments, last paragraph, last sentence

“Such a boundless approach can provide us with a way forward that rings truer with all that we currently know about deciding well.”

was deleted.

Chapter 1, Boundless Models of Deciding Well, third paragraph, footnote

“¹⁰ In accordance with the reasonable concept of completeness put forth in the last chapter, we may also call the timeless end of deciding well a *reasonably* boundless end.”

was changed to:

“¹⁰ More accurately, we may think of this timeless end as a *reasonably* boundless end.”

Chapter 5, *The Explicit Experiment*, last paragraph

Changed “theistic religion, this affirms a theistic” to “a Creator that we know by more than studying nature, this affirms a divinely revealed” in the fifth sentence.

Changed “the pursuit of social justice” to “social justice” and “pursuit of theistic justice” to “divinely revealed truth about justice” in the last sentence.

Changed “theistical justice” to “divinely revealed truth about justice” in the second sentence of the footnote.

Changed “corruption” to “government corruption” in the third sentence of the footnote.

Chapter 8, Reasoning Well, last paragraph, last sentence

“Pursuing this boundless end helps us use the normally unconscious parts of our minds ever more wisely.”

was changed to:

“So conceived, Eudaemonia is a boundless factor of deciding well.”

“Governing our minds well helps us use the normally unconscious parts of our minds well. In truly progressive cultures, cultures in which good people produce good products and good products produce good people, we share the best means of governing our minds well. Private and public means co-evolve.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix A, introduction, fifth paragraph

Changed “**imagining** a scheme” to “**devising** a scheme” in the last sentence.

Appendix C, The Forgotten Role of Octagons, first paragraph

Changed “**Greek** cross” to “cross” in the sixth sentence.

Appendix C, The Forgotten Role of Octagons, last paragraph

Merged the last paragraph with the first paragraph.

Appendix C, The Forgotten Role of Octagons, new last paragraph

Changed “**the** oculus **at the center of the ceiling**” to “**this octagonal** oculus” in the first sentence.

Appendix C, *On the Jurisprudence Wall*, first paragraph

Changed “Pope Gregory IX sits on a” to “Pope Gregory IX sits on **what appears to be** a” in the third sentence.

Changed “ever more wisely:” to “ever more wisely **at the cost of becoming more self-aware:**” in the last sentence.

Appendix C, *On the Poetry Wall*, last paragraph, last sentence

“As such, it is also a strategy for addressing the problem of calculating the value of π ever more wisely, hence of squaring a circle ever more wisely.”

was reduced to a footnote.

Appendix C, A Boundless View of the Whole, first paragraph

Changed “ceiling **beyond the oculus**” to “ceiling” in the third sentence.

Appendix C, A Boundless View of the Whole, first paragraph, footnote

“**9 This is not to say that the forms contained within these rectilinear borders are completely rational. These forms represent models of the world. All models of the world include claims that we cannot prove formally.**”

was deleted.

Appendix C, *The Role of Julius II*, first paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “square-on-octagon platform” to “**apparent** square-on-octagon platform” in the eighth sentence.

Changed “**program**” to “**mission**” in the last sentence.

Appendix C, *The Role of Julius II*, last two paragraphs

“Reinforcing the claim that Julius II ought to be an enlightened jurist **are two subtle references to Julius II in the ceiling. The more prominent consists in the twelve wedge-shaped images of his family coat of arms, three around each of the four squares. The variety of sizes and shapes of these twelve images suggests that they are not major parts of the ceiling:**

[image of Urania corner of the ceiling]

We can easily imagine that the gold lotus-blossom roundels and bands around the oculus, four circles, four squares, and arched walls are the load-bearing parts of the ceiling structure. Adding strength and resilience to this structure are twelve wedge and four hourglass fillers. Holding these “worldly” fillers in place are narrow bands decorated with the heraldic colors of Julius II. The decoration on these bands is an unknotted version of the altar form.

“**The less prominent reference** is the name Julius in the arch that spans the wall dedicated to jurisprudence. What makes this symbol especially telling is its location to the left and below the center of the arch as we face the wall:

[image of jurisprudence arches]

By putting this symbol below the center of this arch rather than at the center of the oculus, the authors of this room would have Julius II aspire to become an ever better jurist rather than ever more Christlike.”

“⁹ We can see a reason for why the authors would have Julius II judge rather than create and judge ecclesiastical forms in the decorative bands of the imaginary load-bearing structure of the ceiling. As we enhance our talent for recognizing forms, we develop the ability to form repetitive images in our mind’s eye. The authors would have us believe that this aspect of opening our unconscious minds to consciousness occurs in three stages. In the first stage, we form geometric images, such as those we see in the rectilinear bottom band. In the second, we form natural images, such as those in the middle floral band. In the third, we form images from our unconscious, such as those in the golden bands filled with grotesque images that form most of the imaginary ceiling structure. A great danger in developing this talent/genius is confusing forms that ring true with what we currently believe with forms that are truly useful in deciding well.”

were changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Reinforcing the claim that Julius II ought to be an enlightened jurist is the name Julius in the arch that spans the wall dedicated to jurisprudence.⁹ What makes this symbol especially telling is its location to the left and below the center of the arch as we face the wall:

[image of jurisprudence arches]

By putting this symbol below the center of this arch rather than at the center of the oculus, the authors of this room would have Julius II aspire to become an ever better jurist rather than ever more Christlike.¹⁰”

⁹ Also reinforcing the claim that Julius II ought to be an enlightened jurist are the twelve wedge-shaped images of his family coat of arms, three around each of the four squares. The variety of sizes and shapes of these twelve images suggests that they are not major parts of the ceiling. We can easily imagine that the gold lotus-blossom roundels and bands around the oculus, four circles, four squares, and arched walls are the load-bearing parts of the ceiling structure. Adding strength and resilience to this structure are twelve wedge and four hourglass fillers. Holding these “worldly” fillers in place are narrow bands decorated with the heraldic colors of Julius II. The decoration on these bands is an unknotted version of the altar form.”

¹⁰ We can see a reason for why the authors would have Julius II judge rather than create and judge ecclesiastical forms in the decorative bands of the imaginary load-bearing structure of the ceiling. As we enhance our talent for recognizing forms, we develop the ability to form repetitive images in our mind’s eye. The authors would have us believe that this aspect of opening our unconscious minds to consciousness occurs in three stages. In the first stage, we form geometric images, such as those we see in the rectilinear bottom band. In the second, we form natural images, such as those in the middle floral band. In the third, we form images from our unconscious, such as those in the golden bands filled with grotesque images that form most of the imaginary ceiling structure. A great danger in developing this talent/genius is confusing forms that ring true with what we currently believe with forms that are truly useful in deciding well.”

Changes in Version 2013.11.01

Chapter 1, *Ever More Complete Multiple-Frame Models*, fourth paragraph, end

Added the footnote

¹⁷ Consider the completeness of W. V. O. Quine’s holistic approach to believing well: Our concept of completeness concerns the supply side of the market for tools for helping us believe well. We find conflicts in our belief systems. *The philosophy of science is philosophy enough*. Now consider the completeness of the boundless approach to deciding well: Our concept of completeness concerns the supply and demand sides of the market for tools for helping us decide well. We find holes as well as conflicts in our belief systems, e.g., we see that Quine’s philosophy is too narrow (Morton White’s problem) and that it lacks a normative

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

element (Jaegwon Kim's problem). *The science of science is philosophy enough if and only if it includes pursuing all boundless factors of deciding well.*"

Chapter 3, *Public Entropy*, last paragraph

Changed "begin **using this concept**" to "begin" in the last sentence.

Chapter 4, *Modern Policy Mistakes*, third paragraph

Changed "**impossibly** hard" to "**very** hard" in the last sentence.

Chapter 5, introduction, third paragraph

Changed "**Governments are**" to "**We may think of governments as**" in the first sentence.

Chapter 5, *The Explicit Experiment*, third paragraph, second sentence

Added the footnote

"⁶ This refers to Article 1, Section 2, Paragraph 3 of the United States Constitution: "Representatives and direct Taxes shall be apportioned among the several States which may be included within this Union, according to their respective Numbers, which shall be determined by adding to the whole Number of free Persons, including those bound to Service for a Term of Years, and excluding Indians not taxed, three fifths of all other Persons." This clause effectively increased the political clout of southern states in the federal government. Arguably, it not only allowed slavery to expand into new territories, but also allowed the removal of most Indians from the south."

Changes in Version 2013.11.04

Chapter 1, *Steps for Building Multiple-Frame Models*, second paragraph, footnote

Changed "can, **given our current ignorance of not only the current *quantum* state of the world but also all future *quantum* states of the world**" to "can *given our current ignorance of not only the current state of the world but also all possible future states of the world*" in the first sentence.

Chapter 4, *Refining Finding Problems to Solve*, second paragraph

Changed "**and**" to "**or**" in the second sentence.

Chapter 6, *Mystical Oneness*, second paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “others, **which encourages us to help those who suffer**” to “others” in the second sentence.

Changed “world **that we are trying to leave behind**” to “world” in the third sentence.

Chapter 7, OODA Loop Analysis, third paragraph

Changed “nations **in order to compete well**” to “nations” in the last sentence.

Chapter 8, last paragraph

Changed “means” to “means **of governing our minds well**” in the last sentence.

Appendix A, The Big Picture, second to last paragraph

Changed “**will**” to “**ought to**” in the second sentence of the block quote.

Appendix C, On the Theology Wall, first paragraph

Changed “**near** the center” to “**just above** the center” in the first sentence.

Appendix C, On the Poetry Wall, first paragraph

Changed “**Near** the center” to “**Just above** the center” in the second sentence.

Appendix C, A Boundless View of the Whole, third paragraph

Changed “**just below** the center” to “**at** the center” in all (2 occurrences).

Changes in Version 2013.11.05

Chapter 1, Boundless Models of Deciding Well, second paragraph, footnote

Changed “boundless end” to “boundless end: **encountering unimagined problems (“unknown unknowns”) provides us with opportunities to make major improvements to our models**” in the first sentence.

Chapter 8, second to last paragraph

Changed “**defined** reasoning well **as** governing our minds well” to “**claimed that** reasoning well **was a matter of** governing our minds well” in the first sentence.

Changed “**people**” to “**humans**” in the third sentence of the first footnote.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “citizens” to “humans” in the sixth sentence of the first footnote.

Chapter 8, last paragraph

“Governing our minds well helps us use the normally unconscious parts of our minds well. In truly progressive cultures, cultures in which good people produce good products and good products produce good people, we share the best means of governing our minds well. Private and public means of governing our minds well co-evolve.”

was deleted.

Appendix C, introduction, last paragraph, footnote, end

Added the sentence:

“The role of octagons, the two-part reason of Plato and Aristotle, the conflict between sophistic and philosophic art, and the meaning of the room as a whole did not.”

Appendix C, *The Role of Julius II*, first paragraph

Changed “mission of the church, which is to bring ever more” to “mission of bringing ever more knowledge of” in the last sentence.

Appendix C, *The Role of Julius II*, last paragraph, first footnote

“Also reinforcing the claim that Julius II ought to be an enlightened jurist are the twelve wedge-shaped images of his family coat of arms, three around each of the four squares. The variety of sizes and shapes of these twelve images suggests that they are not major parts of the ceiling. We can easily imagine that the gold lotus-blossom roundels and bands around the oculus, four circles, four squares, and arched walls are the load-bearing parts of the ceiling structure. Adding strength and resilience to this structure are twelve wedge and four hourglass fillers. Holding these “worldly” fillers in place are narrow bands decorated with the heraldic colors of Julius II. The decoration on these bands is an unknotted version of the altar form.”

was deleted.

Changes in Version 2013.11.19

Chapter 8, last paragraph, last footnote

Changed “Following this literal meaning” to “Accordingly” in the third sentence.

Appendix B, *Inducing the Creation of Knowledge*, last paragraph, last sentence

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Too many yellow lights or a single red light signals too much stress to induce knowledge well.”

was changed to:

“Too many yellow lights signals too much stress to induce knowledge well. A red light signals a problem that calls for immediate attention.”

Appendix C, Black Clouds in Theology, second paragraph

Changed “a thousand years before Raphael painted this scene” to “fifteen hundred years ago” in the last sentence.

Appendix C, Apollo and Marsyas, title

Deleted the title, thereby combining this subsection with the the preceding subsection.

Appendix C, The Role of Julius, last paragraph, end

Added the subsection:

“*Imagining the Designer*”

Imagine that you were an early sixteenth-century Roman cleric. Like most of your colleagues, you received a scholastic education. For reasons not completely clear to you at the time, you were drawn to Florentine Neoplatonism and Hermeticism. In communing with the members of this movement, rather than blazing a trail on your own, most of the symptoms of your break with medieval reality were more curious than sickening. Early in this process you began to see repeating forms in your mind’s eye. These images began with geometric forms, progressed to natural forms, and ended with surreal forms. Years of contemplating forms in geometry, nature, and your own unconscious gave you a talent for understanding symbols. This talent allowed you to excel in public relations. It also gave you an eye for true art.

“Pope Julius II so respected your talent that he assigned you the task of managing the decoration of his private library. The architectural form of this library was a mess. Not only was the room not square, not even its corners were square. As you contemplated how to bring order to this mess, you came to see your task as depicting a plan for bringing ever more knowledge of Holy Wisdom into the world.

“Your first step in depicting this strategy was choosing a symbol for the ideal frame for deciding well. You recognized that such a frame must be rational on the transcendent level: the transcendent ends of philosophy, poetry, theology, and jurisprudence are all facets of the transcendent end of deciding well. It must also be rational on the timeless level: pursuing any one boundless factor of deciding well calls for pursuing all of them. Further, you recognized that we lack the knowledge to pursue these boundless factors rationally.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“During one of your insightful reveries you imagined that an octagonal oculus captured the essence of transcendent and timeless rationality. You also imagined that the symbol of an ideal frame for deciding well must include not only this oculus but also the structure that supports it. Projecting such an ideal structure onto the imperfect ceiling of the library would distort it. The resulting asymmetries would symbolize our ignorance of how best to decide well. This insight struck you with the force of divine revelation. Accordingly, you chose to decorate this structure with repeating patterns from your early reveries.⁹ For the octagon, circles, squares, and tops of the arches, you used surreal forms on a gold field. For the parts of the arches that frame the wall frescoes, you used a gold geometric form on a blue field. In the gap between the surreal and geometric bands on the two shorter walls, you used a gold floral pattern on a blue field.

“To complete the temporal parts of the ceiling, you filled the four hourglass-shaped spaces with eight ancient Greek and Roman images that represent earth, air, wind, and water. You then filled the twelve distorted spaces between the circles, squares, and arches with the heraldry of Julius II. Finally, you cemented these twenty symbols in place with an unknotted version of the Gordian knot pattern.

“In packing so much symbolism into the ceiling, you effectively hid its meaning from medieval consciousness. To hide it more, and perhaps to disseminate it better subliminally, you hired the best young artist you could find, Raffaello Sanzio da Urbino (Raphael), to finish the work. He so surpassed your expectations that very few people now know of you, much less of your role in this great work.”

“⁹ You also chose the image of what appears to be a golden lotus blossom in a roundel to join the parts that form this ideal structure. Arguably, these roundels are symbols of divinely-inspired beliefs. For you, the question of whether such beliefs exist was never an issue. From the boundless view, the question of whether they exist is a minor issue. The major issue is whether our beliefs help us decide well.”

Changes in Version 2013.11.22

Chapter 1, *Temporal and Normative Frames*, second paragraph

Added the footnote:

“⁶ The distinction between normative and temporal is purposely jarring. As we shall see, it relates to the two-part reason of Plato and Aristotle.”

Chapter 1, *Seeing Through Apparent Miracles*, third paragraph

Changed “a timeless frame of deciding well, a frame” to “a frame” in the last sentence.

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “timeless view” to “view” in the fourth sentence.

Entire document

Changed “timeless” to “normative” in all (37 occurrences).

Chapter 4, *Self-Similarity*, first paragraph, footnote, last two sentences

“In philosophical terms, (theory-laden) facts underdetermine theories that we use to explain causation. We ought to choose the explanation that best helps us decide well.”

were changed to:

“We ought to choose the theory that best helps us decide well. In philosophical terms, theory-laden facts underdetermine theories that we use to explain causation. In choosing between theories that explain equally well within their own frame, we ought to choose the theory that rings truest with all that we currently know about deciding well.”

Chapter 5, Good Policies, first paragraph, footnote

Changed “inventing” to “inventing or discovering” in the last sentence.

Added the sentence: “For more about the distinction between inventing and discovering such forms, see Appendix A (The Science of Forms).”

Appendix B, *Folding in Processes*, eighth paragraph

Changed “including” to “which includes” in the last sentence.

Appendix C, *On the Philosophy Wall*, first paragraph, second sentence

“This octagon is part of a symbol of the two-part reason of Plato and Aristotle.”

was moved ahead of the first image in this subsection. Changed punctuation in first and second sentences.

Appendix C, *On the Poetry Wall*, first paragraph

Changed “Holy Wisdom” to “knowledge of Holy Wisdom” in the last sentence.

Changed “well ever more wisely” to “ever more wisely” in the first sentence of the footnote.

Appendix C, *The Role of Julius II*, first paragraph, last sentence

“In managing this conflict, Julius supports neither side, but rather the mission of bringing ever more knowledge of Holy Wisdom into the world.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

was deleted.

Appendix C, *The Role of Julius II*, first paragraph, new last two sentences

“To manage this conflict well, Julius II needs to see the bigger picture. This rings true with the image of Julius as Gregory IX on the wall dedicated to jurisprudence, where the apparent square-on-octagon platform on which he sits raises him above those around him.”

were promoted to a new paragraph.

Changes in Version 2013.11.26

Preface, sixth paragraph

Changed “strategy” to “**grand** strategy” in the second sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, last paragraph, footnote, last sentence

“Following this line of thinking, the normative end of computing π well is a complex structure of knowledge rather than a simple number.”

was changed to:

“*Deciding well is the boundlessly pragmatic means of squaring the circle.*”

Appendix A, *Indispensable Forms*, first paragraph, footnote

Changed “regular/irregular” to “regular **versus** irregular” and “no-transform/**yes**-transform” to “no-transform **versus** transform” in the last sentence.

Appendix C, first paragraph

Added a comma to the Sagan movie quote.

Appendix C, *The Forgotten Role of Octagons*, first paragraph

Changed “**Equally**” to “**As**” in the last sentence.

Appendix C, *On the Poetry Wall*, first paragraph, footnote

“⁷ As such, it is also a strategy for addressing the problem of calculating the value of π ever more wisely, hence of squaring a circle ever more wisely.”

was deleted.

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, *Imagining the Designer*, fourth paragraph

Changed “a blue field” to “an azure field” in the last two sentences (2 occurrences).

Changes in Version 2013.11.30

Chapter 6, *Mystical Oneness*, second paragraph, sixth and seventh sentences

“Ethical mysticism calls for us to feel the suffering of others. Magical mysticism calls for us to deny the reality of the world.”

were changed to:

“In pursuing ethical mysticism, we feel the suffering of others. In pursuing magical mysticism, we deny the reality of the world.”

Appendix C, *The Forgotten Role of Octagons*, third paragraph, last sentence

“This scene depicts a female representation of Wisdom (*Urania*, the Greek muse of astronomy) moving the mysterious element that keeps the heavens in motion (*celestial aether*).”

was changed to:

“This scene depicts a female representation of Wisdom (*Urania*, the Greek muse of astronomy) moving the mysterious element that sets or keeps the heavens in motion (*celestial aether*). On a deeper level, it depicts a belief about the relation between mind and matter: mind sets or keeps matter in motion.”

Appendix C, *On the Philosophy Wall*, end

Added the sentence:

“From the boundless view, both are symbols of squaring the circle: the first is philosophical and the second sophist.”

Appendix C, *Imagining the Designer*, second paragraph, sixth and seventh sentences

“Projecting such an ideal structure onto the imperfect ceiling of the library would distort it.”

were changed to:

“Mapping the normative parts of this ideal structure onto the imperfect ceiling of the library would greatly distort the temporal parts.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, *Imagining the Designer*, last paragraph

Changed “**effectively** hid” to “hid” in the second sentence.

Changes in Version 2013.12.07

Acknowledgments, fifth paragraph

Changed “our success to our ability to **decide (act and learn)**” to “**much of** our success to our ability to learn” in the third sentence.

Preface, tenth paragraph

Changed “**boundless** complements” to “**decision science** complements” in the first sentence.

Preface, last paragraph

Changed “**boundless** approach” to “approach” in the last sentence.

Chapter 1, Boundless Models of Deciding Well, first paragraph

Changed “**allocating resources** well **using a fixed stock of knowledge** does not include **learning** well” back to “**playing basketball** well does not include **swimming** well” in the last sentence.

Chapter 2, introduction, last paragraph, last two sentences

“This chapter offers **boundless** complements to the modern economic concepts of wealth, consumption, trade, production, taxation, and profit, **which we may use to become more effective in deciding well**. The decision science concepts help us become more effective and the modern economic concepts help us become more efficient.”

were changed to:

“This chapter offers **decision science** complements to the modern economic concepts of wealth, consumption, trade, production, taxation, and profit. **The decision science concepts help us explain the world and the modern economic concepts help us predict it. The decision science concepts help us become more effective and the modern economic concepts help us become more efficient.**”

Chapter 4, *Self-Similarity*, first paragraph, footnote, last four sentences

“**More than one explanation may fit what we can sense. We ought to choose the theory that best helps us decide well. In philosophic terms,** theory-laden facts underdetermine theories

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

that we use to explain causation. In choosing between theories that explain equally well within their own frame, we ought to choose the theory that rings truest with all that we currently know about deciding well.”

were changed to:

“Theory-laden facts underdetermine theories that we use to explain causation. In choosing between theories that explain equally well within their own frame, we ought to choose the theory that rings truest with all that we currently know about deciding well. **In other words, more than one explanation may fit what we can sense. We ought to choose the theory that best helps us decide well.**”

Chapter 5, *The Explicit Experiment*, last paragraph

Changed “**divinely** revealed truth” to “**claimed** revealed truth” in the last sentence.

Chapter 6, *Mystical Oneness*, first paragraph, last sentence

“Satisfying this need **allows us to** experience awe, rapture, and bliss.”

was changed to:

“**In** satisfying this need, **we** experience awe, rapture, and bliss.”

Chapter 6, *Worldly Benefits of Detachment*, last paragraph

Changed “mythic” to “**now** mythic” in the second sentence.

Chapter 7, *OODA Loop Analysis*, second paragraph

Changed “**Further, it** gave them **more** time” to “**It also** gave them time” in the last sentence.

Chapter 7, *OODA Loop Analysis*, third paragraph

“Boyd later used his OODA loop model to address the normative problem of living well. This called for defining **a normative end of competing well**. Boyd defined his concept of the normative end of competing well to be improving our fitness, as an organic whole, to shape and cope with an ever-changing environment. **It also called for adding a learning function to the basic cycle. Boyd expanded the orientation element to incorporate a learning function that includes not only our experiences but also our genetic heritage, cultural traditions, and tools for analyzing and synthesizing. Finally, it called for defining our relations with each other. Boyd** argued that we form groups on all scales up to and including nations.”

was changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“Boyd later used his OODA loop model to address the normative problem of living well. This called for defining **what it is to win, for adding a learning function to his OODA loop, and for defining our relations with each other**. Boyd defined “winning” to be improving our fitness, as an organic whole, to shape and cope with an ever-changing environment; **added a learning function to the orientation step; and** argued that we form groups **for competing well** on all scales up to and including nations.”

Chapter 7, *The Grandest Possible Strategy*, footnote

Added the date “**on February 27, 1860**” to the first sentence.

Chapter 7, *The Scope of Biological Evolution*, end

Added the following footnote:

“¹⁸ **The boundless approach to deciding well uses a boundless heuristic algorithm. Using a metaphor made famous by philosopher Daniel Dennett (*Darwin’s Dangerous Idea: Evolution and the Meanings of Life*, New York, Simon & Schuster, 1995), this algorithm is an infinitely large crane that contains countless hooks for pulling ourselves higher. At any given time some of these hooks appear to us to be in line with the apex of the crane and others do not. Further, some of these hooks appear to be supported by the crane structure and others do not. We ought to be open to using whatever hooks best help us decide well. We also ought to take care not to let our passion for Wholeness overcome our reason.**”

Appendix C, *On the Philosophy Wall*, last three sentences

“The first is a boundless symbol of renaissance, of endlessly refining everyday thinking. The second is a modern symbol of the Renaissance, of a refinement of the knowledge of first-century BCE Roman engineer Vitruvius. **From the boundless view, both are symbols of squaring the circle: the first is philosophical and the second sophist.**”

were changed to:

“**From the boundless view, both are symbols of renaissance.** The first is a boundless symbol of renaissance, of endlessly refining everyday thinking. The second is a modern symbol of the Renaissance, of a refinement of the knowledge of first-century BCE Roman engineer Vitruvius. **Both are also symbols of squaring the circle. The first relates to the philosophy of Plato and Aristotle. The second relates to the sophistry of Protagoras and Vitruvius.**”

Appendix C, *On the Jurisprudence Wall*, first paragraph

Changed “more self-aware” to “**ever** more self-aware” in the last sentence.

Appendix C, *Black Clouds in Theology*, last paragraph

Changed “philosophical” to “philosophic” in all (2 occurrences).

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, A Boundless View of the Whole, first paragraph

Changed “forms” to “**internal forms**” in the last sentence.

Appendix C, *Imagining the Designer*, first paragraph, last two sentences

“This talent **allowed you to excel in public relations. It also** gave you an eye for true art.”

were changed to:

“This talent gave you an eye for true art.”

Appendix C, *Imagining the Designer*, third paragraph

Changed “**boundless factor of deciding well**” to “**of these normative ends**” in the third sentence.

Changed “**boundless factors**” to “**normative ends**” in the last sentence.

Appendix C, *Imagining the Designer*, last paragraph

“**In packing so much symbolism into the ceiling, you hid its meaning from medieval consciousness. To hide it more, and perhaps to disseminate it better subliminally,** you hired the best young artist you could find, Raffaello Sanzio da Urbino (Raphael), to **finish the work**. He so surpassed your expectations that very few people now know of you, much less of your role in this great work.”

was changed to:

“**After completing the essential structure of the ceiling** you hired the best young artist you could find, Raffaello Sanzio da Urbino (Raphael), to **complete the decoration of the room**. He so surpassed your expectations that very few people now know of you, much less of your role in this great work.”

Changes in Version 2013.12.10

Acknowledgments, third paragraph, second sentence

“**For a third of a century Fred was extremely generous with his most precious resource, his time.**”

was deleted.

Chapter 1, *Temporal and Normative Frames*, second paragraph, footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“*The distinction between normative and temporal is purposely jarring. As we shall see, it relates to the two-part reason of Plato and Aristotle.*”

was deleted.

Chapter 1, Boundless Models of Deciding Well, last paragraph

Changed “*Wisdom and the boundless end of believing well the Truth*” to “*Wisdom*” in the second sentence.

Chapter 1, Ever More Complete Multiple-Frame Models, last paragraph

Changed “view of this *complex* approach” to “*complex* view of this approach” in the last sentence.

Chapter 2, introduction, first paragraph

Changed “boundless view *to deciding well*” to “boundless view” in the sentence.

Changed “*boundless* tools” to “*normative* tools” in the last two sentences (2 occurrences).

Chapter 2, introduction, last paragraph

“Modern economics² provides us with temporal concepts, which we may use to *become more efficient in solving given problems*. This chapter offers *decision science* complements to the modern economic concepts of wealth, consumption, trade, production, taxation, and profit. *The decision science concepts help us explain the world and the modern economic concepts help us predict it. The decision science concepts help us become more effective and the modern economic concepts help us become more efficient.*”

was changed to:

“Modern economics² provides us with temporal concepts, which we may use to *know better the world as we find it. In contrast, the boundless approach to deciding well also provides us with normative concepts, which we may use to help know better the world as we may form it.* This chapter offers *normative* complements to the modern economic concepts of wealth, consumption, trade, production, taxation, and profit.”

Chapter 2, Wealth, first paragraph

Changed “the *boundless* view” to “the *normative* view of *boundless decision science*” in the last sentence.

Chapter 2, Wealth, last paragraph, last three sentences

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“From a **modern** view of science, the relevant question is which story best predicts how we will act. From the **boundless** view, it is which story best helps us **decide well**. *In explaining the world, we seek to know the world not as we find it, but rather as we may form it.*”

were changed to:

“From **the temporal** view of **modern economic** science, the relevant question is which story best predicts how we will act. From the **normative** view **of boundless decision science**, it is which story best helps us **find problems to solve**.”

Chapter 2, Consumption, first paragraph

Changed “the **boundless** view” to “the **normative** view **of boundless decision science**” in the third sentence.

Chapter 2, *Tools for Pursuing Pleasure and Joy*, last paragraph

Changed “the **boundless** view” to “the **normative** view **of boundless decision science**” in the seventh sentence.

Chapter 2, Trade, last paragraph

Changed “the **boundless** view” to “the **normative** view **of boundless decision science**” in the second sentence.

Chapter 2, Taxation, first paragraph

Changed “the **boundless** view” to “the **normative** view **of boundless decision science**” in the fifth sentence.

Chapter 2, Profit, first paragraph

Changed “the **boundless** view” to “the **normative** view **of boundless decision science**” in the third sentence.

Chapter 4, title and introduction

Replaced one sentence Einstein subtitle quote with the full quote from the first paragraph. Merged the truncated first paragraph with the second paragraph of the introduction.

Chapter 4, *Self-Similarity*, last paragraph

Changed “**cultures, and**” to “**and**” in the last sentence.

Chapter 6, Schweitzer quotes (subtitle and *Mystical Oneness* subsection)

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Added footnote to subtitle quote in the HTML version. Deleted the first of the three paragraphs from the subsection quote, which was the same as the quote in the subtitle.

Appendix C, *On the Poetry Wall*, first paragraph

Changed “the boundless ends of poetry, philosophy, jurisprudence, and theology” to “four boundless factors of deciding well” in the last sentence.

Changes in Version 2013.12.12

Preface, eighth paragraph

Changed “currently know” to “currently believe we know” in the last sentence.

Chapter 1, *Temporal and Normative Ends*, first paragraph, third sentence

“Because events have bounds in time, we may call these *temporal ends*.”

was changed to:

“We may call these *temporally-bounded ends* *temporal ends*.”

Chapter 1, *Temporal and Normative Ends*, first paragraph, third sentence

“Because processes have no bounds in time, we may call these *normative ends*.”

was changed to:

“We may call these *temporally-boundless ends* *normative ends*.”

Chapter 3, *Public Order*, last paragraph

“Policymakers who take the boundless approach promote a climate that helps people decide well. This gives rise to a *boundless* concept of public order that concerns how well people decide. From this view, increasing *boundless* public order is always good. Increasing *temporal* public order is good when there is too little of it and bad when there is too much of it. Too little *temporal* order threatens the networks of knowledge-in-use that bind us together. Too much *temporal* order reduces the need for people to decide well, which, over time, reduces the ability of people to decide well.”

was changed to:

“Policymakers who take the boundless approach promote a climate that helps people decide well. This gives rise to a *normative* concept of public order that concerns how well people

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

decide **across the whole of space-time**. We may call this temporally-boundless normative concept *boundless order*. We may also call its temporally-bounded counterpart *current order*. From this view, increasing **boundless** public order is always good. Increasing **current** public order is good when there is too little of it and bad when there is too much of it. Too little **current** order threatens the networks of knowledge-in-use that bind us together. Too much **current** order reduces the need for people to decide well, which, over time, reduces the ability of people to decide well.”

Chapter 5, *Pursue Boundless, not Current Order*, first paragraph

Changed “boundless order” to “boundless **public** order” in the first sentence.

Changed “boundless order” to “boundless **public** order” in the second sentence.

Appendix C, *Imagining the Designer*, third paragraph

Changed “**the transcendent end of deciding well**” to “**Holy Wisdom**” in the first sentence.

Changed “**normative** ends” to “ends” in the last sentence.

Appendix C, *Imagining the Designer*, fifth paragraph

Changed “**ancient Greek and Roman** images” to “**classical** images” in the first sentence.

Changed “cemented” to “**metaphorically** cemented” in the last sentence.

Changes in Version 2013.12.14

Chapter 1, *Temporal and Normative Frames*, title

Changed title to “*Temporal and Normative Models*.”

Chapter 1, *Temporal and Normative Models*, first two paragraphs

“Addressing the problem of choosing frames well by deciding well calls for understanding what makes frames useful in deciding well. Useful frames are frames that help us achieve our ends. Some ends concern events. We may call these temporally-bounded ends *temporal ends*. Winning a basketball game is a temporal end. **We may call frames that help us achieve temporal ends *temporal frames***.

“Other ends concern processes. We may call these temporally-boundless ends *normative ends*. Playing basketball well is a normative end. We may call frames that help us achieve normative ends *normative frames*.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

were changed to:

“Addressing the problem of choosing frames well by deciding well calls for understanding what makes frames useful in deciding well. Useful frames are frames that help us achieve our ends. Some ends concern events. We may call these temporally-bounded ends *temporal ends*. Winning a basketball game is a temporal end. Other ends concern processes. We may call these temporally-boundless ends *normative ends*. Playing basketball well is a normative end. We may call **frames that help us achieve temporal ends *temporal frames* and frames that help us achieve normative ends *normative frames*.**”

Chapter 1, *Temporal and Normative Models*, last two paragraphs

Merged these two paragraphs.

Chapter 1, *The EOQ/RTS Example*, first two paragraphs

“We refine frames by removing waste from them. Sources of waste include terms that refer to more than one concept and pairs of concepts defined in terms of each other. We may call structures useful in reducing our sensations to concepts from which we have removed all waste that it is currently economic for us to remove *models*.

“In keeping with our distinction between temporal and normative frames, we may distinguish between temporal and normative models. We can see this distinction in two models for helping us to decide how often to set up machine tools. The first is the temporal *economic order quantity* (EOQ) model. The second is the normative *rapid tool setting* (RTS) model.”

were moved to the end of the preceding subsection.

Chapter 2, *Wealth*, last paragraph

“In thinking about what we need to live well, we need to consider the self-fulfilling aspect of the stories we use to explain our needs. If our story is that we are naked apes, we evolve as if we are naked apes. In contrast, if our story is that we are ignorant people seeking to act wisely, we will evolve as if we are ignorant people seeking to act wisely. From the temporal view of modern economic science, the relevant question is which story best predicts how we will act. From the normative view of boundless decision science, it is which story best helps us find problems to solve.”

was deleted.

Chapter 3, *Overcoming Constraints in Deciding Well*, first paragraph

Changed “ π ” to “ π , the modern counterpart to the classical problem of squaring a circle” in the last sentence.

Chapter 3, *Overcoming Constraints in Deciding Well*, third paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “**biological**” to “**evolutionary**” in the last sentence.

Chapter 3, *Three Approaches to Policy*, second paragraph

Changed “**biological**” to “**evolutionary**” in the first sentence.

Chapter 3, *Public Order*, second paragraph

Changed “**biological**” to “**evolutionary**” in the first sentence.

Chapter 3, *Overcoming Constraints*, last paragraph

Removed italics from the last sentence: “Deciding well is the boundlessly pragmatic means of squaring the circle.”

Chapter 5, *The Explicit Experiment*, last paragraph

Changed “**claimed**” to “**claims of**” in the last sentence.

Chapter 6, introduction, last paragraph

Changed “**reconcile**” to “**move ever closer to reconciling**” in the first sentence.

Added the sentence:

“**We can begin by considering Abraham Maslow’s humanistic approach to understanding our spiritual needs.**”

Chapter 7, *Boyd’s Grand Strategy*, last paragraph

Changed “modern **biological**” to “modern” in the first sentence.

Changed “modern-**biological/modern-dialectical**” to “modern” in the first sentence.

Chapter 8, second paragraph

Changed “**bounded**” to “**temporal**” in all (3 occurrences).

Chapter 8, third paragraph

Changed “solution” to “**solutions**” in the first sentence.

Changes in Version 2013.12.16

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Chapter 1, introduction, second paragraph

Changed “a book” to “this book” in the second sentence.

Chapter 1, Seeing Through Apparent Miracles, first paragraph

Changed “for the same cost,” to “,” in all (3 occurrences).

Chapter 1, *The Truth and Wisdom*, last paragraph

Changed “boundless factors” to “factors” in the sixth sentence.

Chapter 1, *Steps for Building Multiple-Frame Models for Deciding Well*, first paragraph

Changed “universally useful and inexhaustible factors of deciding well that we can never have in excess” to “boundless factors of deciding well” in the second sentence.

Chapter 1, *Steps for Building Multiple-Frame Models for Deciding Well*, first paragraph

Changed ““boundless factor”” to “facet of Wisdom” in the third sentence.

Chapter 1, *Ever More Complete Multiple-Frame Models*, first paragraph

Changed “do so” to “can do so” in the sixth sentence.

Chapter 2, *Tools for Deciding Well*, first paragraph

Changed “nothing, who blindly follow their leaders or culture,” to “nothing” in the last sentence.

Chapter 3, *Contemplating the Way Forward*, first paragraph

Changed “six” to “three” in all (3 occurrences).

Chapter 3, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, third paragraph

Changed “describe” to “predict” in the last sentence.

Chapter 3, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, fourth paragraph

Changed “describe” to “predict” in the first sentence.

Chapter 3, *A Boundlessly Pragmatic Interpretation of Quantum Mechanics*, seventh paragraph

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “**We**” to “**Using this class, we**” in the first sentence.

Chapter 4, *Academic Fields*, first paragraph

Changed “**Similarly**” to “**In creating academic fields**” in the last sentence.

Chapter 7, introduction, first paragraph

Changed “**all of us are not**” to “**none of us is**” in the second sentence.

Appendix C, A Boundless View of the Whole, first paragraph, fourth through seventh sentences

“The second thing to notice **is the mishmash of different forms separated by** plain borders. With the exception of the borders along the non-parallel walls and the cursive borders within the large square with the crossed-keys symbol of the papacy at its center, these borders are either parallel or perpendicular to the two parallel walls. **These parallel and perpendicular borders form rectangles that contain locally coherent forms. By far the most complex of these forms is the large square containing the symbol of the papacy at its center.**”

were changed to:

“The second thing to notice **are the fields formed by the** plain borders. With the exception of the borders along the non-parallel walls and the cursive borders within the large square with the crossed-keys symbol of the papacy at its center, these borders are either parallel or perpendicular to the two parallel walls. **Most of these parallel and perpendicular borders form rectangles that contain locally coherent geometric forms. The major exception is the large square containing the symbol of the papacy at its center, which contains more complex geometric forms.**”

Changes in Version 2013.12.21

Chapter 4, *Modern Policy Mistakes*, fourth paragraph, last footnote

Added Richard Hudson to the footnote reference.

Chapter 5, *The Explicit Experiment*, third paragraph

“This clause effectively increased the political clout of southern states in the federal government. **Arguably, it not only allowed slavery to expand into new territories but also allowed the removal of Indians from the south.**”

were changed to:

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“This clause effectively increased the political clout of southern states in the federal government **enough not only to maintain slavery in the southern states but also to expand it into new territories.**”

Appendix A, title quote

Returned the second title quote:

““In mathematics the art of proposing a question must be held of higher value than solving it.”
— *Georg Cantor*”

“² Cantor, Georg, “De aequationibus secundi gradus indeterminatis” (Doctoral dissertation, University of Berlin, 1867).”

Appendix A, introduction, third to last paragraph, footnote, end

Added the following sentences:

“Also note that N2 in the first transformation process and Y2 in the second process are line segments, which we may or may not classify as (degenerate) polygons. To keep things simple, this analysis stops at N3 for both processes. Going further would add little to our understanding of the boundlessly pragmatic relation between mathematics and science.”

Appendix A, introduction, second to last paragraph, footnote, last two sentences

“Note that this analysis ignores degenerate polygons and non-Euclidean geometries. Including them here would add little to our understanding of the boundlessly pragmatic relation between mathematics and science.”

were deleted.

Appendix C, A Boundless View of the Whole, second paragraph, first sentence

Added the footnote:

“⁸ If this floor were a representation of the modern rational mindset rather than the medieval rational mindset, the large working area of the room would represent the modern natural sciences and the surrounding rectangles would represent all other fields. From the boundless view, the source of the problem with the modern rational mindset concerns pursuing the truth about the current state of the world in which we live rather than the truth about the world in which we live. To learn how such views affect induction, read Nelson Goodman’s *Fact, Fiction, and Forecast* (Cambridge, MA: Harvard University Press, 1955). To begin to understand the effects of the misuse of such views, consider the effects of assuming that the distribution of changes in financial asset prices are normally distributed, an all too common assumption based on the belief that there is no direction to cultural evolution.”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, *Imagining the Designer*, first paragraph

“Years of contemplating forms in geometry, nature, and your own unconscious gave you a talent for **understanding symbols. This talent gave you an eye for true art.**”

were changed to:

“Years of contemplating forms in geometry, nature, and your own unconscious gave you a talent for **using superrational forms, forms for pursuing Beauty.**”

Appendix C, *Imagining the Designer*, fifth paragraph

Changed “**Finally, you**” to “**You**” in the last sentence.

Changes in Version 2013.12.24

Chapter 8, last paragraph, first paragraph

Changed “**human** mind” to “mind” in all (2 occurrences).

Changed “**humans**” to “**people**” in all (2 occurrences).

Appendix A, introduction, seventh paragraph

Changed “**transformation** process rather than the results of **transforming objects**” to “process rather than **the process itself**” in the fourth sentence.

Appendix A, introduction, eighth paragraph

Changed “**process rather than the results of the transforming objects**” to “**process**” in the first sentence.

Appendix A, introduction, eleventh paragraph, footnote

Changed “**algebraically**” to “**mathematically**” in all (2 occurrences).

Appendix C, A Boundless View of the Whole, second paragraph, footnote, end

Added the sentence:

“**To begin to understand the effects of the misuse of such views, consider the effects of assuming that the distribution of changes in financial asset prices are normally distributed, an all too common assumption based on the belief that there is no direction to cultural evolution.**”

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Appendix C, *Imagining the Designer*, first paragraph

Changed “sickening” to “distressing” in the fourth sentence.

Changes in Version 2013.12.28

Acknowledgments, last paragraph

Changed “self-referential” to “independent of beliefs and circumstances, hence self-referential” in the last sentence.

Chapter 1, *The EOQ/RTS Example*, second paragraph

Changed “The temporal frame of the EOQ model includes the assumption” to “In using the temporal EOQ model, we presume” in the first sentence.

Changed “assumption” to “presumption” in the second sentence.

Chapter 1, *The EOQ/RTS Example*, last paragraph

Changed “rapidly” to “well” in the last sentence.

Chapter 1, *The Truth and Wisdom*, last paragraph

Changed “knowledge resources” to “facets of Wisdom” in the fourth sentence.

Chapter 1, *Seeing Through Apparent Miracles*, third paragraph, first two sentences

“Similarly, Toyota has performed apparent miracles by quickly pushing back its “efficiency frontiers.” It has thrived by learning well.”

were changed to:

“Similarly, Toyota has performed apparent miracles by learning well.”

Chapter 1, *Seeing Through Apparent Miracles*, last paragraph, last sentence

Inserted the sentence:

“We learn to handle unexpected events ever more wisely.”

Chapter 1, *Ever More Complete Multiple-Frame Models*, fourth paragraph, footnote

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

Changed “*boundless factors of deciding well*” to “*facets of the boundless end of deciding well*” in the last sentence.

Appendix A, introduction, seventh paragraph

Changed “**this** superficial approach” to “**such a** superficial approach” in the last sentence.

Appendix A, Indispensable Forms, last paragraph, end

Added the paragraph:

“From the modern view of Kurt Gödel, mathematics underlies science and more than logic underlies mathematics. From the boundless view, mathematics underlies science and science is self-referential, hence mathematics is a form of science. The transcendental end of mathematics is complete knowledge of the set of all forms that are indispensable to pursuing the boundless end of deciding well.”

Appendix C, introduction, first paragraph

Changed “**Beauty**” to “**Wisdom**” in the last sentence.

Appendix C, *Imagining the Designer*, last paragraph

Changed “**great work**” to “**magnum opus**” in the last sentence.

Changes in Version 2013.12.31

Acknowledgments, last paragraph

Changed “**The best**” to “**They**” in the second sentence.

Preface, fifteenth paragraph

Changed “biological evolution” to “biological evolution **to include cultural evolution**” in the last sentence.

Chapter 1, *The Truth and Wisdom*, fifth paragraph, footnote, end

Added the sentence:

“To learn more about the limits of temporal language, read Nelson Goodman’s *Fact, Fiction, and Forecast* (Cambridge, MA: Harvard University Press, 1955).”

Appendix C, A Boundless View of the Whole, second paragraph, footnote, third sentence

Boundless Pragmatism, An Invariant View of Deciding Well

Change Archive for 2013

“To learn how such views affect induction, read Nelson Goodman’s *Fact, Fiction, and Forecast* (Cambridge, MA: Harvard University Press, 1955).”

was deleted.
