A GENERAL THEORY OF VALUE

(S y n o p s i s)

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July 2006

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CHAPTER ONE
INFORMATION, COMPLEXITY, AND LIFE.

The theory of value offered by this book revolves around three propositions: first, that (positive) *value* is attributed to that which preserves or creates *more life*; second, that "lifefulness" is characterized by a particular quantity and combination of *complexity* and *organization*; and third, that achieving this optimal quantity and combination of complexity and organization depends on the quality and flow of information among people and in the environment. To lay the foundations for this theory, this first chapter offers an account of the concept of information. Developed mostly in the 1940s and 50s, information theory, I try to show, still provides a useful if not ultimate understanding of such critical terms as *complexity* and *organization*—two terms, two concepts, that in turn shed light on the process of evolution and the phenomenon of life itself.

I. What is Information? 1–**2**

Substantial and yet epehemeral, subjective and yet objective, information is easy to recognize and yet hard to pin down and measure. Information grows old; information dissipates; and most of it passes us by. We live in an "information economy" we are told, and notice that more people than ever seem to earn their livings by making not things but decisions, and by manipulating not objects but words, numbers, and images. Information takes space to store, time to process, and energy to move, but there seems to be no limit as to how little of each is required. Some scientists say that, at bottom, the physical universe consists of nothing *but* information. What kind of stuff, indeed, is information? And when and how does it have value?

Information theory: Shannon and Weaver 1–4

In 1948, in a seminal paper, Claude Shannon and Warren Weaver neatly dodged such metaphysical problems. They proposed that "information content" of a message or event was a function of the changed (or changing) probabilities we assign to a finite set of mutually exclusive possibilities. I explain the basic features of this idea. Every probability distribution represents a certain degree of uncertainty, *U*, as to outcome. When *U* decreases, information is gained; when *U* increases, information is lost. The greater are the number of possibilities, the greater is the information (potentially) to be gained or lost. Maximum uncertainty occurs when all possibilities are equally probable; minimum uncertainty occurs when one possibility has a probability of unity (and the others, by definition, have a probability of zero). I touch on some of the difficulties with this scheme, but in the main accept it as useful to our project.

II. Complexity 1–**8**

Other things being equal, the greater the *complexity* of a phenomenon in the world, the greater is the *uncertainty* it generates in us and the greater, too, is the amount of *information* it "contains." There is therefore a fundamental parallel between information and complexity, the exact nature of which is still being explored by complexity-scientists. Like information, complexity is both objective and subjective. It is a quantity one can provably be mistaken about, but just *how* mistaken depends on current best knowledge. A system's *real* complexity may forever be unknown or incomputable. In this section I try elucidate the relationship between information and complexity with a series of less problematic examples: from gambling with dice and roulette wheels to a thought-experiment involving two

people predicting the future from the same stimulus but with different expectations. It becomes clear that just as one requires two uncertainties, U_{before} and U_{after}, to say how much *information* has been gained or lost in the encounter with another system, so one requires two complexities, $C_{potential}$ and C_{actual}, to define how *organized* that system is. We realize that to have information, ***I***, about X, is in some sense to have come to embody some or all of X's (degree of) organization, *R*.

The complexity of fields 1–13

One can extend the concepts used in the above examples—all of which are about temporal sequences of single events—to sequences of *states* of a system that exists in two or three dimensions. I illustrate this with two board games—tic-tac-toe and chess—making special note of how their degrees of complexity, C_{act} and C_{pot}, as well as their degree of organization, *R*, change over the "life" of the game.

III. Complexity, Organization, and "the Thrust of Life" 1–**17**

Armed with computers and with new insights into self-organizing systems, ecology, and microbiology, today's so-called complexity-scientists are coming closer to casting the story of life into information-theoretic terms. Agreed, I report, is the following: that organismic and inter-organismic (i.e. social) complexity increases with evolutionary time and, somehow, because of the evolutionary process itself. So too does the life-necessary degree of organization grow.

The question of direction 1–19

Looking to evolution for the origin of—if not justification for—our present sense of value entails taking up the question of whether evolution has an intrinsic direction. Is there something it "wants?" Does it have a goal or final state? Following Robert Ayers, I report four such directions: greater variety of species, greater complexity of individual behavior as well as specialization, greater metabolic efficiency, and greater stability. Driven by the sun and the seasons, there seems no "end" in sight for any of these directions except more of the same: more life. Biologists Daniel Brooks and E. O. Wiley offer an analytical key to the process: with evolution, potential complexity (C_{pot}) increases faster than actual complexity (C_{act}). The difference between them increases too, and *that* is organization (*R*). To appreciate Brooks and Wiley's findings, it is necessary to look deeper into:

Complexity and scale 1–23

Just as different radio stations can occupy different wavelengths on the dial, so can complexity (and information) be carried at different scales in a system. I examine some examples. (Written) *language* can be looked at as a sequence of individual letters, of syllables, of words, sentences, paragraphs, pages, chapters, books, "bodies of literature"...and so on, each letter-group length—or scale—being larger than the one before it. Each scale has a maximum information capacity, equivalent to C_{pot}, and its own degree of organization, *R*. The relevance of a passage of writing might reside in the *R* of some but not other scales. *Music*, similarly, is made of notes (or pitches pre-organized into keys), grouped into bars or measures, phrases, passages, themes, songs, sections, movements, pieces, etc., each of which can have its own degree of complexity and organization. In a more lengthy discussion, I apply these principles to the analysis of *DNA* at the scale of codons, and return to the work of Brooks and Wiley. Organization, *R*, and the two complexities, C_{pot} and $C_{act,}$ increase over evolutionary time at gene-group and in total length. Many scales of DNA, though, are "silent."

IV. Some remarks on the origins of culture **1–33**

The idea that there are "higher" and "lower" forms of life is ancient. What Darwin gave us was a secular explanation of how this came about: to wit, through "noisy" biological reproduction in a dangerous and complexifying environment. Newer is the idea that evolution continues when members of a species can communicate with, and learn from each other in their own lifetimes, and thus transmit information from generation to generation by means other than, additional to, and in part controlling of, genetic endowment to offspring: culture. Ideas evolve, as do social practices and artifacts. This is the arena in which *value* comes into its own as a subject of contemplation and object of desire—bearing all the marks of its purely biological origins.

NOTES: **1–36**

CHAPTER TWO
VALUE IN THE LARGEST VIEW: MORE LIFE

This chapter lays out the core of our theory of value. It tries to do so in terms precise enough to extend argument and formal enough to invite empirical investigation.

I. Value and Evolution **2–1**

Many have attempted to describe life's purpose—or meaning, or value—in non-theistic, evolutionary terms. Ours is one more such attempt. While acknowledging that humans are eminently capable of taking their future into their own hands, transcending the laws of purely biological evolution, I argue that psychological and cultural evolution are nonetheless cut of the same informational cloth. Even the idea that evolution is wrong, or inapplicable to humans, can be evolutionary. Much turns on the sophistication with which we understand what evolution *is*, and in what sense we take it to be "positive" in direction. Life's purpose—and evolution's "job"—is proliferation: *more life.* This near-tautology, I offer, can be the basis of a theory of value, one that is human and recognizably moral.

II. Complexity-and-organization, Ω, Defined **2–7**

In Chapter One we began to see evidence that living and more highly evolved systems tend to be both more *complex* and more *organized* than non-living and less highly evolved systems. Here, I propose a mathematical measure of evolvedness called Ω (omega), whose unit is bits. Ω is formulated so that it is optimized when a system's degree of *complexity* is equal to its degree of *organization*, and so that it increases absolutely when each (i.e., complexity, *C*, and organization, *R*) increases without (much) decrease in the other. Specifically, $\Omega = \sqrt{CR}$. Our hypothesis is that Ω is also a measure of a system's *lifefulness*, an interesting if not complete-unto-itself "vital sign." I plot all these variables graphically, and offer interpretations of the result.

III. Value Defined, and Its Meaning Explored **2–11**

Given the above, it more or less follows that positive value (to a certain person, P, is properly attributed to anything that increases the lifefulness of P—i.e., that increases the Ω of P—over a given period of time. Written most succinctly: $V = \Delta\Omega$. Admitting its presumptuousness, I ask the reader to accept *V* (value) as at least a candidate for the position of useful measure of value, and proceed to put the candidate through some basic tests. In the process, we realize that both *V* and Ω operate at several scales in a system, some problematically invisible. We discuss the differences between experiencing value directly (in ourselves), indirectly (in others), and attributing its "experience" to complex non-living systems as well as simpler inanimate objects. When it comes to judging the value (to some social organization) of alternative programs and policies, I show how competing advocacies arise from occupying different places on what I call the Ω-surface.

IV. Difficulty and motion on the Ω-surface **2–20**

Because no familiar physical laws operate in the mathematical-statistical "space" of *C*, *R*, and Ω, I seek to explain our intuition that it is difficult or risky or time-consuming to climb "up" the Ω-surface—i.e. to evolve, to experience positive value and more life. Why—for us, anyway—is it *work*? And why do species not leap about on the Ω-surface at will?

The Second Law revisited 2–20

When systems are cut off from material, energic, and informational trade with the outside, their internal organization (*R*) tends to decrease and their actual complexity (*C*) increase. This is the Second Law of Thermodynamics in operation, and combatting it is constant work, both abstractly and in everyday life. I show how elegantly the Second Law can be represented in the space of *C*, *R*, and Ω, and how readily its known effects can be incorporated into our theory of value. Indeed, we uncover examples of the Second Law creating positive value—when "letting things go" is the best course of action. Further, we can see why systems must grow in potential complexity if they are to *evolve* rather than just improve. Here, again, it is essential to let the Second Law have its way, and even to help it along by raising the whole system's "temperature."

What "drives" evolution? 2–26

We are led to wonder: what obliges animals to learn and cultures and species to evolve? The root cause, I argue, is reproductive success. Because *other* animals and plants largely constitute any single animal or plant's environment, their reproductive success breeds complexity in the environment, and complexity in the environment selects for improved creaturely "smarts"—i.e. for higher Ω. Of help at the biological level is the "stickiness" of DNA (which promotes long-term lengthening of the genome), and at the cultural level both record-keeping and the tendency to conserve artifacts and skills (i.e. capital). Even so, nature beggars culture in the production of fine structure and extravagant beauty.

Back to our second question. 2–31

When a narrow range of values of *C/R* are workable, "leaping about" on the Ω-surface is a dangerous business—like a drunk dancing on a small table. We realize that the higher altitudes of Ω cannot be reached from the side, as it were, but only by steady climb up the ridge of optimal Ω, where $C/R \approx 1$. We realize too that all our conscious perceptions of the complexity, organization, and lifefulness of other creatures, and of ourselves, are restricted to a small region of the space of *C* and *R*. Because Ω is found at different scales, real systems are properly represented by constellations of points on the Ω-surface, only a few of which fall into the region we can readily apprehend.

In summary: whence "work"? 2–34

Four of the factors discussed above that would account for the difficulty of climbing the Ω-surface are summarized and re-described. (They are *disorder*, *inertia*, *competition*, and *risk*..) A fifth, additional, factor seems to be exclusive to humans: *impatience*. Humans are aware of time, have intentions, and make plans that are time-sensitive. In nature, by contrast, nothing is in a hurry. No animal, therefore, and certainly no microbe or plant, can be said to *work* in the way we understand the word. None know that they are destined to die. It is knowing of the link between time, work, and value that delivers Man from Eden: first into an economic universe, and then—when consideration for the well-being of others is added—into a moral *and* economic one.

NOTES **2–40**

CHAPTER THREE:
SOME EVIDENCE FOR Ω

This chapter surveys what independent evidence can be found to support the three hypotheses of Chapter Two, namely, that "more life" is characterized by an increase in system's complexity-and-organization, Ω, that systems judged alive are close to Ω-optimal already, and that ones judged life-promoting ("good") nudge living systems towards higher Ω and/or closer to Ω-optimality.

I. EMPIRICAL STUDIES

A. Evolutionary biology 3–1

Statistical studies of species: The research of E. O. Brooks and D. Wiley is reported in Chapter One. John T. Bonner finds increasing organism size and diversity in nature, with greater variety of species and cell-types in evolutionarily younger genera. It is easy to describe his findings in terms of C_{pot}, *C, R,* and Ω—increasing, all. **DNA codon usage measures**: Although total genome length bear no strong correlation to species youth, the correlation is positive. This is total C_{pot}. More telling is that DNA's Ω at the scale of codons (i.e. nucleotide triplets) is extremely close in value for all species—and very-near-optimal for C_{pot} at this scale (6 bits/codon).

B. Cellular automata and artificial life systems 3–6

John Conway's *LIFE*. An analysis of the several initial configurations and parameter settings that generate interesting—i.e. animated, ongoing—"creatures" and patterns in *LIFE*, shows that they are close to Ω-optimal in our terms. **Robert Axtell and Joshua Epstein's *Sugarscape***: A comparable analysis of the much more complex artificial life system, *Sugarscape,* yields similar results, although less conclusive. **Chris Langton's lamda measure,** λ: Surveying several cellular automata systems, and on theoretical grounds too, Langton developed a measure, λ, that described a complexity optimum for such systems to animate and sustain themselves. I show how λ and Ω are related.

C. Studies in psychology 3–8

The partial reinforcement extinction effect Classical conditioning proceeds fastest when the connection between paired stimuli and a response is completely reliable. But it decays slowest when the connection (during the learning period) is *un*reliable to the degree predicted by Ω-optimality. Possible conclusion: life-likeness in the stimulus-response relation. **George A. Miller and the information-processing abilities of humans:** People have a limit of around 3 bits per event in making absolute judgements on random stimuli varying from each other on a single dimension, and 5 bits for higher dimensional stimuli. Higher rates are achieved by "chunking," which is finding *R* at larger scales, or imposing it at some cost. **Daniel Berlyne and 'optimal arousal:'** A preference exists for the "moderate psychological complexity" that delivers optimal arousal, or feeling of lifefulness. Events that move us closer to such moderate levels of complexity are preferred over those that take us away from them. This finding is easy to foresee from Figure 2.6, plotting Ω against *C* for C_{pot} = a constant. **Edward Walker's optimal complexity**: Walker reinforces Berlyne's conclusions over a wide range of studies, including such "stimuli" as music. **Benedikt and Lee's study of preference for melodies**. A pilot study suggests that randomly-generated 60-note melodies high in Ω are preferred over ones low in Ω (Ω

being measured at the group-length of one note). **Mihaly Csikszentmihalyi's model of *flow*:** In scores of empirical studies of happiness-in-activity—which he calls "flow"—Csikszentmihalyi finds support for a model of human preference-for-complexity that maps very closely to ours. I show how his one independent variable *degree of challenge* is equivalent to our *C*, his second independent variable *degree of skill* is equivalent to our *R*, and the single dependent variable, *flow*, is achieved in the balance the two and their increase, which is to say, with optimal and increasing Ω. **James G. Miller's informational stress model:** People's efficiency at processing information falls away from ideal on either side of what appears to be an Ω-optimal load of 10 bits/sec, again seeming to follow Figure 2.6. **Richard L. Meier's institutional coping strategies**: An increasingly overloaded library is observed to develop fourteen "policies" to cope, strategies that lower *C* and/or C_{pot}, and that raise *or* lower *R*. The latter implies a search for workable if not optimal Ω at every stage. Meier generalizes to all organizations, while I note that individuals under informational stress seem to adopt the same "policies"—and in roughly the same order.

D. Economic and social structures 3–20

While **David Warsh** in ***The Idea of Economic Complexity***, does not show that there is an *optimal* quantity or quality of complexity in the economy, he documents the rapid increase in social and economic complexity in modern times and argues that the *value* of goods and services has increased over the same period in a way that is correlated to their increasing complexity. **Frederic L. Pryor** in ***Economic Evolution and Structure*** uses statistical methods similar to those outlined in Chapter One, developed by Henry Theil, to show increase in the information-processing rate of almost every component of the economy, greater interactivity within the system, and increasing heterogeneity—difference—among economic actors. Although supportive of our theory, neither Warsh nor Pryor report data that would enable us to compute Ω growth or Ω-optimality specifically. This would require further study.

II. *SOME CORROBORATING THEORIES* **3–25**

George David Birkhoff's *Aesthetic Measure* (1933). That beauty is somehow mathematical in origin is an idea that goes back to Pythagoras. Birkhoff's contribution was to propose that (degree of) complexity and (degree of) order were properties of all works of art as well as mathematics—properties essential to judging their beauty. I show how Birkhoff's measure of aesthetic value, *M*, is easily translated into our measure, Ω. **Rudolph Arnheim's *Entropy and Art* (1971).** In this influential work, Arnheim interpreted art as mankind's "answer" to entropy and Second Law of Thermodynamics. Here, order is good. By the end of the book, however, Arnheim speaks of mankind's "need for complexity"—but for complexity of a *good* kind rather than a trivial or bad kind. He begins to follow Birkhoff, adding an important evolutionary perspective not dissimilar to ours. **Morse Peckham's *Man's Rage for Chaos* (1967)** Against Arnheim and others, Peckham, also using biology as a reference, argued that Art owes its every innovation to the acceptance of a higher level of disorder, chaos, and entropy into its media and methods. The real danger is ossification. With our understanding of Ω we can see how Peckham, Arnheim, and Birkhoff have no argument with each other at all.

Interlude: why theories of aesthetic value matter 3–28

Few believe that what philosophers have to say about aesthetic value could have much relevance to the understanding of value in the marketplace, the bedroom, the boardroom, or the voting booth. I argue that this view is deeply mistaken, not just because the arts often play a large role in politics and economic development, but because the reasons why product (or idea or candidate) A prevails over product (or idea or candidate) B in the marketplace are not unlike why painting (or song or movie) A is held to be better

than painting (or song or movie) B. There is nothing "mere," I argue, about beauty, and why *this* is so goes back to old and powerful ideas of what the good life consists in at all.

Corroborating Theories , Continued 3-30

Frederick Turner's *Natural Classicism* (1985). For Turner, cultural evolution and biological evolution are cut of the same cloth, information; and at the leading edge of cultural evolution lies art in relation to science. He is interested especially in "reflexivity," the process by which new work, new complexity, is generated out of self-reading, not unlike DNA. Reflexivity gives systems the Ω-boost they "need" to become autonomous and unpredictable: in some sense alive, and productive of meaning and value. In ***NonZero* (2000), Robert Wright's** interest is less in aesthetics than in cultural, economic, and political history, which he casts in evolutionary terms. What characterizes steps forward, he argues, are the new and more complex (and organized) arrangements by which competing parties (and species) come to specialize and/or cooperate to mutual advantage. For Wright, evolution has no moral purpose or direction—no value—without God gifting mankind with consciousness, freedom, and the responsibility to make moral (i.e., positive non-zero-sum) choices. Hope lies in Teilhard de Chardin's dream of the *noosphere*—the surface of earth itself become a super-complex higher consciousness through global communication technology. Although appreciative of Wright's thesis, I stop short of endorsing Teilhard's vision. More and better life is the only value; and the individual its only site and measure.

NOTES 3-36

CHAPTER FOUR:
THE ECONOMY OF TOKENS

This chapter makes a transition from abstract biological and cognitive considerations of value to the experience of value in the richer personal and social-psychological context of everyday life. It posits a finite number of pan-human *needs* and suggests that it is neither material goods nor energic goods that satisfy most of them, but psychological goods, made of information. I call these goods *tokens*. Tokens are produced, consumed, exchanged, and circulated much as material goods are in a the monetary economy, but with certain important differences. Presenting this idea with some rigor requires several excursions into moral philosophy, psychology, and social psychology.

Abraham Maslow and the hierarchy of needs 4–2

I discuss some of the thinking behind Maslow's well-known hierarchy of (five) basic needs, as well as his idea that the lower of any two needs is "pre-potent" over the higher. We return to a deeper discussion of his theory later in the chapter.

Value and "values" 4–3

The existence of the word "values" (in the plural), and the fact we speak of "having" them, suggests to many that there are goods that have such different *kinds* of value that we ought to have quite different valuational principles for and attitudes towards them. I argue, nonetheless, that value is a unitary phenomenon having to do with the enhancement of life (later I will call it: increasing life's *plenitud*e). All goods are comparable at this level. Hence the continuing validity of the singular "value."

The economy of tokens: preamble 4-6

I outline the features of an overlooked economy-entire whose unit goods are tokens. Along with material goods and services of all kinds, tokens embody, convey, and create value in the largest sense. They satisfy needs. In their proliferation and sophistication they increase the range and complexity of social exchange and they add to the complexity-and-organization, Ω, of individual human consciousness.

I. The Stratigraphy of Needs 4–8

Are motivations as manifold as actions? With Maslow, I argue not: there are far fewer motivations than actions, and even fewer *needs* that motivated actions are directed towards satisfying. Maslow posited five such needs; I posit six:

The structure 4-10

In place of Maslow's five-need structure (i.e., the needs for physiological health, safety, love-and-belongingness, esteem, and self-actualization), I offer a six-need structure: the needs for *survival, security*, *legitimacy, approval, confidence,* and *freedom*, arranged not in a hierarchy but in a "stratigraphy" of layers of complexity-and-organization. I discuss the overlaps and differences between Maslow's scheme and mine, as well as the connection between need-satisfaction and value defined as increasing Ω.

Needs, values, and virtues 4–13

Are needs culturally defined and thus "relative"? I concede they might be, and that our "stratigraphy of needs" might be Western (and perhaps just North American). But I also suggest that a great deal of cultural difference

might originate not so much in the needs themselves as in variations of their stratigraphic position and emphasis. If so, it would follow that different cultures might *champion* different virtues but would *recognize* all of the others. This seems to be the case, as Aristotle points out.

The process of growth or ascent 4–16

Maslow theorized that the needs succeed each other in overlapping profiles of emergence, peak, and recession (when satisfied). I propose a structure of succession that is similar but more flexible, and described more fully in Chapter Six. Interesting is how needs emerge over time in maturing children. I propose a schema that has the six needs emerging (in an unexpected order) through the first five or six years of life, thereafter developing only in the degree of complexity-and-organization with which they are satisfied.

II. The Economy of Tokens **4–18**

To give the reader a feel for how devising, offering, accepting, and trading tokens could constitute an economic system, I sort many familiar tokens into the six strata of need they satisfy. The exercise also gives us a sense of what the needs themselves consist in. Nine "elucidations" follow:

1. Positive tokens, negative tokens, and performativity 4–19

Tokens can be positive or negative in value, and can delivered in a variety of forms. *Performatives* are verbal expressions that have their effect by simple virtue of their utterance (e.g., "I promise" or "You're hired."). Most performatives involve the delivery of tokens. But the need to feel that our speech—and speech-like gestures—have external effect *at all*, good *or* bad, runs deep: it is tied to our need for security.

2. Apparent displacements 4–21

The needs keep their place, as it were. But sometimes there's advantage in mis-naming tokens and misdirecting attention (a matter we study further in Chapter Five), as well as to inverting conditionality, as when the satisfaction of a lower need is made conditional on the satisfaction of a higher one. I discuss how democracy depends on just such an inversion: here *legitimacy* is based upon obtaining sufficient and uncoerced *approval* from others.

3. Token bundles 4–23

I describe how tokens are often packaged in "bundles" that address more than one need at a time, and how no token has much value unless the system of exchange that warrants its effectiveness—i.e. that grounds it to lower needs—is in place and functioning smoothly. Several examples are given.

4. Tokens and signs 4-25

I define "signs" in the psychoeconomy as displays of state-of-need, indications of current satisfaction levels. Although they are not themselves exchanged, they create the bargaining environment and thus determine the range of relative values, or "prices," at which the relevant tokens will be exchanged. I prepare the reader for the deeper discussion of signs I offer in Chapter Five.

5. Nobility 4–26

I propose that nobility is a display: it is acting as though all one's needs had been met. Recognized across all cultures and difficult to practice, nobility, as a strategy, has several advantages in both the material and token

economy . It silences (by example) the less fortunate; it hides exploitable needs; it induces others to raise the value of their offers; it reduces guilt.

6. Satisfaction, happiness, and pleasure 4–27

In this section I offer some definitions: Satisfaction is Ω embodied. Happiness is (our experience of) the increase of our satisfaction; sadness the experience of its decrease. Pleasure is the *rate* of increase of our satisfaction, or the "temporal intensity" of happiness. Pain is the reverse: it is a register of the temporal intensity of satisfaction decrease. It follows that the rich may surpass the poor in satisfaction, but in happiness and pleasure it's an even bet.

7. Liberty as foundational to freedom 4–28

I explain how in the Lockean tradition liberty is an inalienable human right whereas in the Burkean it is something to be earned. I follow in the tradition of Mill by distinguishing between *liberty* and *freedom*. Liberty is freedom operating largely at the level of legitimacy. Thus liberty frames metaphysical or existential freedom, (which lies at the top of the stratigraphy) and founds it. Liberty may be an inalienable human right, I say, but well-founded freedom is the prize, and it must be earned.

8. Human and social capital 4–31

On becoming adults, all people bring some endowment of strength, social connectedness, knowledge, and intelligence to society at large. Conversely, societies offer their members access to their technologies, languages, laws, and know-how. It is because these two forms of capital must mix in complex ways in order to be mutually reinforcing that the higher reaches of individual satisfaction are usually attained only by roundabout means. I argue that mastery over a given need both indicates and creates the capacity—the capital—for moving up the stratigraphy to well-founded freedom, the sustained enjoyment of which requires that the most complex-and-organized modes of life be undertaken that a given society offers.

9. The token economy everywhere 4–34

In light of 8 above, I explain why it is inappropriate to valorize either culture or commerce. Both are economic; both are civilizing, educational, and edifying. Indeed, once one sees that there *is* a psychological economy, one sees it in action everywhere, crossing easily between the two realms, culture and commerce, as well as binding them together.

III. The "Goal of Life" 4–36

Having established the framework for doing so, I propose that the goal of life is the same for individuals as for groups: it is to be both satisfied *and* happy—to experience both Ω *and* ΔΩ—in the largest degree and for the longest time. In short, the goal of life is more life. To be sure, cultures formulate many other and worthy "goals of life," but I maintain that they are all translatable to this one, properly understood.

IV. And What of Love? 4–40

Here I discuss why the need for love is not part of the stratigraphy. It is because love is present throughout: it is a pan-systemic need manifesting itself in the relationship between any two people across *all* needs. "Loving" names a relationship that allows exchange to be generous in impulse, imprecise in accounting, and long-term in the assessment of fairness. Essential to love, therefore, are trust, forgiveness, and hope. At the level of legitimacy, love is expressed as mercy—that softener of justice. I discuss why economic values, conventionally understood, are often posed as antithetical to love. It is largely because money permits precision in accounting. But, as I argue,

money-metered exchanges are often more flexible and generous than ostensibly love-based non-monetary exchanges. Thus the antithesis of love is not money (or "economics") but hate, or indifference to the other, combined with exchange that is addressed to only one need and/or the insistence on immediate fairness or redress of past unfairness.

V. The External and Internal Economies 4–47

Following from G. H. Mead and others, I propose that the economy of tokens that exists between people is *modeled* within each and every individual and versa. The mind is social; society "psychological." Mirroring token *exchange* between people, within them there is token exchange too, or conversion from one type into another. We all reward and punish ourselves. A degree of self-legitimation is necessary to us all too, but taken very far it leads to secession from, and ultimately conflict with, the larger society.

VI. Token Consumption and Warranting 4–51

As information-based psychological goods tokens are consumed entirely, wastelessly. They also expire. We produce, offer, and accept tokens mostly on our own authority. The value of a token is warranted by the our implicit (but sometimes explicit) indication that we would be willing to accept in return, and if judged necessary by the other, tokens of equivalent or greater value but of a lower stratum. A society is healthy to the extent that the warrants of tokens are *not* tested. This is taken up in more detail in Chapters Five and Seven. •

NOTES 4–55

CHAPTER FIVE:
SIGNS, SELF, AND FORCE

I. On Signs as Distinct from Tokens 5–2

All exchange begins in stage setting. Upon meeting, people "read" each other's states of mind and character, and, knowing they will be read, display "signs" of who they are and how they want to be taken. I discuss how complexity enters: sign displays can be *intentional* or *unintentional* as well as *truthful* or *untruthful*, while readings of them can be *conscious* or *unconscious* as well as *veridical* or *mis-taken*. This yields sixteen permutations, only one of which combines intentional truthfulness in the display (i.e. *sincerity*) with conscious veridicality in the reading (i.e. *faithfulness*). Few theorists of social communication confront this 16-fold potential complexity. The question I ask is: do ordinary people do so? And if so, how?

II. On the Evolution/Construction of the Self 5–6

With G. H. Mead, L. Vygotsky, and others, I argue that the having of a self, a personality, an identity, is essentially an organizational response to the complexity discussed above. Social evolution depends upon efficient token exchange; and this depends, in turn, on consistency, readability, and reliability in the trading partners. This is why we do not present ourselves in full. Indeed, we are incapable of that. Rather, we make and test simplified models of ourselves on each other, settling, in adulthood, on the model—the self, the persona—that is most successful at producing satisfaction. In the process, we "ourselves" come to understand who we are. And find that very difficult to change.

III. On "Force" 5–8

Exchanges are usually initiated by one of the parties. With this comes the choice of "opening move" or first offer: What will it be? To what stratum of need will the exchange be addressed and/or kept at? I name the kinds of "force" that such tokens have, each force corresponding to a need. Thus: at the stratum of freedom, tokens have the force of *example*; at the stratum of confidence they have the force of *encouragement*; at approval, *flattery*; at legitimacy, *authority*; at security, *power*; and survival, *violence*. The upper three forces, corresponding to the highest three needs, I group together and call *persuasive*; the lower three forces, corresponding to the lowest three needs, I call *coercive.* I show how this schema clarifies many other distinctions we make, such as between custom and law.

Promises and threats 5-11

Having established the different forces, I explain how both promises and threats can be used persuasively or coercively. What makes promises more pleasant than threats is only the direction on the stratigraphy that they point, i.e., up or down, towards gain or loss. Threats are more motivating. Self-sacrifice is a way to preempt threats and elicit promises. Being "cool" can have similar effects, but can also elicit stronger threats. In general, the lower the stratum one is trading in, the greater is the element of *fear*. This is why freedom is so deeply associated with the absence of fear and independence from others' threats and promises.

The moral use of force 5-13

Behind all these forcing strategies lie considerations of how to use force morally. A simple rule applies, one that can be stated in two ways: *use minimum force*, and *start at the top of the stratigraphy*. This is because it is both more effective and more moral to attribute *higher* levels of complexity-and-organization—greater evolvedness—to others, than to do the reverse. It is also more polite (and what is politeness but morality's outermost garb?) to open an exchange presuming the other as little needy as possible. I discuss several examples.

Remarks on how some practices perpetuate, and on leadership 5-20

Cultural practices are not often freely chosen by individuals. They are grown into. Most insidious are practices that use promise and threat structures to expand their membership and reduce defection. I give some examples. I then explain how, while all leaders are adept at the use of force and all excel at preempting threats and eliciting promises, *moral* leaders use the rule outlined in the section above. In doing so, they tend to organize the increasingly complex lives of their followers rather than simplify it. They increase *R* rather than decrease *C*. The result is greater Ω, more life for all.

NOTES 5–24.

CHAPTER SIX
NEED , VALUE, and TIME

How do different goods yield their value to us over time, or at different times? Is there any system to it all? Are there any laws or rules of thumb? Economists claim there are, and chief among them is *the law of diminishing marginal utility.* In this chapter we look into this "law" and try to enrich it with our theory of value.

I. Satisfaction and Social Complexity 6–2

Although the stratigraphy shows that needs are satisfied from bottom to top, in real life the process of satisfying needs is a more complex, risky, and opportunistic affair. This is because the world in which the process takes place is complex. The hallmark of a developing society is the ever higher level of mental and behavioral complexity-and-organization it demands from its members (and institutions) in order for needs to be better met. Goods too become increasingly complex-and-organized, and thus able to yield higher levels of satisfaction. Indeed, I suggest that internalized complexity-and-organization *is* what "satisfaction" is.

II. Two Models of the Law of Diminishing Marginal Utility (LDMU) 6–5

Philosophical economists of the 19th century thought it self-evident that, all else being equal, the *marginal utility* (or increment of satisfaction) yielded by a given unit good depended on the neediness of the person wanting it. Since such neediness would diminish with every act of consumption, so to would the good's marginal utility. The insight remains central to economic theory to this day. The question for us is: is it accurate? Can we shed light on when and why it might not be?

The shortfall model 6–7

Here, the "mechanism" behind LDMU is described as the decreasing distance (shortfall) between the level of satisfaction a person currently feels and the maximum level of satisfaction they know (or imagine) could possibly be reached. The latter is subject to cultural influence, as is the acceptable minimum level of satisfaction.

The dissipation model 6–12

Here, the "mechanism" behind LDMU is described as the cumulative effect of successive "doses" of satisfaction, each of which mounts and then dissipates away, like a wave. On this model too, satisfaction (utility) grows ever more slowly with continued consumption, even though the dose provided by each unit good remains constant.

The shortfall and dissipation models compared 6-16

Each has its descriptive strengths and weaknesses. The shortfall model is teleological. It is sensitive to ends and purposes that, on approach, can turn out to be chimerical. It also points out valuation's susceptibility to changing images of perfect satisfaction. The dissipation model, on the other hand, "knows" only that *this* is good and *more* of it would be better (when maybe it would not be). Some categories of goods are more easily modeled, and therefore valued, by one method than by the other. In everyday life, though, we (wisely) try to use *both* models in assessing the value of the *same* good: one as a check of, and check on, the other.

The immediacy effect 6-18

Why do people regularly choose the nearer (in time) or two promised goods, almost regardless of the satisfaction they would yield? Five related explanations are offered. One is based on the dissipation model, suggesting that pleasure might be valued more highly than satisfaction. The fifth explanation, however, introduces the concept

of *plenitude*. I define the plenitude (of a life) as the total amount of satisfaction felt over its entire length. The mandate "maximize plenitude" seems to underlie all five explanations of the immediacy effect. It also underlies other effects I discuss.

III. Value and Satisfaction Across Many Needs **6-29**

The picture complicates when different needs must be met simultaneously, or the availability of goods is such that decisions must be made as to which need to address. The six needs have different intrinsic weights and "trumping power." Some rational way to compare their value is required, as well as a way to calculate trade-offs, so that total satisfaction (or plenitude) can be maximized. I show how these calculations might be done. Important to rational behavior is that one's "need-state" be "well balanced." Several behavioral and even cultural pathologies become explicable using this idea. Among them is *akrasia*.

Akrasia: weakness of will 6-33

Unlike the immediacy effect, which describes *im*pulsive behavior, *akrasia* describes *com*pulsive behavior, i.e., knowingly, helplessly, taking actions that are in direct conflict with what we say we want and value. With unbalanced need states inner conflict is common, caused to some degree by the pressure we all feel to seem motivated only by higher needs. What appears to others as weakness of will—a form of ignobility—occurs when lower needs win out, as they naturally tend to do.

Incommensurability 6-36

Some argue that what explains *akrasia* is that the value of different classes of goods are *incommensurable*—i.e., cannot be measured on the same scale and therefore cannot logically be compared in value. I largely reject this interpretation in favor of the view that although all goods have varying substitutability for each other, the single dimension on which they can all valued and compared is their contribution to plenitude. This does not eliminate all moral problems or conflicts, but then neither does the doctrine of incommensurability.

IV. Climactic and Other Satisfactions **6-38**

Not all goods obey the law of diminishing marginal utility (LDMU). I discern four categories of goods that for one reason or another disobey LDMU. All can be characterized by the shortfall or dissipation models—with some or other critical parameter modified.

Climactic Goods 6-38

Prime among members of this category are goods (tokens, acts, gestures, gifts) associated with the satisfaction of sexual desire. But related are: goods that are pursued against deadlines, goods that offer some "edge" in competitive win-lose contexts, goods that require continuous investment of effort before they can be obtained, and goods that complete some set or series. All increase in value as a threshold is neared, an interpretation favored by the shortfall model, but the dissipation model sheds light on the mechanisms involved too.

Goods That Keep Giving 6-42

These are goods that are alive or growing in some way, that store a great deal of information or that trigger or give access to information, or that can be used to produce other goods. In one or more ways, all goods that keep giving are capital goods. They are best understood by the dissipation model

(Goods that involve) Goals That Keep Receding 6-43

These are goods that raise the bar of enough-satisfaction the more we enjoy and know about them. Highly complex-and-organized at several scales, they induce connoisseurship, which in turn induces producers to pursue greater heights. Such goods help stimulate qualitative economic growth. They are best modeled by the shortfall model.

Salted Peanuts: Addictions 6–46

Similar to the prior type in many ways, addictive goods go further, inducing withdrawal, dependence, intoxication, and decreasing sensitivity to the good's effects in their users. I give addictive goods special attention not only because they represent a serious social problem, but because the dissipation model offers what might be a new way to understand, and then counteract, certain addictive behaviors.

NOTES 6-53.

CHAPTER SEVEN:
THE LOGIC OF EXCHANGE

I. Value, Economic Value, and the Purview of Economics **243**

Some say that scientific, aesthetic, sentimental, moral, and economic value(s) are independent and incommensurable. In disagreeing, I nonetheless single out economic value as different to the others. "Economic" is a second-order modifier of all the other kinds of value, one whose role, conventionally, is to apply to the subset of all valued things that can also be bought and sold in a marketplace. I argue that this way of thinking about economic value limits economics' purview as a discipline unduly. I define economic value instead as that which accrues to anything that has value to us for whatever reason and that requires "in exchange" some effort, risk, loss, or sacrifice in order to produce, obtain, or maintain. On this view, decision-making can be economic whether or not it involves marketplaces, other people, or money.

Is there escape from the economic realm? 248

I argue that there is no escape from the economic realm as defined. All things of value are obtained at some effort, risk, loss, or sacrifice (though it might be someone else's). We long to be free of economics and economic calculation, and create special times and places where they are suspended. Yet even this "suspension" is the result of economic thinking: it is the wish to reduce the burdens of obligation, computation, forethought, and regret, while experiencing greater plenitude. If only temporarily.

II. Two-Party Exchange **252**

Given the inescapability of some degree of economic logic in human affairs, it becomes important to examine the idea of *fairness* in exchange. I argue that fair exchanges between two people (or institutions) happen when both parties experience equal happiness as a result. The value of a fair exchange as a whole is thus twice the value of its value to each party (and often more). But, I ask, how is fairness judged? And by whom?

The question of fairness and obligations 253

That two parties make an exchange voluntarily does not indicate that the exchange is fair. Most exchanges are neither fair nor voluntary. I argue that they need they be neither, however, *if* obligations are acknowledged and reparative exchanges are undertaken that increase the complexity-and-organization of social life. Indeed, awaiting complete voluntariness on every occasion, or negotiating to *perfect* fairness, would be socially destructive.

The pleasure of others and the value of giving 256

I draw on the idea that involuntary resonance with the psychological state of others is an evolutionarily adaptive trait. Psychoeconomically speaking, it is how the happiness (or unhappiness) caused and shown by the reception of a good becomes, itself, a component of the value experienced by the party who provided the good, and thus of the exchange as a whole. The effect is usually catalytic of further exchanges, especially if their value has been positive.

Asymmetries in fairness and obligations. 259

A more careful analysis yields further insight: first, into the tactical uses of "love" to gain advantage in exchange, and second, into problems of enforceability of obligations in the face of unequal vulnerability to uncertain future events. I show how these asymmetries together explain how capital ownership, bargaining power, and legal authority reinforce each other and accumulate unevenly in certain individual and occupations.

The complexity of judging fairness 265

Given the myriad ways of constructing a fair exchange involving a single pair of goods, simplification seems necessary. Alternatively, it is possible that we actually grasp the full complexity of exchange but deny that we understand it. In either event, to aid in understanding, I sort exchanges into five "domains:" gift, barter, commercial, financial, and political. Knowing which domain is operative is crucial to success. We realize that the fairness of an exchange does not imply its legality. The experience of value can also be bluffed. I look at problems arising from bluffing the disutility of work.

Quasi-fairness and the value of fairness itself. 273

The value of fairness itself can become a variable. When fairness is valued differently by each party, many unfair exchanges suddenly become acceptable: they become "quasi-fair." Disvaluing fairness characterizes relations between paternalists and martyrs, and between sadists and masochists. I describe how such individuals seek each other out, or find individuals who strongly discount "the whole fairness issue," and I make the claim that these relations are more common than supposed.

III. The Net Value of an Exchange **279**

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Many fair exchanges are of net negative value, and many unfair exchanges are of net positive value. Given the category of quasi-fairness, I develop a taxonomy of six types of exchange. These can be arranged in descending order of net value, from fair and positive ones to unfair and negative ones. An economic decision is always made as to whether improving the net value of a proposed exchange is worth the effort. However, when one takes the view that social complexity-and-organization (Ω) is a good in its own right, then the scales tilt towards assuming that efforts at optimizing exchange are likely to be worthwhile, even if they must, ultimately, be cut short.

When the goods exchanged are living things 284

Economics assumes that goods themselves have no interest in where they end up, or with whom. This cannot hold when the good is a living creature, be it a professional football player, a child up for adoption, or a pet. The question becomes more than casually interesting in the context of arguments for environmental conservation, animal rights, and so on. In this section, I try to incorporate these factors into our model of exchange.

On the value of inanimate objects. 287

Not just living things but certain valued objects, such as significant works of art, can be said to have a rightful interest in their ownership and whereabouts. When these goods enter the marketplace, they do so in more complex-and-organized ways than do commodities. I argue that an expanded ethics of care for both natural and artifactual objects of beauty would serve the cause of economic progress.

IV. "Exchange Value" Examined, and a Foray Into Understanding Money **290**

"Exchange value" is a 19th century term often contrasted with utility or use-value. I look at what this distinction consists in. Money is said to have only exchange value. This is not quite right since exchangeability *is* money's use-value. I show how one might quantify exchangeability as such: it is a function of the number of ways it can be spent in a given market. Thus, the concept of "buying power" combines the value of what a sum of money can buy (its value-in-exchange) with the number of ways it can be spent at all (its exchangeability or exchange-value). I conjecture that the satisfaction provided by spending a given sum of money in a marketplace depends, all else being equal, on the preference/probability distribution over all the thought-possible combinations of ways to spend it there. I suggest that distributions with high Ω might be best.

CHAPTER EIGHT:
THE NATURE OF MARKETS

I. Defining a Market **295**

"Markets" are more or less public venues for the simultaneous, choiceful, non-coercive exchange of goods among many competing individuals. This leads to questions as to whether there are *markets* in tokens. I suggest that there are, and give some examples. Indeed, the economy that these markets help create—the psychological economy, or economy of tokens—might be just as important as the conventional economy with which it interacts, involving the exchange of material goods and services. To see more deeply into the matter, however, one needs to study just how markets work and to what extent theorizing about them depends on idealizations.

II. The Ideal Market **298**

The ideal market is a useful abstraction. Operating without brokers, it depends on being large enough that no single seller or buyer can set a market-wide price. It depends on goods and buyers and sellers being closely substitutable for each other; it depends on full and free information being available to all parties, and it depends on the existence of unambiguous property rights, legally supported currencies, and enforceable rules of fair exchange. No actual market is ideal. The non-idealness of actual markets is seized upon by market critics as a reason for more institutional control and by market enthusiasts as a reason for less. I explain how both are right and both are wrong. Neither side sees the effects of psychoeconomic factors on such sacrosanct "laws" as the law of supply and demand. I suggest that a more complex and nuanced basic model of the market is called for..

III. Market Exchange: a New Basic Model **308**

Since many factors go into setting the price of a good in a marketplace, our model, unlike the standard model in economics, conceives of price as the "dependent variable" from the outset. I sketch four broad categories of independent variables: costs, competition, value, and income (or wealth) distribution. How they affect market prices can then can be examined from two perspectives: that of the producer-seller and that of the consumer-buyer.

The producer- seller's perspective 312

To a first approximation, the price a producer-seller can ask for her goods depends on her costs of production and on the relative strength of between-seller and between-buyer competition. In our model, the latter factor is cast as the ratio of the degree of organization of the potential buyers (R_{buyers}) to the degree of organization of the category of goods in question (R_{goods}), as modified by the degree of match (μ) between what potential buyers want and the goods of sale offer. Manipulating these variables yields insight into many actual market behaviors and provides several pointers for a seller to improve his or her position.

The consumer- buyer's perspective 323

The price a potential consumer-buyer offers to pay for a good depends on how much he values the good, on his income or wealth, and on his costs of finding, buying, bringing home, and using the good. Because of

differences between buyers, the first two factors operate across ranges that can be systematically described. As goods "move" across these ranges of valuation and income, they sort themselves into "normal," "inferior," and "superior" goods—categories familiar to economists but re-examined through my new market model.

Combining the producer-seller's and the consumer-buyer's perspective 327

The law of supply and demand is subsumed as marketwide equilibrium or "going" prices come into being at the intersection of our two perspectives, which is to say, around the uncoerced agreement as to a good's money price by buyer and seller. Nonetheless, producer-sellers and consumer-buyers continue to try to position themselves differently in the marketplace and to exert what pressures they can on each other's perceptions, a point I investigate using our model's variables.

Two-party exchange and fairness: a reprise 331

Looking more carefully at the anatomy of a single exchange, I show that agreement as to money price does not guarantee that a market exchange is *fair* (as defined in Chapter Seven as: equal in value to both parties). We recall that an exchange can be unfair even if no coercion is involved and even when the value the exchange as a whole is positive. This is partly because fairness itself can be valued differently by different parties (yielding what I called "quasi-fairness"), but it is also because, when money is involved and is *taken* to be the neutral and sole metric of value it is not, the impression of fairness can be given publicly while allowing quasi-fairness or plain unfairness actually to be the case. Why do we acquiesce to the discrepancy? In order to allow money to fulfill its larger purpose, which is to lend markets the efficiency they need to function at all and to provide the wealth of choice that they do. A highly "marketized" society is thus one in which money is the token that conveys freedom best. It is also, very likely, one in which mutual benefit is a higher priority than perfecting fairness.

CHAPTER NINE:
THE MEANINGS OF MONEY

The chapter opens with some assertions and some questions about our feelings towards money. Is the love of money the root of all evil? How did money become so powerful? What is it about merchants that bothers us? Why are some goods cheapened by being for sale, and others not? Is money something different to the gambler and the investor, to the rich person and to the poor one? Some conventional wisdom about money is presented in terms that connect standard economic theory to our theory of value. This serves to open up a discussion of money that might answer our questions.

I. The Resellable Good **340**

Goods, by type, can be arrayed on a spectrum of their resellability. Money is the ultimate resellable good. Trash or waste lies at the other extreme. In the middle of the spectrum lie "hybrid goods:" goods that we use and enjoy *and* that have some resale value (e.g. cars and houses). Most capital goods are hybrid goods too. Interesting is how hybrid goods induce ambiguity into how they are properly to be valued, an ambiguity that extends to the value(s) of consumption and production per se. Her our Ω theory of value sheds some light by providing grounds for comparison, and an argument for correctness in balance**.**

Traders, middlemen, and merchants. 344

Although what they produce is the marketplace itself, the value of traders, middlemen, and merchants to society has often been underestimated. I discuss why disquiet over the role, and sometimes the person, of the trader/middleman/merchant persists.

The value of hybrid goods 346

Many hybrid goods are valued less for their direct contribution to life-enjoyment than for their future resale value. This can have a deleterious effect on the quality of their design and the quality of life they engender. Developer-built "homes" are a case in point. To determine how to prevent this effect require a deeper look at how goods evolve (and de-evolve) over time.

II. Gresham's Law **349**

"Bad money drives out good money." This is Gresham's Law. Although it is avowedly about money, Gresham's Law can shed light on the evolution and de-evolution of all goods that are bought and sold. I suggest that money itself is the fruit of Gresham's Law: the de-evolution of a once material and complex good with several qualities and uses to an all-but-immaterial cipher offering nothing but perfect exchangeability. I discuss why this development is salutary for money but deleterious for most other goods by tracing Gresham's Law basis in...

The logic of efficacy 353

Most goods have a far greater number of qualities and possible uses than those for which they are commonly valued. In a market economy, qualities that are *not* valued and yet are costly to produce or purvey tend to be eliminated. The idea is to produce only what is appreciated and will be paid for. I discuss how and why this tendency has unfortunate and de-evolutionary effects on several categories of goods. I contrast this marketplace

logic to the model of biological evolution, and suggest that we would do well to learn from nature if greater complexity-and-organization everywhere is our goal. (Which it ought to be.)

III. On Money and its Meanings **364**

More than any other good, money multiplies the number of *possibilities* for trade. This, plus money's Gresham-acquired physical lightness, is what makes money the token that bestows freedom so well, and ever better as the extent of the market grows and more of anything anyone might want can be found for sale to anyone who might want it.

Qualms (the usual...) 364

The freedom money grants is not well-founded when lower needs have not been met. Monetary freedom that is poorly founded attracts sycophants and blackmailers. Nor is all money earned money deserved. There is often a complete separation between where, how, and from whom money is earned and where, how, and for whom it is spent. And there are important things that money cannot buy, such as respect as a parent, artist, athlete, leader, or scholar. That said, one wonders why and...

How money becomes the dominant token. 366

Most tokens are fleet, light, and made for exchange. Money is exemplary in this way. But it is also one of the very few tokens whose total supply is controlled by the state. Most socially-exchanged tokens can be privately "printed," and so tying them to money helps social convention hold down token-inflation. I argue nonetheless that the chief reason money dominates is that it lies at the (current) end of an evolutionary trend which has tokens higher on the stratigraphy acting as *proxies* for tokens lower on it. The moral success of such "proxification" depends on token-trade satisfying lower needs becoming both more complex and more routine over time.

A measure of organization: money shaped, marked, and packaged 369

Money is usually conveyed with "strings" attached—i.e. with obligations as to its proper uses. Wages are not tips; royalties are not donations or taxes. Divided into "sums," money is most often budgeted. These constraints allow money and non-money tokens to intermix, and, in so doing, to both organize the "freedom"—really the chaos—that a record-less, cash-only society would bring about, and to encourage it to reach ever higher levels of Ω.

Money to the poor 374

In highly "marketized" societies, money does not begin to give real freedom until it is *enough* money. For the poor, constraints having to do with preference or propriety are overruled by constraints having to do with necessity. Under enormous pressure to save money, the money-poor are also subject to many unnecessary and further freedom-robbing practices, from limited consumer choice to usurious interest rates and endless waiting in lines.

Money to the rich. 380

The freedom of the rich is also limited—but Nature, law, time, and the imagination, not (the lack of) money. So what to do with the excess? Philanthropy is an option. More common is setting out to achieve ultimate satisfaction of the lower needs. Perfect legitimacy and universal approval are often the focus of such efforts, but neither are to be had without considerable rationalization and self-doubt. Alternatively, the rich can invest their money in other people's enterprises: a way to exercise one's freedom and to contribute to economic development by selling some freedom to others.

Some observations on gambling and investing 384

Gamblers too test the limits of their freedom by making risky "investment" decisions. In a society wary of commitment, infatuated by freedom, and unable to comprehend the changing nature of work, gambling becomes an easy way for some to challenge their fate...or lose everything. Both investor and gambler understand that there is no freedom without risk. Both are committed to money as that which earns more money. But the investor bets on the House.

IV. Gresham accepted, Gresham reversed 388

When a good de-evolves to minimum complexity and maximum single-function efficiency, it may or may not be a bad thing. It can be a good thing if the complexity-and-organization of society as a whole is increased by that de-evolution. This was the case with money itself, and with most of the goods that became commodities without significant loss of complexity-derived quality. Some goods, however, become more complex, sophisticated, expensive, and multi-functional with every generation of production, and this under the same market pressures that affect all goods. How can this happen? I argue that there are limited number of (related) ways: One way is through establishing communities of connoisseurs that do not regard the resellability of the good as central to its value. Another is through construing the good as one that defies the law of diminishing marginal utility (as studied in Chapter Six). Another is through appealing to historical snobbism, preferably *sans* elitism based on wealth. Another is through deploying technological innovations that increase (or lower) the price of the good more slowly (or faster) than consumers expect it to increase (or decrease). And finally, there is adjusting the stratum of need the good addresses, up or down, but usually better down. I argue that all of these ways of reversing Gresham's Law are important not only to defending certain long-evolved and complex goods from market forces, but also to increasing the complexity-and-organization of goods, jobs, laws, and practices of all kinds.

CHAPTER TEN:
PROGRESS: TOWARDS A VALUE ETHICS

I. ***Economic Growth, Development, and Progress.*** 402

Growth, development, and progress are terms in the language of economics that usefully combine evolutionary theory with moral concerns such as value and justice. I argue that economic progress *is* progress because of the way in which it increases the degree of complexity-and-organization (Ω) of the environment in which people must think and act. A significant source of this complexity-and-organization is the ingenuity demanded by commitment to the principle of "no harm without the consent of the to-be-harmed." This is what distinguishes progress from development and mere growth.

Suite 1: Reasons for increases in the general price level. 406

Economic development and progress are always accompanied by a general increase in wages and prices. I argue that there two distinct reasons for this, inflation and (economic) evolution. While economists focus on the first, we are interested in the second. Critical are issues of justice, as described above, but also the responses to population growth, the need for new token economies, and the rising taste for luxuries.

Suite 2: Using our market model to describe general price level changes 413

Here the equations developed in Chapter Eight are revisited to show how many of the arguments given so far can be abstractly represented.

Suite 3: The complexity-evolution argument more closely 415

Focusing on the variable "market power" (r^{μ}), I show how competition between sellers for the attentions of increasingly-spoiled consumers is a major driver of complexity-based economic evolution as well as of the general increase in prices and wages. This kind of "inflation" is good.

II. ***Towards a Value Ethics*** 422

In the matter of reducing poverty, injustice, crime, hatred, and meaninglessness, perhaps the most socially useful statement that can be derived from this book's theory of value is the aphorism: "the love of simplicity-and-disorganization is the root of all evil." Here "love" means "strong and persistent preference." Simplicity-and-disorganization is the opposite of complexity-and-organization, Ω, the increase of which is life's purpose.

The problem of uneven innate limits of human capability. 424

Not every person, and not every social system, can deal with the degree of complexity-and-organization required of them to thrive. The moral question becomes how to deal with the mismatch. Dumbing down the social and physical environment is one option, and is morally defensible in certain cases. But it is second-best to increasing the person (or system's) capacity for handling higher levels of Ω. Only a commitment to the latter—one that abjures coercion (but not persuasion)—can prevent descent into fascism or anarchy. The issue becomes more pressing as globalization continues. Six recommendations follow:

1. Education 431

The argument for the centrality of a liberal education is made again, with emphasis on the problem of pacing and timing to avoid discouragement and rejection of the program.

2. Welcoming the "complications" of the no-harm principle 433

The virtues of efficiency, simplicity, and freedom ought not be accepted at face value. They are only half the story. In particular, the inefficiencies, complications, and constraints involved in following the no-harm principle must be embraced. In the long run they benefit all, including those who value efficiency, simplicity, and freedom.

3. Dealing with addictions 434

In providing refuge on the one hand, and temporary performance enhancement on the other, addictions to drugs, alcohol, and even television, can be a form of non-coping with environing complexity-and-organization. It becomes important that we understand addiction's origins, which, insofar as they are neurological and cultural, might lie in the imbalance between feelings of satisfaction and feelings of pleasure. If this hypothesis is correct, then new salience is given to cultural strategies that promote the appreciation of nature, other people, and the fruits of civilization, and to strategies that match individual capacities to social roles that satisfy all needs at whatever absolute level of Ω is achieved.

4. Supporting the token economy 437

Money has so become the dominant token that we overlook the economic system that trades in other tokens. These tokens account for social bonds as well as non-market freedoms. One sees again why money should be taken out of politics on the electoral side, but also how valuable would be governmental support—monetary, legal, and physical—for purely social occasions in which token trade in non-money tokens is intensified. One good that all people produce is the sight of their happiness. Witnessing this on television is not good enough. Needed are shared goods: spaces and occasions for mutual influence and appreciation in the flesh. Enter architecture.

5. Extending rights to animals 440

With Gary Francione, I argue that we should extend to animals the right not to be treated as human property. Although this would do away with a number of industries and jobs, not to mention change our diets, I argue that the effect of "animal liberation" (as it is sometimes called) on economic development as well as economic and moral progress would be substantial and positive.

6. Towards a value ethics: optimizing circles of concern and influence. 442

This book has for the most part looked to utilitarianism for an ethical framework. Here I explore a few ways that utilitarianism might be modified or transformed into a system one might call *value ethics*: a complete view of how we should behave in order to maximize the plenitude of all lives on earth, including our own. Each of us has around us a circle of concern and a circle of influence. Ideally these two circles coincide in size and membership, but in real life they do not. I explore the consequences of this, and of the persistent effects of propinquity on our *levels* of concern and influence. In the face of the complexity revealed, new techniques of analysis are called for. I suggest that the field of research called "artificial societies" holds out promise for studying experimentally the evolution of ethical principles as well as the likely effects, in real populations, of their combination and distribution. I submit that our theory of value as the increase in life's complexity-and-organization, Ω, can supply the consistent background of such studies, as well as useful pathways of connection to other disciplines.

CODA:
THE VALUE OF ARCHITECTURE

This Coda applies our general theory of value to a particular problem, namely, the dispiriting condition and indifferent design of large swaths of the American environment. I argue that turning the requisite attention to this problem would result in more than just "beautification" or improved sustainability. It would generate a surge of economic growth and progress equal to the one caused by the confluence of communication, computation, and entertainment technologies in the closing decades of the 20th century. Essential to this happy scenario's unfolding is a better understanding of the value of architecture, which has long played an important but underestimated role in increasing life's plenitude.

I. The Problem 458

I present empirical data that suggest that 98% of the buildings in America—desultory in design, hasty in execution, and unlovely to look at—are built either without an architect or *with* an architect interested only in meeting his or her client's short-run investment goals and minimum legal and engineering standards. I then present further data that show that the portion of the (U.S.) GDP accounted for by civilian building construction has diminished considerably since 1945, this even though the number of square feet built per year has gone up. To some, this indicates a laudable gain in the productivity of the construction industry. I suggest, rather, that it indicates the diminished value of the built environment as a "product" towards which it is worth directing time and money. In the larger picture, that is, architecture is an inferior good.

One of the reasons for this lies in architectural history. I recount the circumstances under which Modernism arose in the early 20th century in the heart of Europe to become the standard "style" and mode of construction it is today around the world, and I discuss how the economic motives of developers, landlords, and taxing authorities helped it proliferate in spite of people's preferences. I show how architects themselves have been complicit all along, through holding on to dated ideologies and working methods. At fault, chiefly, is architects' acquiescence to impoverished "engineering" definitions of functionality and efficiency. At fault too is architects' unwise and unwarranted belief in the redemptive power of their own creativity.

II. Eighteen Proposals for Revaluing Architecture 476

Many books and articles are published each year addressing how American society and values are changing due to market globalization, demographic shifts, new technologies, natural resource depletion and the like. Conspicuously absent from the discussion among public intellectuals is the effect on, and of, architecture, except indirectly in occasional broadsides against sprawl. I take this as another sign of how little understood and how little valued is architecture, this though everywhere our lives depend on it, and though much of the pleasure we derive from life is inside of, and from, places that have been designed for that purpose. The problem seems to be that *what* architecture does, and *how* it has value, remains a mystery.

The remainder of this chapter addresses how the revaluation of architecture might proceed, first through coming to better understanding of how architecture satisfies human needs (as schematized in Chapter Four), and then (drawing on Chapters Five though Ten) through adopting some new strategies for competing with other goods in the marketplace and polis. Throughout, I address not only fellow architects, planners, designers, urbanists, and writers on such subjects, but everyone who has an interest in making a healthier, more just, more prosperous, and more beautiful world through acting upon the physical environment.

My proposals fall into in four groups.

Group I: Proposals that would help persuade more people to value the quality of the built environment more highly.

Proposal 1. Addressing more needs in thought and deed. 481

People's everyday surroundings form the stable background of their lives, and are thus largely ignored. To see the environment as a figure, one must have intentions that it obstructs, allows, or promotes; one must feel needs that it frustrates, serves, or awakens. I argue that although college-level courses in architectural history and "architectural appreciation" have some value in directing attention towards the finer points of design, they do not convey the multidimensional subtlety of the ways that *all* buildings affect us. If people are to value architecture more highly, then a way of talking about architecture must be developed that is not art-historical or commercial but, rather, that engages all human needs and possibilities as directly as possible. I offer the outline of how this mode of discourse—this "way of talking"—might go, using as a basis the six needs identified in Chapter Four, namely, *survival, security, legitimacy, approval, confidence,* and *freedom.* Each need suggests a different approach.

Proposal 2. Raising the standards of necessary and sufficient satisfaction. 492

Having made some progress in conveying how richly architecture satisfies needs, the task becomes persuading people to want more from architecture in these terms, and more from archi*tects*—who in turn must ask more from themselves. In this section I concentrate on strategies of public persuasion based on the analysis of "force" presented in Chapter Five, and on the analysis of goods that defy the law of diminishing marginal utility, presented in Chapter Six.

Persuasion using example 494
Persuasion using encouragement 495
Persuasion using flattery 496
Construing architecture as a climactic good 498
Construing architecture as a gift that keeps giving 499
Construing architecture as a goal that keeps receding 501
Construing architecture as an addictive good 502

Proposal 3. Combatting "place machismo." 504

There is a persistent strain in American culture that judges sensitivity-to-place to be a weakness. Because that "weakness" is associated with femininity, I call the virtue of *in*sensitivity to place "place machismo." In this section, I delve into the origins of place machismo and challenge its claim to be a virtue outside of the most dire circumstances. I criticize the large number of American public high schools, designed since the mid-1960s on the model (it would seem) of minimum-security prisons, for cultivating place machismo in two generations of Americans—and thus for desensitizing a whole population to the value of place. I conclude with some suggestions at to how to improve school design and how to make sensitivity to place in American culture something "cool."

Proposal 4. Seeing architecture as always a public good. **507**

Most buildings in America are privately owned. But the effects of buildings overflow the legal boundaries of their sites. All buildings, that is, are public goods to some degree: payed for by some but enjoyed (or suffered) by many. To serve as a theoretical framework for dealing with this fact, I sketch out the idea of buildings as *information fields*, and examine the property rights people might have in those fields. I then explore how the public-good nature of architecture might be handled by the marketplace in a dynamic way instead of leaving it up to regulation by public authority.

Proposal 5. Seeing buildings in the "experience economy" as the primary preservers and standard-bearers of our sense of reality. 513

Post-industrial economies are becoming increasingly involved in the production and consumption of experiences. I argue that although architecture can join in this trend—and has a long history of creating special atmospheres and "experiences"—the one experience that architecture (along with nature) could specialize in offering as it becomes rarer is "the direct aesthetic experience of the real." In our media-soaked environment, this experience can be transformative, and hence of immense value. I offer a way to conceptualize an architecture whose central quality is being real, this through having presence, significance, materiality, and 'emptiness.' I discuss how enlightened developers might capitalize on our desires for such experiences.

Group II: Proposals that would reform certain of the attitudes, beliefs, and practices of architects.

Proposal 6. Reclaiming the science of architectural phenomena. 519

Throughout the 20th century, architects ceded much of what was technical and quantifiable about architecture to the engineering professions. I argue that this division of labor in fact left large areas of knowledge about architecture's subtle effects untended, ultimately undermining architects' claims for the value of design. I urge architects to revive their interest in the science of "architectural phenomena," not just in order to enrich their design palette but to revalue their art at a time when quantifiability is an important guarantor of economic value.

Proposal 7. Using computers not to simplify design and streamline production but to complexify design and organize construction. 521

Most architecture firms use computers as they are conventionally used in business and industry, i.e., to increase labor productivity while eliminating what buyers don't notice or need from the product. This trend puts architecture's value in great danger. In this section I urge architects to take the higher road, one that so far only a few have taken, namely, to use the power of computing to create and manage greater complexity in their product, with stronger and more fluid connections to the construction process.

Proposal 8. Downplaying creativity. 523

While creativity is essential to being an architect, I argue that pride in creativity is a distraction from more important issues and values. I show how pride in creativity is deleterious to the quality of the built environment and how it weakens the bargaining power of architects when arguing for their designs with business people, civic officials, and engineers.

Proposal 9. Rethinking the role of "environmental determinism." 526

Many things influence human feelings and behavior, the physical environment being one of them. The question is: what proportion belongs to the physical environment, and how strong is the influence? In the 1970s, psychologists and sociologists interested in the topic quickly conceded that the influence was minor and hard to measure. I argue that they were too quick to concede. People are influenced by what they want to be influenced by, and can sensitize (or desensitize) themselves to almost anything. Why not to architecture? The complexity involved is so great that we need fear no loss of freedom by opening ourselves to the idea that we are not only *who* we are, but also *where* we are.

Proposal 10. Adjusting architectural education. 528

Architecture, like literature, is a complex pleasure best appreciated by people who have tried to produce it. The case for it must be made anew with each generation. In this section I make several recommendations, ranging from increasing undergraduate enrolment to architecture schools, and giving a full studio-based education there, to laying the groundwork for Proposals 6, 7, and 8.

Proposal 11. Inviting and tolerating more debate. 531

For all that one can find fault with in architectural education, one of its strengths is its tradition of supporting earnest critique and debate of current architecture. This dwindles in architectural practice, professional meetings of the AIA and mainstream architectural press coverage notwithstanding. I suggest how the schools could do more to keep the debate going once students leave school for practice.

Group III: Proposals that would emend some of the contractual and market relationships that presently obtain between architects and others.

Proposal 12. Making the market for architecture more, or possibly less, "ideal." **533**

I examine the market for architectural services for "ideality" as defined in Chapter Eight, as well as the market for real estate. Both come up wanting. The question is, is this a bad thing? Are buildings commodities? Market forces have eroded architect's fees and left realtor-broker fees intact. I conclude that trust in professionalism, and on market regulation by the state, can and should be minimized if and only if people's willingness and ability to exercise quality-discriminations are at the same time maximized. I argue that the real estate market would benefit by approaching ideality more closely, and point to online property listing and mortgage brokering as a step in this direction. Greater transparency in the auction system is also called for.

Proposal 13. Making the architectural services more affordable. **539**

"More affordable" here does not mean cheaper. It means easier to pay for, and easier to see the reason for paying for. I examine how bank lending practices determine whether or not "architecture pays," and how the answer differs for residential and commercial properties. Certified appraisers operate at a critical juncture in the process, and could make a significant contribution to its evolution. I then examine the formulae by which most architects are contractually paid, namely, as a percentage of construction cost, and comment on its drawbacks. I discuss various alternatives, like risk-sharing and royalty-based systems, and conclude by proposing a modified percentage-of-construction-cost contract that realigns owner-client and architect's incentives, called the "Tilted-L Fee Contract".

Group IV: Proposals for new legislation and/or financing methods that would help bring about better buildings and environs for all.

Proposal 14. A sprawl tax. 544

As the name implies, this is a tax levied by the city on property owners, the aim of which is to discourage sprawl and encourage denser, more efficient use of land closer to the city's center. The idea is to apply a multiplier to the typical, flat-rate property tax—which simply tracks the property market values. This multiplier might vary rise from 0.5 at the city center to 2.5 at periphery.

Proposal 15. A ticky-tacky tax. 546

Here the municipality keeps track of average per-square-foot construction costs for different building types (and their associated landscaping) in the city, reducing property taxes on those projects that exceed the average, and raising taxes on those that fall below the average. I discuss likely outcomes and problems in implementation.

Proposal 16. Dampening real-estate speculation. 549

Drawing on the analysis of resale offered in Chapter Nine, I argue that architecture should not be allowed to become a capital good only, to anyone. Specifically, I suggest prohibiting owners from selling their property if they owe more than 33% of its purchase price to a lender. Alternatively, or in addition, one might set a minimum time period of such ownership before resale is legal.

Proposal 17. Encouraging "extended investment." 550

Extended investing means tying part of one's return on investment (ROI) to what would normally be called that investment's externalities. After elaborating what this means more fully, I propose an entirely new way to invest in, and raise capital for, architecture—a new form of market that combines elements of the securities market with a neighbor-based scheme of property rights co-ownership: micro-REITs.

Proposal 18. Legislating historical continuity. 553

Statutes that prohibit demolition in general—except in certain cases—go beyond those that already protect demolition historically significant structures. They encourage historical continuity in the environment through incorporation of the past into the present and future. This complexity-and-organization-increasing strategy follows the example of the evolution of common law and of DNA as discussed in Chapters One through Three (although in this case "architectural DNA"). It can also enrich the design of new buildings on undeveloped land. The Uniform Building Code (UBC) is a critical but overlooked part of this process.

With human and natural history thus incorporated, with the UBC revised, and with more than a few of the seventeen other proposals in this Coda adopted, a Renaissance for architecture would surely take root—as it might well for society as a whole. •
