WORKING KNOWLEDGE:

HOW HUMAN COGNITION GROWS INTO CULTURE

E. N. Anderson

Dept. of Anthropology

University of California, Riverside

“Ye shall know the truth, and the truth shall make you free.” John 8:32

“Truth shal thee deliver, it is no drede” Chaucer

Table of Contents

Preface

Chapter 1. Introduction

PART 1

Chapter 2. Darwinian Humans

PART 2

Chapter 3. Individual Cognition in Interpersonal Context

Chapter 4. How We Don’t Know: Cognition Confounded

Chapter 5. The Failure of Rational Choice Theories

PART 3

Chapter 6. Culture

Chapter 7. What Culture Isn’t: A Middle Ground

Chapter 8. How Culture Happens

Chapter 9. Culturally Constructed Knowledge of the Environment

Chapter 10. Some Theories of Complex Cultural Knowledge

Chapter 11. Conclusion as Application

References

Preface

“One might recall…an anecdote of Darius. When he was king of Persia, he summoned the Greeks who happened to be present at his court, and asked them what they would take to eat the dead bodies of their fathers. They replied that they would not do it for any money in the world. Later, in the presence of the Greeks, and through an interpreter, so that they could understand what was said, he asked some Indians, of the tribe called Callatiae, who do in fact eat their parents’ dead bodies, what they would take to burn them [as the Greeks did]. They uttered a cry of horror and forbade him to mention such a dreadful thing. One can see by this what custom can do, and Pindar, in my opinion, was right when he called it ‘king of all.’” (Herodotus 1954, orig. ca. 400 BCE)

 So far as we know, Herodotus was the first person to realize that cultures were radically different, and to advocate—implicitly—cultural relativism: the idea that each culture’s knowledge and belief must be understood in its own terms, and that if we want to judge other cultures we must understand them first, and evaluate them in their own terms. This lesson has not yet been learned. Worldwide, most people are still with the Greeks and Callatiae, evaluating others as “bad” solely because they are different.

This book is an enquiry into how individual knowledge grows up into culture. “Culture” is learned behavior that is shared in relatively large groups. It is shared through communication by language, gesture, and other means, either symbolic (like language) or direct (like imitating another’s work motions). It is hard enough to understand how individuals learn and know, but more difficult to see how they can share it widely. Some utterly trivial things, like texting abbreviations (“LOL”…) and emoticons (like the use of colons and parenthesis to make a smiley face), have swept the world in recent years, while desperately important knowledge, like the need for folic acid in nutrition, languishes in comparative obscurity. At the very least, we need to understand what is happening.

This book is written partly to critique three particularly widespread and incorrect views of knowledge and culture. First is the idea of the rational individual. In fact people are neither individuals nor rational; they learn almost all their knowledge from other people, and for emotional and social reasons. Second is the idea that individuals within “a culture” are homogeneous and can be thought of as one blob. Third is the idea that “cultures” are wholly separate, such that persons from different cultures or even subcultures live in completely different worlds that are mutually closed and inaccessible. In fact, cultures cross-cut, mix, blend, and overlap, and in any case are all probably derived from a very local and simple ancestral pool not many tens of millennia ago. People communicate with striking ease across cultural barriers.

The viewpoint herein is based largely on experimental psychology and cognitive anthropology. I begin the present book from scratch, with the evolution of the human capacity for knowing. I spend the first half of the book on psychology, before getting to culture. I leave out areas well covered elsewhere, such as sensory environments (Abram 1996), learning and education (Louv 2005), general cognition, and neurophysiology.

 Anthropologists are notorious for deconstructing generalizations. The first response of an anthropologist to any general statement is “My people do it differently” (the so-called “anthropological veto”). The second is “It’s all more complicated than that.” These become reflexes after a while. Sociologists and psychologists, whose careers are often made from trying to find general rules of human behavior, grit their teeth.

 I can play the anthro-veto game with the best of them, but in this book I am trying to find generalizations about human knowledge. I am thus exposing myself to vetoes, and I am sure I will often deserve it. I apologize to experts in fields I have inadequately treated. But we need to know about knowledge and error, because so much dangerous error is out there, from racism to global-warming denial. I will, then, go where angels fear to tread.

The list of acknowledgements for this book should cover everyone I have talked to. In fact, it should even include the dogs at my feet and the crows at my window, who serve as my models of nonhuman mentation and sociability. Suffice it to mention the people most critically involved in the actual enterprise of writing: First, as always, my wife Barbara Anderson; then my colleagues, especially Alan Fix, David Kronenfeld, and John Christian Laursen, with whom I have hashed out these ideas over many decades. Finally, though, this book really owes its existence and survival to many truly exceptional students and former students, including (most recently) Seth Abrutyn, Julie Brugger, Kimberly Hedrick, Sandy Lynch, Aniee Sarkissian, and Katherine Ward. Their interest in these arcane matters motivated the book and kept it going.

I: Introduction

Different Worldviews, Different Worlds

Hilario and his family were devastated. Their dogs had been killed by a jaguar. Yet the dogs had slept peacefully the night before, instead of crying out as they dreamed of their fate. They had not foretold the attack of the jaguar, as they would normally have done. Could they have simply chosen to die? What would the future bring? Would people die unforetold? The family worried and speculated. Hilario’s wife asked: “How can we ever know?”

Hilario and his family are Runa of the Upper Amazon basin, and anthropologist Eduardo Kohn (2007:3) recorded their story. He built it into a brilliant exegesis on knowledge—how the intense relationship of the Runa with animals is fraught with signs and symbols, layers of significance that make it not only plausible but inevitable for them to believe that dogs dream the future.

When I was an undergraduate student, I was taught that continents had been stable on the earth’s crust for all time. There were, to be sure, some wild-eyed geologists in the Old World who thought continents floated around like rafts! The professor paused for laughter, which duly followed.

During my graduate career, the evidence for continental drift became overwhelming, and even the strongest holdouts had to give in. New evidence from sea-floor magnetism and other data was decisive, but everyone had to admit that Alfred Wegener and his followers had had enough evidence, long before my undergrad days, to make a credible case—certainly not a laughingstock. I treasure a battered old copy of Arthur Holmes’ *Principles of Physical Geology* (2nd edn., 1965)*,* which I read and re-read in my youth. Holmes was probably the greatest geologist in Wegener’s camp, and should surely have convinced any reasonable person. His book—revised just after the victory of the “drifters”—includes a tiny, gentle line celebrating the victory of his lifelong fight.

Naomi Oreskes, a historian of science, later studied the whole “continental drift” question. Why did an idea that was quite old, and in some quarters well-established, seem so truly revolutionary when it burst belatedly on the American scene (Oreskes 1999, 2001)?

So American geologists—top-flight scientists, impeccably trained in rational, objective methods—were as constrained by their cultural belief in stable continents as Hilario by his cultural belief in future-dreaming dogs.

Dreams, delusions, and scientific mistakes are the stuff of humanity. We deceive ourselves and we let ourselves be deceived. We believe in the all-perfecting Invisible Hand of the market; the inevitability of something called “globalization” which nobody can define; and the messianic perfection of this or that political candidate. Witchcraft, astrology, and reincarnation are still very widely believed, and I have talked to dozens of people who had directly and personally experienced what they thought was confirming evidence for these beliefs. Conversely, global warming, evolution, and other facts of life are subject to widespread skepticism.

Why do you believe anything?

You may believe it because it’s true. Most dogs bark. Water is wet. Things fall down, not up. Behind all such truths are complex and subtle realities, but the bare blunt facts are in our faces.

Yet, clearly, humans not only believe much that is false, but even distort their own experience to “remember” it.

Omar Khayyam (in Edward Fitzgerald’s translation) wished:

“Ah, Love, could you and I with Him conspire

To grasp this sorry scheme of things entire,

How would we shatter it to bits, and then

Remould it closer to the heart’s desire!”

As I have pointed out elsewhere, this exactly what we do in our minds (Anderson 1996). The very concept of “fact”—a discrete, isolated, totally veridical statement, free from emotion and bias—is a social construct. Harold Cook, historian of science, maintains it developed in legal practice—a *factum* was a “done deed”—in the European middle ages, and was carried over into science in the 16th century (Cook 2007:16). Before that, people knew truths from falsehoods perfectly well, but did not isolate them or take them out of emotional and social contexts so thoroughly. Cook, however, ignores a solid Aristotelian background to the medieval “innovation.”

 Most knowledge is social and cultural. You believe it because you have learned it from people you trust—family, friends, media. Some you learned on your own, but social and cultural contexts framed even that. The human animal is born to learn from other human animals. Humans survive, and have survived and multiplied for many millennia, through cultural learning.

 Anthropologist Peter Worsley wrote a wonderful book, *Knowledges* (1997)*,* pointing out that different cultures, and even different occupational or residential groups, have very different repertoires. They not only know different things; they structure knowledge differently and transmit it differently. We know what we know, we know how we know, we know what we should know. Such “meta-knowledge,” as well as everyday working knowledge, differs profoundly between a computer expert, an assembly-line worker, and a fisherman, even if they are in the same town.

Cultural knowledge is an amazing mix of brilliantly discovered pragmatic truths and wildly wrong speculations. Every culture has to incorporate a great deal of accurate, useful information to get along in the world. The tiny, isolated Inuit bands of arctic Canada filled many huge volumes with specialized knowledge (the Reports of the Fifth Thule Expedition), and even those volumes only scratched the surface of their knowledge of winds, seas, seals, bears, whales, seasons, stars, and sicknesses. The same people believed in a vast range of spirits. Modern civilization has expanded science inconceivably far beyond Inuit knowledge, but, unfortunately, has expanded error to match. Astrology columns, conspiracy theories, and urban legends confront us on every newsstand, frequently swamping accurate news.

Knowledges and Knowledge

 Naïve empiricism teaches that we have, or can have, direct access to truth about the world. This is most tenable for ordinary direct experience: I am cold, I am petting a dog, I am hungry. The other extreme is total skepticism, like David Hume’s (Hume 1969): There is not even evidence of my own existence; “I” may be merely a set of unrelated sense-impressions. There is no cold or hunger, merely a sensation which may or may not have anything to do with reality.

 Immanuel Kant (2007 [1781, 1787]; 1978 [1798]) provided one answer: we can be sure only of our experiences—the hunger and cold, the sensation of petting the dog. Some ancient Greek philosophers, notably the Skeptics, had made the point, but it was left to Kant to develop it and ground it in psychology. Maybe “I” do not exist and there is only a transient detached experience. Maybe the dog is illusory. But the sensations must be real in some sense. They are undeniably there. These he called aesthetic intuitions: aesthetic in the sense of “feeling,” not of “artistic.” I can also be sure that I am elaborating these feelings into concepts—actual thoughts. So there is an “I,” at least to the extent of something that knows it is feeling and sensing. This sounds like Descartes’ “I think, therefore I am,” but with the key difference that Kant’s prime is not thought but bodily sensation. Descartes’ person could be a disembodied soul (and, basically, was, for that devout if unconventional Christian). Kant’s is a living, breathing body.

I personally cannot refute the total-skeptic position; I have to agree with Hume and Kant that all I can really say is that there is a sensation of cold and a conceptualization of it as “coldness.” (Maybe Hume would not even allow me to know that.) I think there is an “I” that is conceptualizing this, but maybe I came into existence one second ago, complete with illusory memories. Perhaps I will disappear in another second. Perhaps there is nothing in the universe except my sensation of cold.

However, this seems unlikely, because the memories have to come from somewhere. How could they have appeared as a transient isolate in a vacant universe? Kant’s answer to total skepticism was to argue that we define ourselves through interaction with other entities, and cannot have come to have sensations and experiences any other way (Kant 2007:138-141). Thus, there must be other entities. He knew he was on shaky ground philosophically, and the skeptics have gone right on being skeptical. However, he appears to have been right. I could not possibly think up all the crazy stuff I experience, especially if I came into existence only a second ago. I can’t possibly be imagining Kant’s book—it must be a real book by a real person other than myself—because I just don’t have the brains to write anything like this. My wife, my children, my friends keep surprising me; I would never think of the ideas they create. Solipsists certainly have a high opinion of their imagining skills. I will, henceforth, simply follow a tagline floating around the Internet: “Reality is the stuff that refuses to go away when I stop believing in it.”

Even a Buddhist sincere in the belief that “all is illusion” has to admit that some illusions are stable and predictable while others are not. If I go into my garden expecting to find grass, I will never be disappointed. If I go expecting to find a herd of unicorns, I will always be disappointed. Astronomy gradually diverged from astrology, between the 17th and 21st centuries, because astronomy’s predictions got more and more routinely validated and astrology’s more and more routinely proved wrong. A millennium ago, both looked equally reasonable. Naming the stars and plotting their courses was barely scientific, and of course astrophysics was not even a dream. Conversely, nothing seemed more reasonable than the belief that, since the sun and moon had obvious effects on this world (light, heating, tides), the other celestial bodies must have their effects too, especially since their slow progression in times of rising did correlate with the progression of the seasons. It was not until the Renaissance that astronomy became truly scientific (via the work of Tycho Brahe, Copernicus, and their followers), and that astrology began to suffer from serious attempts to verify it. Thus one half of a single science forked off from the other; one went from success to success, the other wound up on the “ash-heap of history.”

Astrology survives today because it gives people the illusion of being able to predict and control their lives; as we shall see, such control is a basic human need. Even the lame, feeble predictions in the daily column would be useful if only they were true. My wife still sometimes consults the daily astrology column, not because she believes it but because there is some satisfaction even in *imagining* that she could believe it. This morning, it provided her with the stunning information that she would be able to use a coupon today.

However, we must sometimes believe on faith, and must sometimes *dis*believe our own senses. I believe there are black holes in space, but I can’t observe them. Conversely, I saw lots of amazing things last night, but woke to find them mere products of my sleeping mind. Most cultures, over time, have taken such dream encounters as real, and people from those cultures would tell me that the things I dreamed must really exist somewhere (Tylor 1871), or, with the Runa, that these things will exist in the future.

So I take it that there is a reality out there, consisting of what Kant called things-in-themselves. It is infinitely complex and always surprising. It does include black holes but does not include unicorns. It includes my waking perceptions but not my dreams, except in the trivial sense that my dreams were physically represented as some kind of brain action.

However, I can never know all that reality, or even much of it. We know from Heisenberg’s uncertainty principle that we cannot fix both the position and the trajectory of the atoms, let alone the mass and velocity. They won’t hold still. We also know from Kurt Gödel’s famous proof that we can’t deduce everything from a few axioms.

Kant also pointed out that we generalize indefensibly. I have a concept of “dog” that is very accurate and predictive, but I do not know much about dogs’ internal anatomy, and I am not clear about just where dogs end and wolves begin. My concept of “cold” is very clear and sharp, but does not let me say exactly when cold turns to warm, or how the temperature of the room affects my body, or how my body’s sensations affect my brain. Kant showed that even such apparent real-world primes as space and time are not real out there, at least not in the way we experience them. Philosophers and scientists since have had a field day with this insight. Kant partly anticipated and partly inspired modern thinking about time, from Einstein to Hawking.

Time is a properly confusing thing: we must deal with both subjective and objective time. We all know that an hour in the dentist’s waiting room is much longer than an hour at a lively party. Yet, somehow, our internal clocks are ticking right along at the same rate in both places; all animals have built-in circadian clocks that regulate sleep, wakefulness, and so on, and these are gloriously indifferent to subjective time. We also know, rationally, that we have only 24 hours in the day, and cannot change this; hence, as the Chinese say, “an inch of time is worth more than a foot of jade.”

Thinking produces *schemata* (or schemas, if you prefer): concrete but generalized ideas about the world (Kant 2007:177-178). These would include the general idea of cold, the general idea of hunger, the concept of dog. People mentally connect the dots—the sensations—into lived experiences, and connects the experiences into more general and abstract concepts.

The term *schema* has passed into general use in the social sciences, with quite a few different meanings assigned to it by various scholars. Also general today is the term *representation* in Kant’s sense: our internal representations of things as we see and understand them. Social scientists have generalized this term to apply to cultural “representations.” These are really cultural constructions of reality, based on (individual) representations.

 Kant argued that we keep interacting with whatever is out there, and refining our concepts accordingly. Kant completed the task, set underway by John Locke (1979 [1697]; cf. Jay 2005:55) and continued by David Hume, of focusing attention not so much on “the real world” as on how humans think about the world. Empiricists like Locke were interested in how we can improve our knowing about the world. Kant saw the problem as one of knowing more about knowing.

Human limitations allow all manner of error to creep in. We have nothing remotely close to the visual abilities of the eagle, the scenting abilities of the hound, the ultraviolet vision of the bee, or the electric-field senses of many fish. Even though we know, intellectually, how Amazonian catfish use weak electric fields to read their environments, we have absolutely no clue to what that feels like. In Kantian terms, we have no phenomenological intuition of it. By missing the rich, complex scent-world my dogs know so well, I suspect I am missing a great deal—as much as they miss through inability to appreciate the music of Beethoven.

Repeated interaction with the world can sometimes take us farther and farther from reality. Kant realized that people can take an idea and run with it in the wrong direction, like the conspiracy theorists who take every news item as proof of their wild theories.

Our causal inferences may be wildly wrong. Almost every traditional group of people in the world believes that earthquakes are caused by giant animals moving around under the earth. This is a perfectly reasonable explanation, and an adequate one for most purposes. The real explanation for most earthquakes is continental drift, but, as we have seen, the idea of continents floating around like rafts seemed so wildly unlikely to the human mind that geologists did not accept it for decades.

Humans naturally make mistakes. We can never be sure of our knowledge. From Francis Bacon and his “idols” through John Locke to David Hume and Adam Smith, scholars had become more and more conscious of information processing biases, but it was left to Kant and his followers to foreground them, and their effects on our understanding of the world. Even the incredibly stodgy Kant was moved to a rare burst of lyricism: our limited “country of truth,” he wrote, is “surrounded by a wide and stormy ocean, the true home of illusion, where many a fogbank and fast-melting ice-floe tempts us to believe in new lands, while constantly deceiving the adventurous mariner with vain hopes, and involving him in adventures which he can never abandon and yet can never bring to an end” (Kant 2007:251).

Most of the research on this ocean was done by later scholars whom he inspired.

Interaction

Kant also focused attention on *interactions* with other people and with the nonhuman world, and on how such interactions allow us to construct concepts—including our concepts of our selves. This turned out to be a productive way of looking at society and life (Kant 1978/1798). The point was developed especially by the “Neo-Kantian” school of the late 19th century. Wilhelm Dilthey (1985) based his grand theory of society on this, and his student George Herbert Mead developed the whole field of social psychology from it (Mead 1964). The theologian and moralist Emmanuel Levinas (1969) created a whole ethical philosophy based on this idea.

Another branch of Neo-Kantianism came via Franz Boas and J. W. Powell to dominate American anthropology for many years (Patterson 2001). This branch was concerned with the means of interaction: languages and other communicative media such as the arts. Communication is, obviously, the very heart of interaction. Later concerns with interactive practice include the work of Pierre Bourdieu (1978, 1990) and his many followers. Knowledge is debated and negotiated in social arenas to produce the shared or partially-shared knowledge systems that underlie culture and society. On the other hand, people know things; interactions don’t. So in the end we are back to individuals.

The most famous of Kant’s intellectual followers was Karl Marx, who saw that the powerful always construct ideologies that justify power and privilege. They often dupe the less powerful into believing that, for instance, kings are divine or divinely appointed; that nobles are inherently purer and better than others; that the rich deserve their wealth because they work harder; or simply that the god or gods who rule the world decide to favor some people. Of course, these points had been made long before Marx, but he developed them into a whole theory of social ideologies.

Marx hoped that people’s interaction with reality would allow them to eliminate such “false consciousness” and come to more accurate assessments. Writing from disillusion with the failed radicalism of the 1960s, Michel Foucault offered less hope. He saw most knowledge as “power/knowledge” (Foucault 1977, 1980). He wrote largely about matters in which there was maximal need to know and minimal hope of knowing accurately. In his time, this included mental illness, as well as some other medical conditions. This sort of situation is tailor-made to call up people’s worst mistakes. We will look at Foucault’s ideas in due course.

On the whole, culture is a storehouse of useful knowledge, but these and many other distortions make it unreliable. Received wisdom is not to be received lightly.

PART 1: LARGELY ABOUT BIOLOGY

II: Darwinian Humans

Basic Biology of Knowledge

“[T]he economy, social structure, and beliefs of a historical era, like the fence restraining a baboon troop at a zoo, limit each person’s understanding of the world to a small space in which each day is lived” (Jerome Kagan 2006:253; cf. pp. 195-196). The simile is closer than Kagan ever thought: baboons too have their social metaphysics (Cheney and Seyfarth 2007).

Recent findings have firmly grounded our hypersocial life, our cultural learning abilities, and our unique language skills in evolutionary biology. The “killer ape,” and the “savage” in a permanent “state of warre” (Hobbes 1950/1651) are long dead. Instead, biologists have found much inborn mental equipment, including innate sociability. This includes some interesting parallels with birds as well as mammals. Humans are animals with a complex evolutionary history. (Only 40% of Americans accept evolution; 40% reject it totally; Miller et al 2006.)

Our behavior is, ultimately, the product of genes. These specify very few rigid instincts: dilating our pupils in the dark; closing our eyes when we sneeze; breathing even when asleep (and even that instinct fails in sleep apnea and sudden infant death syndrome). More often, our genes specify ability to learn. We learn some things much more easily than others, and which things are easy to learn is usually readily explained by our social needs and our former needs as hunter-gatherers in varied or savannah-like landscapes (Barkow et al. 1992). We have a genetic mechanism to learn language, but we can learn—with equal ease—any of the 6800 or more natural languages and any number of computer languages and artificial codes. We are genetically programmed to recognize blood kin, but we humans go beyond that: we have elaborated thousands of different kinship systems, and we adopt, foster, and otherwise create artificial kinship links with great enthusiasm. Biology produces general contours of thinking and feeling, while environment—notably including culture—fine-tunes these. Biological templates, grounds, or modules are shaped by learning. Jerome Kagan (2006, esp. pp. 234-245), who has done much of the relevant research, points out that the sorting is poor, the interplay complex.

The idea that humans are “blank slates,” without genetic programming, is long dead (Pinker 2003). John Locke usually gets blamed for the *tabula rasa* view, and indeed he used the phrase, but he was quite aware of, and indeed had a quite modern view of, innate information-processing capabilities. (Among other things, he draws interesting contrasts between normal individuals and "changelings": autistic persons, thought by countryfolk to have been fairy-children "changed" for real children that the fairies stole.6knew they were not fairy-children but ordinary humans who were simply born different. See Locke 1979 [1697]).

As one would expect from animals evolved as hunters and gatherers, we notice animals more than objects. Experimenters claim that children notice animals even more than internal-combustion-engine vans. (See Holden 2007—but they obviously weren’t testing my sons!) We also notice anything strongly patterned in nature. It is pattern sense that lets us pick out the snake from the grass, the fruit from the foliage. We notice flowers, guides to food for a primate. A walk with a dog reminds one of how much inborn preferences matter. Dogs care little about flowers, much about rotten bones that humans try to ignore.

Needs

 Humans act to satisfy needs, and not only physical ones. Critical was the discovery in the 1950s and 1960s that all mammals would work for chances to explore, chances to see new and interesting stimuli, and even for chances to stimulate the pleasure centers of the brain via electric currents. This discovery can be accommodated in an extended theory of “needs,” but only if one remembers that the old “drive-reduction” view is wrong (Anderson 1996; Baumeister 2005).

Humans have several broad classes of needs. Abraham Maslow constructed a classic needs pyramid in 1970; the lowest but most basic needs must be fulfilled first in order to survive. The others can be delayed progressively longer. Maslow’s original list (as summarized in Kenrick et al. 2010) was: Immediate physiological needs; safety; love; esteem; self-actualization. (The last was never well formulated and has tended to drop out; see Kenrick et al. 2010.)

In order of immediacy—how long it takes to die from lack of need satisfaction—we may expand the classic list a bit: breathing (oxygen); water; food; temperature regulation (fire, shelter, clothing…); health and physical safety; sleep and arousal; control over life situation; and social life from acceptance to social place (“esteem”) to love and belonging. In addition, reproduction is a need for society, though not for individual survival.

People have to prioritize getting air, water and food. Making a living, and coping with ordinary life, have to take first place. But social, control, and reproductive needs are more important to people. Thus people have to balance immediate, urgent, but less psychologically deep needs with things that can be put off but are more deeply significant.

These needs are not simple. “Food” is a complex of needs for protein, fats, carbohydrates, vitamins and minerals. We have genetic programs telling us to eat, but no two human groups eat quite the same foods. Silk moths live only on mulberry trees, pinyon jays live on pine seeds in pinyon groves, but humans live anywhere, and, as we used to say in Texas, “will eat anything that won’t eat back faster.” Genes specify how our bodies lay down fat, but obesity incidence has skyrocketed in recent years. Faced with floods of fast-food, some overeat, others exercise and eat wisely and stay thin. All this makes nonsense of the claim for “fat genes.” Where were those genes in 1900, when Americans ate much more than now, but were almost all thin?

Sleep and arousal are not simple states; sleep ranges from deep sleep to highly creative dreaming, and arousal varies from doziness to passionate interest, wild excitement, and manic enthusiasm.

Reproduction is not just sex; it involves a few minutes of sex followed by nine months of pregnancy and 20 years of child-rearing. Human birth and child-rearing require assistance (see Hrdy 1998). Biologists, especially male ones, often write as if human reproduction was all “mate selection” and the sex act. Darwinian selection has operated on the entire process, including the whole social program associated with birth, development, and education (Hrdy 1998; Zuk 2002). Humans are programmed to learn from peers, elders, and indeed almost anyone, as well as from parents (see Harris 1998). Unlike many animals, we learn throughout life, and in a multiplicity of ways.

In the face of this, Douglas Kenrick and associates have recently redone Maslow’s classic table (Kenrick et al. 2010). Acknowledging the huge amount of attention to mating and parenting needs in recent years, they now see the list as: Immediate physiological needs, self-protection, affiliation, status/esteem, mate acquisition, mate retention, parenting. They provide a very thorough discussion of the recent Darwinian theorizing on all these. Oddly, they miss the control needs.

Genes Code for Development, Not Destiny

 Darwinian theorists often forget that genes in humans code for *development* of traits. As we learn more about the physical underpinning of thought, we get farther and farther from detached Cartesian rationalism (Lakoff and Johnson 1999). The mind is embodied. Not only is the brain a physical organ; it is influenced by hormones and much else. Notoriously, bad digestion influences thought, and the ancient Greeks and Romans already took this and other such influences as fundamental to psychology. The link between dyspepsia and a “sour” disposition is as old as time.

We now know that genes are often switched on or switched off by environmental factors, ranging from overall stimulation to particular foods. If a gene is switched off, the trait it codes does not develop. (Thanks to epigenetics, this switch-off can last several generations.) So one can be fully wired genetically for a particular mental abilty and yet never show it. This was first demonstrated with vision; animals or humans blinded or partially blinded at a very young age do not develop the relevant visual centers of the brain. Further work shows this to be general. Rats raised in complex environments develop more cortex than those raised in dull cages. People raised in abusive isolation seem never to develop full language.

Nutrition, chemical exposure, particular experiences, birth defects, diseases, trauma, environmental stimulation, and dozens of other factors either stimulate or retard brain growth, or divert it into various channels, and profoundly change the amount and type of intelligence that develops in an individual. Even being an oldest sibling helps; oldests get to tutor their younger siblings, and thus learn more and test higher in IQ. (My wife loves this fact—she is an oldest-sibling and I am not.) Female mice and rats get smarter through having young—birth and mothering actually stimulates brain growth (Kinsley and Lambert 2006). I eagerly await findings on the human female!

Even standards of beauty are biocultural. Everywhere, healthy young adults are considered relatively beautiful, presumably because they are the most desirable partners if ones wants a lot of healthy children (Buss 2003). Reproductive advantage is, after all, the “bottom line” in natural selection—certainly in mate selection. Yet, even within my lifetime, standards of feminine beauty in the United States have changed several times. Marilyn Monroe, the idol of America in my youth, would be too plump and heavy-breasted for early 21st century tastes. The starveling models of today would look downright pathological to an American of the 1950s, and still more to one from the 1890s, when obesity was “in.” On the other hand, the ideal models of the 1970s were even more starved.

Cross-cultural differences are even greater. The variation has a lot to do with what is rare and expensive, and thus prestigious. Notably obese individuals are idolized in Samoa and West Africa, where diet was unbalanced and poor until recently. Only the most fortunate could manage to get fat, so they seemed the healthy and successful ones. Conversely, in the modern US, a high-calorie but poor-quality and unbalanced diet is the lot of the poor,while only the rich can afford the gyms and training that produce the “perfect” body. Other variations are less clearly economic matters, but they vary as much. Facial features, waist length, leg length, ear shape, and anything else visible are all subject to wide variations in preference from culture to culture.

Standards of beauty in landscape may have a genetic component. Worldwide, people like water and waterside spots, such as beaches and streamsides. They tend to like savannah-type environments, with scattered trees in extensive grassy areas—look at all the lawns and parks in the US. This probably goes back to our evolutionary roots in Africa, where ancestral humans indeed lived in such landscapes (Orians and Heerwagen 1992). Yet, also, people everywhere tend to love their immediate environment. The Plains Indians loved the plains, Inuit love the Arctic. Australian desert-dwellers, both Aboriginal and white, love the barren outback. Innate tendencies to like certain “harmonious” color combinations and line patterns are well demonstrated (Dissanayake 1995).

Probably almost all the really important things people do are biocultural. The purely biological behaviors seem either minor (like knee-jerk reflexes) or so automatic that we hardly think of them (breathing, heartbeat). The purely cultural matters are more serious—up to and including different languages—but are often mere fads. More serious matters are culturally varied but solidly based in biology, as in the cases of food needs and of language capability as opposed to specific language.

The excessively genetics-driven and “modular” theories of knowledge do not accommodate human learning, or the multipurpose nature of brain regions. Knowledge appears to be a matter of networks, spreading activation, and distributed cognition, not tightly defined modules or other knowledge structures. Two brief but delightful and incisive articles by professional “skeptic” Michael Shermer make this point very well. He points out that language is certainly a single evolved capacity, thus “modular” in a sense, but various components of language competence are distributed over the brain, often lodged in areas that have other tasks to perform (Shermer 2008a). Similarly, fear lodges in the amygdala, and that bit of brain has thus been called the “fear center,” but other intense emotions lodge in the amygdala too; nor is the amygdala the only area that processes fear (Shermer 2008b). More complex and diffuse abilities like music and recursive planning are even more widely distributed.

Dumb Animals, Smart Animals, and People

A lizard does not have to know much. Living a simple life, with little brain, little socializing, and little ability to regulate its temperature, it has enough instincts to do all it needs to do. From hours of observing lizards in my southern California homeland, I have concluded that their rules are simple:

 1. During the day, move to warm sun when cold, then into shade when hot.

 2. At night, hide in a crack, let body chill down, and sleep.

 3. When aroused and warm: If something much smaller moves within range, try to eat it.

 4. If something much larger moves in, flee from it.

 5. If something about the same size moves in, threaten it.

 5a. If it then threatens back, chase it off.

 5b. If it chases first, flee.

 5c. If it does not react at all, ignore it.

 5d. If it shows sexual interest, mate with it.

Outside of specialized rules for egg-laying and such, this about sums up life for a lizard.

Humans have far more complex needs, and thus far more complex rules. In particular, our social system requires enormous knowledge, most of which has to be learned. Without this, we could not be the social animals we are. A lizard probably knows his or her few square metres of habitat, and the immediate neighbor lizards, but otherwise is indifferent to the universe.

 Humans are more complex. Not only humans, but monkeys, can do astonishing mental tasks. Baboons can keep track of the social interactions, relationships, and personal histories of everyone in the troop—and troops can have more than 80 or 100 animals (Cheney and Seyfarth 2007). They can probably keep track of everyone in the larger aggregates one sometimes sees, up to hundreds of animals. Their social intelligence is quite stunning to observe; I have been the victim of baboon raids on campsites in Cheney and Seyfarth’s research area—possibly some of the very baboons they studied. The raids were organized with military precision, awareness, and sophistication. The baboons were able to outsmart humans and coordinate the activities of a whole troop.

 Monkeys can calculate probabilities, using the technique of taking the logarithm of the probability of an event divided by the probability of the opposite (Yang and Shadlen 2007). Border collies can learn up to 340 words. Jays can remember up to 100,000 caching places of nuts they’ve hidden.

 However, nonhumans lack the kind of advanced planning necessary to compose a sentence (Chomsky 1957; Pinker 1994), let alone to plan what to do with their whole lives. Some animals make apparent plans, but are guided by varying degrees of genetic programming. Ants do not plan for the future; they save for the winter because of genetic firing, with no awareness of what they are doing. Jays and other seed-saving birds seem to be much more self-aware about this, but even they are clearly following a basically instinctive program.

Still, animals ranging from ravens to dogs to apes can innovate new ways of doing things, even when this innovation requires considerable planning. I had a dog who realized that she could trick her larger partner out of his dog food. He was a born follower. So she would scratch to get into the house. He would immediately follow her. At the last minute she would whirl around, leaving him inside and her outside with the food. She did this for many years. To do this she not only had to plan; she had to put herself in his place, knowing what he would do, and knowing it was *not* what she would do—she was no follower! This was far from the only trick she played on him. The pair was living proof that Machiavellian cleverness beats size and strength any day. All her tricks involved a comparable level of wit. There was not one distinctive trait he had that she couldn’t exploit. Every trick depended on her knowing how he would react, and knowing that his way was different from her way. (See the book *Machiavellian Intelligence* [Byrne and Whiten 1988]about such games among primates.) None of these involved more than the simplest learning processes—all she had to do was watch—but it did involve ability to plan on the basis of very conscious differentiation of “self” and “other.” I have not only seen other dogs do this, but my Maya coworker Felix Medina Tzuc once had a pet peccary (a sort of wild pig) that I knew well and observed a great deal. It learned to play with his dogs—anticipating their every move, having figured out dog psychology!

Marc Hauser, a leader in studies of dog and human cognition, has argued (2009) that in addition to the recursive thinking that allows planning and language, people are unique in their ability to “promiscuously” combine all sorts of ideas; use complexly stacked metaphors and allegories; and think abstractly. These appear to me to be all aspects of one thing: humans can do higher-order planning. We can go from a general sense that we want good for all beings to thinking we have to protect the Amazonian two-toed sloth to constructing long and complex sentences arguing for that. We can combine ideas about sloth biology and human psychology in order to persuade people to do what needs to be done.

Some birds and primates can do surprisingly complex planning, but they seem unable to get to the levels of moral and theoretical abstraction in which we move easily, or to plan sentences or other complex symbolic sequences.

Humans are Genetically Social

Yellow-rumped Warblers breed in the mountains near my home, and winter in large numbers on my university campus. Many a dull and interminable committee meeting was made bearable by a flock of these little birds in a tree at the window.

They are true individualists. They pair off in spring, mate, and are very attentive to their young for a month or so. For the rest of the year, they are without family. Yet they are not antisocial; they like each other's company, and even the company of other species of birds. They eagerly join the large flocks of mixed small birds that forage through the trees and bushes. Here, however, they act not as organizers but as classic free-riders. They are interested in the insect concentrations that these flocks find. They also appear to know that there is safety in numbers. They respond to the alarm notes of more social species. Except for nesting pairs, yellow-rumped warblers do not help each other. They will happily tolerate others feeding with them as long as there is a superabundance, but shortage leads to conflict.

In short, warblers are perfect rational humans. They act exactly as rational-choice theorists (e.g. Olson 1965) say we act. It is a wonderful comedown for the word "rational"—early sages used it to distinguish us from the brutes; now we know applies only to some brutes, not to humans.

At the other extreme are the crows that also come to my windows. Compulsively social, they are never alone. They travel in large flocks. All the crows in the community are part of one flock that flies, feeds and sometimes nests together. This flock is composed of family groups, stable over many years. Children of previous years come back to help their parents raise or protect the young. Crows regularly sound the alarm when they see an enemy, and often the whole flock gathers to attack. Individual crows risk their lives this way. It is probably safe to say that such extreme sacrifice is done only for the closest kin, and thus not altruistic from a genetic point of view, but the bird presumably does not calculate gene distributions; he or she simply dies for the family. John Marzluff and Russell Balda, in their study of closely-related pinyon jays, provide a quite moving account and picture of a flock leader sacrificing his life to drive off a goshawk that was threatening his flock (Marzluff and Balda 1992:46-47). They draw the appropriate genetic implications, based on their meticulous data about relationships within the flock. I have seen crow leaders go up against Cooper’s hawks in the same way, and sometimes I have later found small piles of crow feathers under the hawk roosts. This is serious business. (I am grateful to Drs. Marzluff and Balda for discussion of the above.)

There are bird species in which some populations are social while others are individualistic. The Acorn Woodpecker is an example (Koenig and Mumme 1987; again, I am grateful to Dr. Koenig for further discussion). Acorn Woodpeckers are extremely social in California but not in Arizona. California's oak forests provide much food. Woodpecker groups store large numbers of acorns in "granary trees," and help each other defend these stores. Thus, the larger and more solidary the group, the better it does. Arizona’s oaks are less productive, and woodpeckers have to space themselves out in pairs.

Clearly, humans are a great deal like crows and California acorn woodpeckers, and not a bit like warblers. As David Hume pointed out in the 18th century (Hume 1969/1740), only an animal that didn’t need a basic social contract could form one.

Humans—like crows, dogs and chimpanzees—are instinctively social animals. If there is one thing that is genetically determined in the life of *Homo sapiens*, this is it. Humans are the most social of all. Chimpanzees are violently aggressive in large groups and against strangers; humans usually are not (see de Waal 2005). Humans, even perfect strangers, can aggregate in vast herds and swarms (such as introductory college classes) without breaking down into total violence. Humans can live in cities, which often present almost endless vistas of densely-packed apartments. I have seen rooms in Third World cities where impoverished people had to sleep in three shifts, because only 1/3 of the occupants could lie down at one time. Yet the inhabitants got along perfectly well. I have also been in rural areas where space and subsistence were lavishly abundant but people were constantly at each others’ throats.

Humans are altruistic; they sacrifice their interests for others. This makes genetic sense if the benefits to relatives offset the damage to one's own genetic potential. Sacrificing one's life for three siblings, or even for one sibling who is three times as likely to breed as oneself, is genetically sensible and will be selected for. But humans sacrifice their own self-interest for unrelated individuals and even for abstract ideals, making simplistic kin-selection explanations inadequate (Haidt 2007). They will also kill their own kin, sometimes over ideals, as in the classic “brother against brother” tales of the Civil War.

Dogs, of course, will sacrifice their lives for their human owners. Dogs have lost the close, long-lasting pair-bonds with mates of their own species that characterize wolves and coyotes; apparently humans have bred dogs to redirect their self-sacrificing love from canine pack-mates to human ones. Mothering remains a vital instinct, however; my spayed female dogs have always been good mothers to new and unrelated puppies, even trying to nurse them. Social animals from dogs to gorillas to ducks will adopt young of other species.

Altruism is very common among humans. We do it all the time, and even enjoy it. Some economists, like high school debaters, take great pleasure in pointing out that people enjoy altruism, therefore it is selfish, therefore altruism cannot exist. This argument would be beneath notice if it were not so common. The interesting fact is *precisely* that people do good simply because they enjoy helping. They often do it by stealth, without anyone but the helper knowing. Even when they help because they “should,” they are being altruistic. Try to explain “should” to a mountain lion, the quintessential loner animal. Crows who go up against a hawk understand “should” perfectly—not in the ear, but in the heart, where it matters. The mountain lion will never understand.

Humans have more complex biology than crows or dogs, but, with us as with them, it seems that instinct teaches us to be favorably disposed towards anyone near. Doubtless, in prehistoric times, people nearby were likely to be relatives, so individuals were increasing their own overall genetic fitness by favoring close neighbors. Early Darwinians also expected people to be fixated on their immediate descendents. They are not. Humans do take care of their nuclear families, but they are also protective of wider groups. Humans everywhere create levels of fictive kinship, from full adoption at birth to courtesy-aunts. Sacrifice for the wide group is universal and routine.

In fact, human society *depends* on bonds that go far beyond anything that can be maintained by direct reciprocity or any other rational or economic bond (let alone blood relationship). We have to be respectful to perfect strangers, obedient to governments whose leaders we never meet, and faithful to abstract rules and concepts that have no personal embodiment at all. Not even crows and dogs manage this. They will die for their groups, perhaps even for The Flag if you condition them to see it as a group marker, but not for Liberty or Capitalism.

Humans also sacrifice their lives willingly for their social groups, whether kin or no. Not only loyal soldiers, but even punks in street gangs, do this without a second thought. Some ideology of fictive kin—“we are a band of brothers”—always seems to enter in, but it is often a very small fig-leaf. People will sacrifice themselves for “imagined communities,” in Benedict Anderson’s famous phrase (B. Anderson 1991).

Humans are so social that loneliness is intensely stressful, causing major health consequences. Oddly, however, loneliness can be caught socially, like an infection. It actually propagates through social networks. This is especially true for women, who talk over their problems with each other a great deal; sympathizing with another’s loneliness makes a woman think of her own problems, and thus what might be called infectious loneliness has been traced through a whole large social network in a major study (Cacioppo et al. 2009).

Many early theories of human evolution were based on the assumption that Darwinian selection necessarily produced competitive individualists. This belief, derived from economic theory, is wrong. Humans join a vast group of animals—crows, parrots, wolves, dolphins, monkeys, and even colonial corals and amoebas—in living highly social lives based heavily on cooperation. Individual advantage comes from working with one’s society. Social scientists speak loosely of "society" as if it were a single tangible object, but this must not lead us to reify or essentialize society. Society is people—families, friends, foes, and those "Other People" our parents were always invoking. ("What will Other People say if you wear that shirt?")

Social scientists who take their reification too literally can delude themselves into thinking that individuals react rationally to Society, or its Institutions, or its Principles. Ethnographers know that, in reality, individuals react emotionally to other individuals or to symbols of reference groups. The individuals may be filling social roles to enforce cultural rules, but they are confronting each other person to person, and that is a confrontation that always, necessarily, invokes a total personal response. Social attacks, criticisms, and and even small verbal slights are physiologically very stressful, causing major release of stress hormones (Flinn 2008) and preparation of the body for fight, flight or depression.

Humans probably evolved in groups of 50-150 (Dunbar 1993, 2004; Van Vugt et al. 2008; the figure is confirmed by several independent lines of evidence). Robin Dunbar also notes there are expanding circles of close friends within these groups, few people having more than 3-5 close friends and about 30-50 more distant. Since a group of 150 would have few more than 50 adults available for friendship, and people seem definitely adapted to such levels of sociability, I think 100-150 was the standard size of the early group.

This means that we are evolved to think in terms of sharing, being responsible, being protective, and caring within groups of this size. People are not “selfish”; unless traumatized and abused to the point of fearing and hating their own, they will care for their families and friends. But, on the other hand, people are not evolved to take care of the whole world. It becomes harder and harder to care about other people as they get farther and farther from one’s immediate reference group. One of the proofs of this is corruption: corrupt officials sometimes look out for themselves, but usually look out for their families and friends, if only because they have to have mutual support. My long experience living in corrupt countries is that the problem is not selfishness but lack of unity above the group level. People are fully participant in their families, friendship groups, villages, and neighborhoods. They just don’t feel any real identification or participation with the wider state-level polity. An extreme example is the Mafia, characterized as it is by incredible levels of loyalty and mutual support at family and village level, but a purely predatory attitude toward everything beyond.

Existing hunting-gathering groups display a great deal of moving around, especially as young people marry out. A given group includes a lot of non-kin, many of them wives or husbands coming from different groups. This makes kin selection difficult. Often, however, at least some kin stay together, and brother-sister bonds are important (Hill et al. 2011).

Social solidarity is constructed through religion, songs, folklore, festivals, co-work, shared cultural knowledge, and other ways. Such devices are increasingly necessary as populations get larger and more “faceless.” Even a small group needs some of these social mechanisms, but a nation needs massive investment in them. From media and museums to schools and songs, nations draw on every mechanism they can think of to create “imagined communities” (B. Anderson 1991).

However, humans are amazingly comfortable in large groups. Even simple hunter-gatherer societies usually run to about 500 individuals. There is evidence that 500 is about the number of entities that the human brain can easily manage when they are clumped into one sector. A typical person seems to know (really know, not merely recognize) about 500 place names, 500 plants, 500 people (Berlin 1992; Hunn 2007). *Homo sapiens* naturally lives in a world of expanding social circles that typically run from a very intimate inner circle of three or four to a wide one of perhaps 500. These larger groups in turn add up, and people now feel solidarity with much larger groups—nations, religions, even all humanity or all life.

Often, solidarity is constructed along kinship lines and breaks down along them when conflict occurs. This is known as “segmentary opposition” in the trade, but is better put by the Mediterranean proverb: “I against my brother, my brother and I against our cousin, my cousin and brother and I against our village, and our village against the world!” That captures the realities of human sociability about as well as many a learned tome in sociology. Because of this, the most universal way of constructing “imagined communities” is by making their members into fictive brothers and sisters, or, with some churches, “brethren and sistren.” Many patriotic song begins “We are a band of brothers…” or something very close. (The specific quote is the first line of “The Bonny Blue Flag,” a Confederate rallying song.)

Robin Dunbar and others (Dunbar and Shultz 2007) find that in higher primates brain size—including size of brain regions—tracks social complexity. In other animals, pair-bonded species are bigger-brained than others, but higher levels of sociability do not add much (except perhaps in crows and jays). Dunbar and Shultz argue that human “bondedness” is a complex social phenomenon, like pair-bonding, rather than mere aggregating. Evolution has selected for computation of complicated social relationships. Joan Silk (2007) details many of the primate relationships in question and their advantages. Clearly, higher primates succeed through large-scale, complex sociability. Humans are far more sophisticated at such tasks than apes, though humans are not much better than apes at many physical tasks (Herrmann et al 2007) and even at simple life-skill cognitions like picking good food from a forest environment.

This can only have arisen if early humans received huge advantages from living in big groups. I personally cannot imagine any way that group solidarity and self-sacrifice could have evolved except through warfare, as many have argued from Darwin on down (Bowles 2008, LeBlanc and Register 2002; Van Vugt et al. 2008). Samuel Bowles (2009) has recently made a powerful case for this argument, showing that small local cultures do fight a great deal; mortality from violence in such groups can be as low as zero, but usually runs from 4 or 5% to over 40% of deaths, and these are often among young people with most of their reproductive lives ahead of them. Bowles shows that wars between groups could rapidly select for solidarity with such mortality.

Groups of 50-150 must have been able to unite and exterminate smaller groups. Modern *Homo sapiens* appeared in East Africa about 200,000 years ago, and very possibly the key adaptation was development of tight, fast-moving, warlike bands of this size that quickly eliminated rivals. I believe this is why we humans feel so extremely protective about our immediate groups, as argued by Bowles (2008). Bowles is a former Marxist, and recognizing this must be a bitter pill for him; so much for worker solidarity!

Hatred of rival groups is very often the deepest, most intense, and most involving human feeling. Markers of group membership, such as physical similarity and shared basic ideas and beliefs, evolve into racism and religious bias. Often, the only way to unify a diverse group is to oppose a common enemy (Arrow 2007; Bowles 2006; Boyd 2006; Choi and Bowles 2007; Nowak 2006). Bowles thinks that competition over resources in the harsh, fast-fluctuating conditions of Pleistocene Africa would have made this a likely scenario (cf. Potts 1996; see also Boyd and Richerson 2005; Cheney and Seyfarth 2007; Richerson and Boyd 2005). Leaders manipulate this by targeting hated groups.

A truly Machiavellian leader, like Osama bin Laden, may take advantage of his enemies’ blundering by getting them to seem opposed to a huge group rather than to a tiny band. Bin Laden quite openly admitted that Al Qaeda’s 2001 attack on the United States was deliberately calculated to make the Bush administration incautiously blame “Islam” or “the Islamic world” rather than a tiny, ragged band of not-very-Muslim fanatics. Bush played into this, talking of a “crusade” and letting his stalwart backers rant about a “clash of civilizations” and other wild-eyed matters. The result was that a group that would have ordinarily been written off as mad managed to get all Islam to see the United States as their collective enemy.

What matters in this story is that it shows that humans have to be stirred up to feel truly threatened by a structural-opponent group, but that it is generally easy to stir them up, and once they are stirred up their enmity often gets out of control and becomes all-dominant and implacable.

Human life seems based on “parochial altruism”—mutual support among “us”—and opposition to “them” (structural opponent groups). A society of tolerant altruists would not stay compact and tightly organized enough—no selection pressure would favor strong altruism and self-sacrifice. It would be vulnerable to any threat. A society of bullies—oppositional and nonaltruistic—would quickly destroy itself. Instead, we observe unity against opponents, such that the easiest and commonest way to unite a society behind a leader is for the leader to go up against an enemy. The interesting question, clearly, is how “we” and “they” are defined. Threat can bring together warring factions. Humans are individualists as well as social, and this leads to endless reshuffling of groups.

Most of us have multiple memberships and roles, and can be mobilized to defend our country, our neighborhood, our profession, or our family, according to whatever threat seems most immediate. Government can be my defender and organizer against invaders one year, but the next year can be the enemy when it tries to build a superhighway over my family land. Much, if not most, of social life is a constant negotiation and renegotiation of threats and priorities for defense.

Societies are nested: the town in the province, the province in the nation, the nation in the world. Societies grade into each other: French into Swiss, North Italian into South Italian. Social rule systems have fuzzy edges, and there is continual negotiation and debate in the fuzzy zones (and even in the cores).

That 50-150 size range was probably the biggest that the early hunting-gathering lifestyle could support. It may also be about the minimum size for a viable breeding population of humans. There must have been peaceful benefits to large groups too: food-finding, collective food-gathering and storing, sharing information, social support, defense against nonhuman predators, and much more. Complex culture probably cannot develop with extremely small, scattered groups; it requires demographic critical mass (Powell et al. 2009). The more people are interacting, the more cultural complexity can be maintained, so long as the people are not reduced to serious want or illness.

The birth of sociability through war explains only our vicious and cruel streak and our sometimes fanatical loyalty. Human sociable goodness, so popularity in all societies, must have evolved in connection with more beneficial group activities. War by itself would not produce the whole spectrum of “caring and sharing.” The arts, usually neglected by students of human evolution, but universal and biologically grounded, must have arisen to communicate deep and usually positive emotion within a wide group. They still serve to bond groups by communicating, and synchronizing, emotions too deep for speech. Perhaps Giambattista Vico was right in his speculation, almost 300 years ago, that humans sang before they talked (Vico 2000; Mithen 2007).

Animals from termites to crows and mole-rats have evolved extreme sociability without warfare or group competition. They probably did it because of food: they feed by specialized manipulation of large patches of stuff they can eat. Termites seek logs, mole-rats seek large tubers, and crows seek garbage dumps (or the pre-human equivalent). Humans certainly evolved as seekers for rich, widely dispersed patches of food—berrying grounds, small animal concentrations, rich fishing spots—and that has very obviously conditioned our social life (Anderson 2005). Baboons have groups whose solidarity fades with distance, but extends to neighboring troops. I have watched baboon troops break down into small foraging groups and rejoin into large troops. These troops hold together only so long as food is concentrated and abundant (tourist-facility garbage cans, for example).

Social life, including altruism, could have evolved through “kin selection, direct reciprocity, indirect reciprocity, network reciprocity, and group selection” (Nowak 2006:1560)—in other words, at first through kin sticking together in families, later through extending networks of reciprocal help and exchange. Such networks could extend farther and farther. Finally, groups held together by such ties could compete with other groups, making some degree of group selection at least theoretically possible (Curry 2006).

Solidarity and responsibility decline with social distance. This is quite different from hatred, rejection, or prejudice. I feel nothing but good will toward the people of India, but I can’t feel as loving and responsible toward them as I do toward my children. On the other hand, my adopted kids are as close to me as my biological ones, and my sister-in-law and her kids are a very great deal closer to me than my blood cousins, proving that social closeness can overcome lack of genetic closeness.

Fairness and egalitarianism also characterize humans, and are also wired in. This makes great sense if we evolved to find and share large patches of food, but no sense if we evolved only to fight. Egalitarianism as opposed to simple selfishness develops between the ages of 3 and 7 in humans (Fehr et al. 2008). It never develops in chimpanzees, our closest relatives, or in dogs. Dogs can be generous with puppies in their pack, but throw the pack some bones, and selfish competition with even the closest packmates is the rule. This startles us humans when we see it in such an otherwise social animal.

Leadership is another concern that evolved, again in connection with war as well as foraging. An excellent discussion by Van Vugt, Hogan and Kaiser (2008—I like that third name!) finds the origin of leadership and hierarchy in tribal warfare and its need for rapid, organized dealing with any emergency. I agree, though these authors exaggerate both the extent of the warfare and its monolithic role. Leadership surely involved defense against predatory animals, organization of foraging and foodsharing, care for the long-helpless human infants, eldership in kingroups, and ordinary dispute-resolution, as well as actual war-leading.

These authors also emphasize followership: people have to have a strong capacity to put themselves under an elder or leader. This would follow naturally from our long childhood under parental supervision, but it does go well beyond that. Nothing could be further from Hobbes’ “savage” in a “warre of each against all” than the human animal docilely following a warchief, boss, or priest. The human problem—control over life versus sociability—here takes the form of maintaining a balance of power, with conformity but with full accountability and recourse, in hierarchic situations.

Humans are usually raised by parents who constantly correct them, often harshly. They generally deal with that, and go on to live peaceably in a wider social world where such correction would be insulting and conflictive. We do this so easily that we never realize how truly weird it is. Children by the age of five learn that they can’t talk to each other the way their parents often talk to them. Adults have learned a great deal more about fine-tuning critiques. Correcting your own child, your neighbor’s wayward kid, and the office pest all require different behaviors.

No animal can even remotely approximate this. Higher mammal parents can be strict teachers, and the young take it, but—at least among adult wild animals—any attempted correction by a nonparent merely gets a fight started. Domestic dogs have been bred to take any amount of correction (and even abuse) without usually turning on their masters. Many a wolf-owner has gotten careless and tried that with a pet wolf. Bad idea. And even a dog will not put up with the insane abuse that spouses and children get, and accept, in many households. Some other animals are savage enough to dole out such abuse, but no other animal will tolerate it.

In the contemporary world, many people seem to need not only direct social ties, but the "virtual" social and communicative world of movies and TV shows. I have spent a good deal of my life in “developing” societies, and I find that, everywhere, the first thing people buy when they get beyond the barest necessities is a communication device—a radio, TV, or cellphone. The worldwide appeal of the media says everything about the desperate human need to be in a social communication network. TV has become a social ritual, but it is also a practical necessity for more and more people, allowing them to talk about and understand their interpersonal worlds. A person who ignores the media is almost a nonbeing.

Human hard-wiring for sociability includes our large numbers of mirror neurons, which respond to both others’ behavior and our own equivalent behavior. This allows—even forces—tight entailment of behavior, or at least “empathetic” reaction to others. A simple model is provided by birds, which learn songs from others with the help of a mirror-neuron system that connects vocal centers, motor centers, and forebrain (Prather et al. 2008). Monkeys have more. Humans appear to have large numbers of mirror neurons entraining all sorts of behavior. This permits culture: exceedingly elaborate, complex behavior learned from the wider group. Without massive innervation with mirror neurons, we could never manage that.

Ashley Montagu, many years ago, wrote a book called *The Biosocial Nature of Man* (1973; the title follows the usage of the time—of course he intended to include women). He stressed the biological grounding of human sociability. Indeed, we are the heirs of millions of years of evolution as a social species.

Language, Too, Evolved

This evolutionary scenario for humans would be just about right for developing the complex language we have and use (see again Cheney and Seyfarth 2007). Even a smart animal does not need language for communicating in a small face-to-face kingroup. We clearly have innate skills in language (Chomsky 1957; Pinker 2003; on wider questions of innate abilities, see Barkow, Cosmides and Tooby 1992). Language involves facility with complex symbols, but above all it requires a facility for arranging them in hierarchic structures: sounds into words, words into sentences, sentences into texts, texts into life works, life works into whole traditions. No other animal can even manage a sentence, let alone a lifetime of writings organized into a single coherent *oeuvre,* or a commentary on Shakespeare’s place in Western drama.

All this must have evolved over time. The idea that language was “invented” in a short, rather recent time is clearly wrong. The human lip, tongue, and throat musculature, vocal cords, and brain wiring all show clear proof of thousands of generations of evolutionary shaping for highly complex vocal communication. Presumably, language evolved from two-symbol phrases (such as apes create in gesture talk, and many birds produce in song) to simple three-“word” phrases, and on to very simple sentences, and ultimately—possibly within the last 150,000 years—to full grammatical complexity.

This language program governs not only language but also a large part of music and other arts. Human music is a strange and complex phenomenon, clearly close to language in its communicative function and hierarchic organization. All animals communicate, but very few sing. Most are birds, and many of these actually *learn* a musical communication system, as opposed to following rigid instinct. However, they, like chimpanzees and dogs, are not known to go beyond simple phrases. They appear to have nothing like a sentence, let alone a book. I sometimes wonder about mockingbirds, though; what are they thinking when they weave all those imitations into their songs?

It would make no sense for even the most intelligent animal to talk, if it had no social groups, or none bigger than the nuclear family. Messages could be communicated economically by instinctive noises and gestures. Language would be wildly overengineered for such an animal. It makes sense only if there is a large group, many of whom are out of touch for long periods and some of whom are immigrant, and if this groups sometimes needs to talk to other large groups that are downright strangers.

Human communication makes possible our fantastically elaborate and varied cultural repertoire (Chapter 3, and for more thorough discussions of this issue see Boyd and Richerson 2005; Goldschmidt 2004; Richerson and Boyd 2005; I have discussed some related issues elsewhere: Anderson 2005; Sutton and Anderson 2009).

And Even Morality Evolved

Such an elaborate social life requires innate morality. Chimpanzees show the rudiments of this (de Waal 1996, 2005; Petrinovitch 1995), as do some other social creatures (Bekoff and Pierce 2009). We have to be able to damp down extreme aggression and competition, and provide strong encouragement and support for cooperation and mutual aid. If we did not have strong genetic tendencies in this direction, human society would be impossible; humans would simply hunt each other down, killing their own young for food, as alligators do.

It turns out that witnessing unfairness causes instant and rather impressive reactions in the lower front brain, in the ventrial striatum and ventromedial prefrontal cortex, areas that cognitively process rewards and sociability (Tricomi et al. 2010). This seems to confirm that humans have a built-in reaction to fairness and unfairness, though early and intensive learning is not ruled out.

Certain sociobiologists have talked as if aggression were an innate drive. Indeed, the *potential* to be aggressive is found in all higher animals; they have to fight in self-defense, and often for mates and food. However, even in instinct-guided animals, aggression is a means to an end, strategically invoked. It is tightly coupled to particular situations involving biological needs. In humans, and even among wolves, lions, and tigers, spontaneous outbursts of aggression are quite rare except in brain-damaged individuals. Even in war, humans often try to restrain excessively aggressive urges. The Taoist monks of old China and the Zen-trained Samurai of Japan knew that an enraged soldier is generally a bad soldier. These warriors learned to fight with cool minds.

Otherwise, people are rather peaceful and very sociable animals. This is no veneer of culture—no social contract. Humans love to think that they are seething founts of raw sex, passionate violence, and all kinds of antisocial emotions, restrained only by learned manners. From Thomas Hobbes to Sigmund Freud to Richard Dawkins, thinkers who fed this fond fantasy have prospered exceedingly. Yet, as critics have pointed out since Hobbes’ day, it is impossible. No veneer of culture could work so thoroughly against biology.

Moreover, comparative biology shows that monkeys and apes are rather as we are: sometimes violent, especially in defense of their group against other groups, but usually relaxed and sociable (de Waal 2005; he provides a superb critique of naïve, reductionist biologizing, on which see also Zuk 2002). Even young males, notoriously the most aggressive “demographic” in any mammalian species, socialize happily and peacefully in college classes and dorms and in work settings. When they fight, it is usually as members of organized, exceedingly tightly-bonded groups—armies or street gangs. Sexuality, too, is heavily socially constructed, devastating Freud’s psychodynamic theories. Monkeys raised in isolation never develop anything close to normal sexual behavior. Humans are evidently similar, though one must rely on anecdotal evidence, experimentation being impossible.

Humans have to be alert to anyone who breaks social trust, and ready to sanction them with condign punishment (see esp. Gintis et al. 2005; Henrich et al. 2004). Hence the fear of foldbreakers noted above, and also the widespread fear of people who are openly emotional. This is an obvious necessity for social life. Without it, the more narrowly-oriented or unreliable members of society would freeload on the rest, bringing the whole system down.

People are much more prone to be selfless and generous when being watched. This is so deeply wired into us that a pair of watchful eyes painted on a box or sign are enough to discourage theft and irresponsibility (Milinski and Rockenbach 2007). Most of us can reflect with guilt that we are prone to cut corners when solitary, in ways we would never do if observed. The whole online economy—eBay and the rest—works because of trust; an amoral “rational” individual would advertise something, take the money sent for it, and send nothing. Online vendors take some steps to establish trust, but not many. The credit card economy and the banking industry ultimately depend on trust too, though they have more safeguards. Experiments show that people simply act generous and trusting, by nature, as a default (Uhlhaas 2007). We learned the downside of this in 2008, when corruption and shady dealing brought down the world economy. Finance had become a mammoth confidence game, and like all con games it worked by exploiting the naïve trustingness of the human animal.

Levels of reported trust in others (people in general) vary greatly by country. A survey found Scandinavians are particularly trusting, while Philippines, Uganda and Brazil report low levels. (Zak 2008:95; the survey had some problems. China reported three times the trust level of Singapore, which is overwhelmingly Chinese ethnically. I know from much research experience with Chinese in both places that the difference is nowhere nearly that large, though indeed people in China are more trusting than people in business-oriented, sharp-trading Singapore.)

Oxytocin, an all-purpose social bonding hormone related to everything from lactation to orgasm, mediates trust as well. Oxytocin in the blood makes people more monogamous; trust and romance combine. Happy couples should daily thank the evolutionary process that led to oxytocin steadily expanding its functions from its ancestral use in mating and lactation. A nasal spray with oxytocin in it makes people more trusting (in double-blind experiments, a placebo does not; see Zak 2008; it also alleviates autism).

Altruism produces a sense of control of one’s life, of autonomy, of value, of competence, and of ability to deal with the real world (Weinstein and Ryan 2010). Moreover, helpers learn valuable lessons in how to take care of others, which may, for instance, be extremely helpful to young animals or people when they become parents. In fact, helpers often benefit more than those they help.

Unreliable people—cheaters and “flakes”—generally suffer social ostracization or punishment. Experiments show that people will not be satisfied with simply damaging the reputation of such sinners; they want to make them pay, and will pay a good deal themselves to do this (Rockenbach and Milinski 2006; actually, people will pay a lot to hurt *anyone* they dislike). The more people can use reputation and respect to reward and punish, the less they have to invoke costly punishments.

Evolutionary biologists have labeled some animals as “cheaters,” but this is one of those unfortunate mislabelings based on human moral judgments (see Zuk 2002). Other animals are quite unconscious of being “immoral users” when they lay eggs in others’ nests, or steal neighbors’ stores. Once again, humans are truly different; we have morality, and we can label cheaters pejoratively. In fact, if the evolutionary biologists are right, we developed morality for this very purpose.

However, in humans, the real problem is *unreliability*, not cheating per se. Normally, humans are less worried about cheaters than about people who are simply eccentric, impulsive, irresponsible, or flaky. Actual deliberate cheaters are less scary. If they know they are detected and will be sanctioned, their highly-developed sense of self-interest does the rest. Chronic nonconformists who refuse to follow cultural codes or are socially insensitive are more frightening. Such people are the ones that really set the “cheater” detection bells ringing in the human mind.

Moral evaluation comes before cognition, and sometimes plays against it. People love to justify their own actions, and can argue themselves into acting immorally but selfishly. Currently, it appears possible that moral intuition may be a better guide, overall, than moral reason—the reverse of Immanuel Kant’s Enlightenment vision (Miller 2008).

It appears that moral sentiments build on innate and emotional roots—the “sentiment” theory of Aristotle is correct. Ming Hsu and colleagues found through neurological research that sentiments of fairness and distributive justice are localized in the insula, a part of the brain that processes emotions. These sentiments are integrated with cold reason (efficiency, logic, expediency) in the caudate/septal subgenual region, in a part of the brain involved with integrating emotion and cognition in general (Hsu et al. 2008). Hsu and colleagues note that this supports the moral sentiments theories of David Hume and Adam Smith, as opposed to the deontological rationalism of Kant and Rawls or the utilitarian calculus (though people do in fact integrate cool calculation with their moral judgments).

This makes sense. The utilitarian calculus, cold and mathematical, would not work in a society. A short but extremely insightful letter to *Scientific American Mind* is worth quoting. Commenting on why we feel repelled by a fictional character who would push a man onto a track to divert a train that would otherwise kill five men, David Butler writes: “A person making such a decision is not deciding simply if five is greater than one. He is deciding how bad he will feel if five people die versus how bad he will feel if he pushes one man to his death. This feeling he is weighing is more than just some squishy sentimentalism—pushing that one man is equivalent to pushing the whole of human trust onto the tracks. After all, how could we function if we had to always watch our backs so as not to be sacrificed? These feelings are there for a good purpose—they evolved from a system of trust and respect that allows us to function successfully as a society” (Butler 2008).

This letter neatly captures the facts of moral sentiment and their evolutionary reason. Every tyrant in history has had perfectly “rational” utilitarian reasons to sacrifice his opponents and assorted other annoying folk.

Similarly, Thomas Hobbes’ claims about humans being isolated and amoral in a state of nature are simply wrong. His idea of the “warre of each against all,” and of the complete lack of any sense of justice or right and wrong in primitive society (Hobbes 1950, orig. 1651) cannot stand. The nonsocial period of human evolution ended tens of millions of years ago, and morality was wired into our brains hundreds of thousands—if not millions—of years back. All humans live in societies, and all societies have elaborate systems of morality and justice—culture building on a biological foundation, as in other areas of human action. Moralists may note that this means human morality, laws, and justice evolved through constant negotiation rather than being formed by contracts arrived at through reason. The contractarian theory of law, from Hobbes to John Rawls, cannot stand. This is not to say that we should not make reasonable contracts! It is, however, to say that that is not how legal and moral institutions developed over the *longue durée* in human prehistory and early history.

Game Theory as Partial Improvement

Game theory (on which see Gintis 2000; Henrich et al. 2004) can be a useful aid at this point. The technical forms of game theory are beyond the scope of this book, but a very rough form of game theory, at its simplest, differentiates three types of games:

The ordinary games we all know are usually *zero-sum games*: One person or team wins, one loses. A chess game or a football game are typical examples. In social life, if two people compete for the top job and only one can get it, we have a zero-sum game.

 *Positive-sum games* are onesin which everyone gets better off. I suppose a family competition to see who can pick the most blackberries is a good example. Everybody gets blackberries, and everybody presumably shares the resulting pie.

 *Negative-sum games* are those in which one person hurts himself or herself to hurt someone else. Vengeful or vindictive war (as opposed to a safe looting expedition) is the classic case. Many a grudge match in boxing or football qualifies, especially if the grudger not only hurts himself or herself physically but also hurts chances for future play by being openly unsportsmanlike. Feuding and dueling are other examples. So are many faculty meetings. Professors of management or of social science may spend their lives researching and teaching cures for interpersonal tension and its more mutually-destructive results, but in faculty meetings they forget everything they have learned. Is it rational to make oneself miserable, if it is the best way to reach a goal? This depends on which theory of rationality one uses.

We can see short-term and narrow strategies as zero-sum or negative-sum games, long-term, wide ones as positive-sum ones.

 A major proof of the biosocial nature of humanity is the ultimatum game. Created by the Swiss economist Ernst Fehr, this game involves two players. One is given ten dollars (or ten Swiss francs) and asked to share the sum with the other player. The first player can offer any split. (Only whole-dollar amounts are allowed.) The second player can accept or decline the offer. If he or she declines, both players get nothing.

 “Rational” players would split 9-1, obviously. Chimpanzees have been trained to play the game, and, being sensible animals, they do indeed break 9-1 (Jensen et al. 2007). However, almost no humans do. Worldwide, most players split approximately 6-4 or 7-3. A second player typically declines anything worse than three, feeling that the breakout is unfair. First players want to seem fair, and offer accordingly. So humans are not usually perfectly “fair,” but are certainly not “rational maximizers.” We are rarely saints and rarely sinners.

There is one group of people that actually offers 9-1: autistic persons (Lehrer 2006). Lacking any social sense, they lay themselves open to certain declines by second players, who feel offended. Nothing could show more clearly how “irrationally” social most humans are. The only other western group to split outrageously is economics students; they split around 8-2 (Gintis et al. 2005; Henrich et al. 2004; Lehrer 2006).

The indefatigable Fehr group found a truly weird sightlight on this: women who take testosterone pills without knowing it are more fair, tending to split 5-5, but if they wrongly *think* they have taken testosterone pills, they are notably less fair than usual (Eisenegger et al. 2010). They think testosterone makes them more aggressive and masculine, and think this means unfairness. In fact both those ideas are, at best, dubious (and probably wrong). The Fehr group speculates that testosterone may make people more leader-like and thus more prone to treat others well for purposes of bonding. Maybe.

Anthropologists, notably Joseph Henrich and Michael Alvard, have played this game with local people around the world. (One investigator was threatened with a knife by a subject who suspected witchcraft. More happily, a well-to-do Mongolian herder refused to play because he feared he would be taking money away from impoverished students doing the research [Cohen 2007:232, citing information from Herbert Gintis, one of the team members].)

The range is significant. Splits run around 8-2 among warlike groups in the Upper Amazon who have no tradition of cooperation (Gintis et al. 2005; Henrich et al. 2004; Lehrer 2006). Conversely, Alvard’s researches in Lamalera, Indonesia, have revealed a society of cooperators (M. Alvard, personal communication). Lamalera is a village that depends on hunting large whales at sea, and large boat crews must cooperate or die. Splits here run 4-6 or even 3-7—yes, the first player keeps only three!

 The Hadza of Africa, living in a world where money barely exists, had a different take (Marlowe 2006). Player 1 would offer an outrageous cut (8-2 or 9-1) and Player 2 would reject it, leaving both with nothing. The Hadza—indifferent to money—didn’t care! Moreover, a Player 3 who could reward 2 or punish 1 in such a case never did so—unlike third-players in monetized societies, who love to punish the unreasonable and reward the nice. To the Hadza, rewarding or punishing a friend over mere money seemed utterly silly!

 In some cases—the Hadza, for instance—people who were uncharitable in these artificial games were very charitable in village practice (Gurven and Winking 2008; Weisner 2009). Polly Weisner, an eminent anthropologist, tried it with the San of the Kalahari. At first they were super generous; then they realized it was only a game, and got thoroughly selfish. But soon a real-world problem almost exactly equivalent to the game came up, and the San were super generous, as they usually are. Evidently the San are better than city folk at realizing that games are games and reality is reality.

 Brain scans show a tight, dynamic integration of emotion and cognition when people make these decisions (Lehrer 2006). People are offended by unfair splits; the section of the brain that is concerned with disgust and annoyance is active. Emotion and cognition have been thought of as separate, often conflicting, things, but in practice the human brain integrates them closely (Damasio 1994; Hammond 2006).

In some games, nice guys dominate, take over the system, and force economic men to be nice too (Camerer and Fehr 2006). This is more likely if there is a closed system with specification of rights and duties, a chance to punish the unreliable, a clear to-and-fro or mutualistic relationship, and/or sequential dealing that allows good people to default and thus shut the game down.

Subsequent work shows that the larger the community or social-network size, the larger the marketing network, and the more inclusive the religion, the more people play these games for fairness—and the more they punish the unfair. World religions have a striking effect; missionized groups otherwise small and isolated still show a wide-flung idea of fairness (Henrich et al. 2010).

Games can prove that rationality is irrational. A fiendishly clever game of this sort has been developed by Kaushik Basu (2007). In the Traveler’s Game, two players are instructed to imagine that they have bought identical vases, which suffer identical damage. They are to ask compensation, but whichever one asks less will be assumed to be the more honest. So she will be rewarded, while the one who asks more will be penalized. This, of course, makes it rational to ask less, and the game reaches a stable solution (technically, a Nash equilibrium) only at the lowest figure allowed. So it is rational to ask for only that lowest figure. Of course, nobody does this; everybody realizes that they will get more by asking for a fairly high figure and taking the penalty if it is higher than the other player’s. Better to have $80 minus $10 than $2 plus $10! So it is rational to be irrational; one maximizes one’s take by guessing wildly, and minimizes one’s take by doing the most considered, clever, thoughtful thing.

Many readers of Basu’s work must feel that this is the story of their lives! We all confront situations like this. Even commoner are situations in which the fully rational option is not even clear. Life is about guessing. Hopefully, we come up with brilliant approximations. More often we simply take the plunge and pray hard.

Finally, recent work involves more complex games in which individuals can be generous but also can punish each other. Highly social, generous ones regularly punish the selfish. This happens in every society tested (Hermann et al. 2008). What is surprising is that in some societies the selfish punish back—they stick it to the generous ones who punish them (those goody-goodies…). In the Euro-American democracies (the United States, Australia, Switzerland, Germany, Denmark) and in still-Confucian China, this almost never happens. It happens rather infrequently in Korea, Russia and Turkey. It is really common in the Arab countries, and also in Athens. (Athens has lots of sharp traders, as every tourist knows). These results bring culture back into the picture, with a vengeance (the pun is irresistable). The experimenters link this with tradition and patriarchy, but the link is much tighter with the extreme, defensive “honor” complex of the societies in question.

Another, related game showed that, while costly punishment of cheaters or defectors is common, those who do *not* punish do better in the end. “Winners don’t punish” (Dreber et al 2008). They let others do it. Punishment keeps the game honest, or deters defectors, but hurts the punishers, and does not greatly improve outcomes—except for the souls who abstain from punishing. They reap the benfits of the game. In so far as this game is true to life—and it may not be—it might explain a lot about “nice guy and heavy” teams in administration and elsewhere.

Deeper into the Brain

Critically important in understanding the truth about humanity has been the work of Antonio and Hannah Damasio (Damasio 1994). They have discovered that the basal part of the frontal lobes of the brain—the orbitofrontal cortex—integrates emotion and cognition, and that this activity is necessary to successful and competent decision-making. They have studied hundreds of cases in which this area of the brain has been injured. Such injury devastates the ability to decide, by decoupling "rational" knowledge from emotional understanding. One might say that knowledge is conserved but wisdom is destroyed. Without such an injury, people are in enough cognitive control of their emotions to choose what to feel—within limits—and to deploy emotions strategically. In practical experience, emotion and cognition are not at all easy to separate.

In hindsight, it is easy to see why we need an orbitofrontal cortex. Crudely, emotions are the driving force behind action. Without control and regulation, emotions would make us act so spontaneously and violently that we would be incapable of social life. Without emotions, however, we would not be able to act at all.

Social information is processed in the anterior cingulate cortex (ACC). Here social learning takes place, near the center for learning through reinforcement. Evidently the former developed from the latter, and social learning is merely an elaborate form of general reinforcement-based learning, with society the great reinforcer (Behrens et al. 2008). The ACC is apparently damaged in autistic persons. Macaque monkeys, like humans, use the anterior cingulate cortex to integrate emotion and cognition (Rudebeck et al. 2006). In humans, the ACC must be the most overworked organ of the body. The heart (more usually regarded as the hardest-working part) has only to beat over and over; the ACC has to deal all the time with perfectly impossible problems. Mine, at least, is frequently overwhelmed.

It also processes envy—an unrewarding feeling. Interestingly, schadenfreude—delight in the misfortunes of another (trust the Germans to have a word for it)—is a combination of envy in the ACC and activity in the ventral striatum, a reward-processing area: unpleasant envy plus pleasant enjoyment of seeing the envied one cut down (Takahashi et al. 2009).

The whole anterior frontal cortex does the highest-level work, integrating the most complex plans and putting some on hold while more immediate needs are being met (on this and what follows, see Koechlin and Hyafil 2007). It also innovates and creates. But even it can only handle one plan at a time, and cannot put any great number on hold, either; and it cannot do what we often wish we could do, integrating several complex processes simultaneously into one great Plan.

The rapid, recent expansion of the frontal lobes in primates and especially in humans has a certain jury-rigged quality about it. We were stuck with the primary emotions first. The front brain had to accommodate. Brain damage to the orbitofrontal cortex and the nearby ACC—basically, the lower and mid front brain—show how bad things could get (Damasio 1994). The damage to normal life is greater than equally serious damage to the main cognitive-rational centers in the frontal lobes; better to lose 40 IQ points than lose ACC function. The same is true for macaques (Rudebeck et al. 2006). A milder, more local damage to the ACC can produce obsessive-compulsive disorder, where the rewards or consequences of doing an activity become so decoupled from reality that the individual in question continues to repeat the activity beyond reasonable levels (Paulus 2007).

The ventromedial prefrontal cortex integrates this input from the ACC (and elsewhere)—both emotion and cognition—to make decisions. Persons with damage to this area can make moral decisions, but the decisions are remarkably “cold-blooded” by most standards. Such people would, at least in self-report, willingly sacrifice their own children’s lives to save more lives even if those others were perfect strangers (Koenigs et al. 2007). Decisions are made on the basis of generic social “oughts” rather than personal emotional involvement. This might be a good thing in cases of fear and hate. It would probably not be a good thing in decisions relating to loved ones.

A new study, with potential for further dynamite, finds that chronic unpredictable stresses—even for only three weeks—causes major changes in the brains and behavior of rats. The sensorimotor cortex grows and grows, which makes sense if the poor rat has to attend to more and more stresses. What is more surprising and disturbing is that the prefrontal cortex, where complex decisions are made, atrophies. The rat falls back on learned habits (Dias-Ferreira et al. 2009).

If this applies to humans, and it probably does, it would explain a great deal of human behavior. We have long known that people in chronically stressful situations have trouble learning or changing their behavior. They become conformist, passive, and slow to change in even the most beneficial ways. The intractable problems of the urban poor and the conservatism of impoverished peasants seem perfectly predicted by this study. So are the problems of adjustment among persons chronically abused as children. The disturbing thing is that it is not mere behavioral response; it is an actual adaptive change in the brain. Can it be reversed? Probably, but we do not know. The study gives us a powerful new reason to fight abuse and horrible social conditions.

Jon Elster, in his magistral survey of emotions in Western philosophy and literature (Elster 1999), has begun the task of taking Damasio (1994) into account. It is important here to continue this agenda--to look at Damasio’s findings, and then see how they affect the conclusions of Western philosophy as seen through Elster’s glass.

 Descartes, and other western philosophers (long before and long after Descartes), tried to separate reason from emotion, and to privilege the former. Emotion was seen as, at best, a low source of pleasures and motives. At worst, it was a mere disgusting distraction from the serious business of using our reason to get what we rationally wanted. Elster says it was seen as “sand in the machinery of action” (Elster 1999:284) The Romantic reaction brought emotion back into vogue, but swallowed the Cartesian opposition; Romantics merely reversed the value scale, so that wild, rough, “untamed” emotionality was the “good” thing. Nietzsche in his less guarded moments represents an extreme case of this sort of thinking. There were, of course, many grave thinkers who saw both emotion and reason as healthy and worthwhile—David Hume, for example—and those who saw emotions as needing regulation and fine-tuning by reason. However, not even Hume seems to have made Damasio’s point: emotion and reason are not only both good, but must be combined as part of one grand mental process if we are to live normal human lives. “Descartes’ error” (Damasio 1994) was to separate them.

 In humans, and also in chimpanzees (de Waal 1998), social emotions seem necessary to motivate social action and to fine-tune it. Without envy, friendship, jealousy, affiliation, hate, love, vengefulness, gratitude, and all the other emotions, feelings, biases, and other distorters of rationality, how could we interact?

Deeper into the Biology

 One thoughtful conclusion from all the above is that another of Descartes’ famous principles is also wrong. Humans are not separated from animals. Descartes, motivated more by Catholic dogma than by science, considered humans to be creatures of reason, animals to be mere machines moved by instincts. The last 60 years have been devastating to both views. Birds learn their songs and plan them, and also plan their social lives (a good, accessible review is Birkhead 2008). Monkeys know each other’s feelings, dogs can anticipate each other’s actions with attention to personality, and dolphins really do help swimmers. The gap between humans and even the smartest chimps or crows is still enormous, but it is quantitative, not qualitative, and it—or, rather, our perception of it—has narrowed from both ends.

PART 2: LARGELY ABOUT COGNITION

III: Individual Cognition in Interpersonal Context

“…[I]t appears not that God intended we should have…perfect, clear, and adequate knowledge…. [T]hat perhaps is not in the comprehension of any finite being.” (Locke, quoted Jay 2005:50.)

Kantian theory

We now know more than Kant did about the processes of sensing, but it merely confirms his insight that our senses give us a special view of the world. In his terms, it gives us *phenomena*—not things-in-themselves but our experiences of them. Phenomena contrast with *noumena,* the unknowable things-in-themselves out there—or, for that matter, in here, for purely abstract mental representations would be noumena if they existed. Since all thought seems to be inseparable from *some* sort of experience, noumena are generally disregarded, and Kantian (including neo-Kantian and sort-of-Kantian) theorizing is known as *phenomenology.*

Jakob von Uexküll memorably extended it to animals in a fascinating book, *Umwelt und Innenweld der Tiere*, “The Environment and Inner World of Animals” (1909). He pointed out that perception enormously constrains the view we have of the world. Memorable are his pictures of his small town as seen by himself (shops, buildings, signs, and all), a dog (buildings and streets, but little detail), and an invertebrate (just dark and light spaces). So animals too have their phenomenology, and we cannot treat them as if they saw the world “as it is” or as we see it. Animals not only perceive their own worlds; they structure them, construct them if you will, in distinctive ways. My dogs see a world structured and defined by smells, and to a lesser extent by sounds (many of which I cannot hear).

In vision, we now know that the retina’s receptor cells are particularly sensitive to dark vs. light (the rods), less so to three colors (the cones—three sorts of them). These receptors’ chemical changes as light falls on them are picked up by nerves, which merge into the huge optic nerve. Already, a good deal of integrating, pattern-seeking, color balancing, and other evaluation has been done. In the brain, the visual cortex contains cells specially sensitive to horizontal lines, others sensitive to vertical lines, and so on. Again, these are all assembled, evaluated, and processed. The processing takes place at higher and higher levels of the brain, till finally the frontal lobes determine what is seen and why we should care. An enormous amount of feature analysis and reconstruction goes on. (see e.g. John Medina’s *Brain Rules,* 2008,pp. 221-240.)

We selectively attend to stimuli, and selectively interpret them according to our experience. If we don’t care about something, we don’t “see” it, no matter how thoroughly it has been processed and recorded by the eyes and the visual cortex. It is the same with hearing. We hear what we are listening to, and tune out everything else. We do this with varying degrees of success. Those of us with some Asperger’s tendencies are aware of a major inability in this regard. It hurts us at cocktail parties, but is useful in listening for birds and animals out in the wild.

Everyone knows that when you are holding a conversation in a crowded room, with many people talking, you instantly react when your name is mentioned by someone in a quite different conversation. Clearly, you were attending, at some preconscious level, to all the words spoken in that room. Parents are aware that a child’s faint cry in another room instantly wakens them from sound sleep, though they may have slept through fire trucks and bulldozers going by outside. The human mind can attend to only one thing at a time—true multitasking is impossible—but we are always monitoring hundreds of things, and can shift attention instantly if there is any good reason to do so. “Multitaskers” are those practised at shifting rapidly without losing much. But they lose efficiency by doing this.

The same goes for smell, taste, hearing, touch, and temperature (Medina 2008). Proust’s madeleine in *Swann’s Way* is famous in this regard (Lehrer 2008). We can share his nostalgia, now that madeleines are inseparable from the counters at Starbuck’s.

Learning is based on developing synaptic connections between neurons, ultimately an electrochemical process. The brain becomes a vast neural network, constantly changing and adapting, in which information is managed by parallel distributed processing—all this mediated through chemical neurohumors (Tryon 2009). Memory is similarly constructionist. We even invent stories and convince ourselves they were true. Progressive distortion of memory to fit stereotypes is the bane of trial lawyers. Many students of law and psychology have been exposed to a rather dramatic experiment: while the professor lectures, a man rushes in waving a huge knife, threatens the professor, and then runs off. The professor proceeds to call out two men and ask the class “Which one was holding the knife?” Students almost always pick the larger and darker of the two, who is—of course—the innocent one (the professor makes sure of that).

However, memory is generally a superb tool for sharpening, highlighting, and driving home the necessary skills of living. It discards the irrelevant or routine, but keeps the dramatic and vital. I have had occasion to check my memory by looking up scenes I had not visited in 50 years and finding that I had them near-perfect. I could see how much trees had grown and roads had been widened. I have also had much experience with the “déjà vu effect,” and, thanks to a good memory, I can usually figure out why. It isn’t memory of one’s past lives or hallucination; it’s always memory of something real. When I drove into Orvieto, Italy, for the first time, I experienced a powerful déjà vu. I tapped my memory store, and the explanation became laughably clear: I had seen a million (well, several dozen) travel posters and postcards of Italy with exactly the scene I was seeing, taken from exactly the same spot. Travel photographers are not always an original lot.

Ever since Locke’s *Essay Concerning Human Understanding,* philosophers (among others) have known that we do not see the world as it is; we select, rearrange, impose structure, attend selectively, and wind up often deluded. Locke has been accused of naïve empiricism and believing literally in his *tabula rasa* catchphrase, but only those who have never read him accuse him so. Kant, among others, was far more aware of Locke’s important role in focusing attention on human information processing and its biases (Locke 1979/1700; Kant 2007).

 Animals, notably including humans, give a great deal of structure to their perceptions. This is necessary to make them manageable (another Kantian point; Kant 1978). Kant spoke of the principle of aggregation: we group things into one category when we need to think of them together. Against this plays the principle of differentiation: we think of things, even closely related things, as truly different if we want to see them as different. The most familiar example is “sex.” Humans everywhere think of male and female as essentially Different with a capital D (Lévi-Strauss 1962), far more so than biology warrants. (They may, however, have other ideas too; some cultures recognize five or six genders.)

Almost equally familiar, and pernicious, is “race.” Americans see “whites” as somehow one essential thing, and “blacks” as an utterly different essential thing. Most of us know, intellectually, that millions of American “whites” (myself included) have some identifiable Black ancestry, and most Blacks have a good deal of white in them. Some genetic studies indicate that the average American Black is genetically ¼ white and 1/10 Native American. But even medical personnel fall into the absurd trap of “race medicine,” treating “Blacks”—even obviously light-skinned ones—as Africans and “Whites”—even dark-skinned, kinky-haired ones—as Europeans. This could be genuinely dangerous if “races” really differed in medical requirements. Fortunately, they do not differ much (in spite of the dubious claims of “race medicine”).

Such considerations led to a near-obsessive concern with mental structures in the mid-twentieth century, and an understandable but exaggerated reaction in the late twentieth. We can now, hopefully, recognize that people do structure reality, but that our mental structures are not iron cages. We have certainly changed our thinking about sex and gender in the last couple of generations.

Possibly the mind’s favorite task is taking advantage of the principles of aggregation and differentiation to construct neat pigeonholes for everything (Atran 1991; Berlin 1992). This produces classification systems, taxonomies, grids, sorting categories, names in general. This involves imaging, and forming images—often highly selective, focusing tightly on identifying marks—is a major activity of the brain. Images, including those in dreams, can vary from “photographic memory”—which can really be astounding—to very vague impressions.

Then one needs rules for combining all these units. Rules naturally lead into decision-making algorithms (of which more anon), flowcharts, sequences, canonical orderings, and other structural aids to planning. For instance, we learn music at all levels, from the most unconscious sense of rhythm on up to detailed knowledge of tunes and even of whole symphonies. We are then surprised, pleasantly or not, when these expectations are violated (Huron 2006).

Far more difficult, but engaged in with relative ease, is mapping. All mammals are good at creating cognitive maps, and figuring out routes. This is an area where humans can instantly, effortlessly call up amounts of information that would stagger a mainframe. An Australian hunter-gatherer who lacks knowledge of Japan and Tierra del Fuego more than makes up for it by knowing literally every rock, log and waterhole of her vast habitat. Humans are notably good at mnemonics to remember these: associating them with stories, events, past hunting successes, and so on. Claims that hunter-gatherers are too “primitive” to have mental maps have been emphatically refuted by studies from those of Franz Boas on down to major recent research (Istomin and Dwyer 2009).

More difficult still, and perhaps limited to humans except for simple and straightforward matters, is planning the future. They can predict, plan prospectively, and anticipate, in far more detail than apes do (Gilbert and Wilson 2007). Their errors, significantly, are errors of higher-level cognition: making the world more consistent, simple, and manageable. A dog can learn every detail of when his pet humans will take him for a walk, and can know every single move involved, such that he will bark excitedly when his pet human so much as moves toward the coat closet; and he may know every millimetre of the route. However, he cannot go much beyond that. He cannot see how a walk fits into a week’s balance of activities.

We combine sounds into words into sentences into books into life-works. Our ancestors planned antelope drives, fruit-gathering expeditions, migrations in search of new habitats, and defense against invaders. These require coordinating the activities of many people, often improvising and facing the unexpected, in the service of a distant goal. Interacting depends on instant, accurate assessment of people’s moods, mind-states, abilities, and limitations. This ability was mysterious until the recent discovery of mirror cells and associated social centers in the brain. These give us extremely rapid and accurate tracking of others’ behavior—including the tiny, almost imperceptible gestures that convey mood and intention. Indeed, until mirror cells were found, human intuition was literally “supernatural”—there was no known natural process that could account for it. Coordinating activities is part of this, and is another activity we all need to perform, and it is so hard that everybody realizes it is a major problem.

Yet another meta-skill in brainwork is fixing mind problems. Every culture has some sort of psychotherapy. Usually its value is lost on outside observers, because it tends to get assimilated to supernatural beliefs, and thus dismissed as “their religion” rather than being evaluated as therapy. In fact, shamans, spirit mediums, and other local religious healers often use perfectly standard, hard-headed counseling techniques. (I know this largely from personal research on several continents, but see Jilek 1981.) They sympathetically ask the patient what’s wrong and how she feels, then go into a spectacular and highly convincing performance, then dispense some homey common sense and say it’s the words of the gods. Sometimes, they also dispense an herbal remedy that actually has calming or painkilling chemicals in it. The patient goes off genuinely helped.

Why Know Anything?

“Most people are other people. Their thoughts are someone else’s opinions, their lives a mimicry, their passions a quotation.” -Oscar Wilde (Gross 1983:52)

 Learning and knowing new facts is sometimes fun, but most of what humans know is learned because it is directly useful. People need food, clothing, shelter, and healing. Above all—by far the most important—people need social place. They need to have a social world in which they fit. They need at least some warm, accepting, caring human interaction, and want more than they get.

The human ideal, universal in hymns and visions of Heaven, is of a totally warm, loving, accepting society. More often, people fail to get that, and are consequently insecure, frightened, upset, and angry.

 Wishes lead to plans, which require giving structure to one’s thought. Anything remotely resembling rational planning requires classifying resources, evaluating means, and prioritizing ends. Some hierarchic nesting of goals is inevitable.

 Structures can be ordinary taxonomic systems, in which people classify things under orderly heads. They can be linear plans, like the canonical plans for folktales (Propp 1968), meals (Douglas 1997), and other events that unfold over time. They can be mental maps (Lynch 1960). They can be specific procedural rules, including rules for making and breaking rules.

 We used to think that material needs were somehow prior, if only because they were more evolutionarily primitive, and that social needs were “higher” and thus somehow less basic and motivating. This turns out to be entirely wrong. Social needs are the overwhelmingly important ones for humans. The clearest proof is the eagerness with which people die for their social group. In this age of war and suicide bombing, we cannot believe any more that people are motivated primarily by basic material needs. They eat and shelter themselves largely so they can socialize, even when it means dying for the cause.

 People remain basically eusocial. Human good and evil are both derived from that. Evil behavior by people always seems to turn out to be the result of abuse, betrayal, and rejection. About one in three victims learns to give back as good or better, and becomes a true hatemonger or sadist.

Control

We return now to human higher-order needs. People everywhere clearly have a primary need to feel in control of their lives and situations (Anderson 1996; Heckhausen and Schulz 1995, 1999). The control needs presumably derive from primal fear and the basic animal need for security and safety. Humans need more: we need not only to feel secure, but also to feel we have *autonomy*, that we *know enough to exercise it effectively*, and that we have the *physical and mental ability to execute the plans* so constructed.

These needs for various aspects of control are the biological bases of the human need for feelings of self-efficacy. Albert Bandura’s theory of self-efficacy (Bandura 1982, 1986) is foundational to much of social science. Humans have to feel that they are able to manage enough of their lives, critically including their social lives, to give them what they need in the world, including social position. To the extent we feel out of control, we first fight against whatever is restraining us; even a newborn will struggle against restraint of motion. If that fails, people fall into despond, depression, and inaction.

What matters is *perceived* self-efficacy, not some objective “reality.” Most people are fairly realistic about it, but many give up in spite of obvious opportunity, and others keep fighting long after all is lost. Those who give up generally turn out to have had some major and unmanageable problem in childhood, such as alcoholic or abusive parents. Even certain success is foregone by self-handicappers (Bandura 1986). The perseverers turn out to have had the opposite experience: a background of fighting through, somehow, against long odds.

 All this leads to some imperfections in the human condition, dashing the optimism that comes from belief in human rationality. People insecure in their self-efficacy are defensive. This most obviously takes the form of open aggression, but most children are disciplined for that. They learn to be passive-aggressive, treacherous, or at worst vengefully self-destructive.

Control needs may add to the normal animal need for security. Notoriously, people will do anything to feel secure. But the opposite can happen too: teenagers show control by seeing how fast the family car will go. Indian ascetics strive for control over their bodies. Insecure, aggressive people strive for control over other people.

Few data exist on the different phenomenology of being at the mercy of natural forces as opposed to being controlled by other people. My Chinese and Maya rural friends, and the rural Americans among whom I spent my youth, lived very much at the mercy of nature: hurricanes, typhoons, floods, droughts, crop failures. Yet they felt fairly well in control of their lives. They shrugged off the disasters as “fate” and went on coping. Modern urban Americans are not subjected to such disasters, but their worlds are dominated by bosses, politicians, and giant corporations. Even their entertainment and diversion is canned in Hollywood. They seem to feel a quite different kind of stress from those who must create their own lives in the face of often-hostile nature. Facing the latter often breeds independence and self-reliance. Facing the urban social world is much more prone to create feelings of hopelessness, anxiety, and alienation. In China I encountered a saying: “Better sink in water than among people; if you sink in water you can swim, but if you sink among people you can do nothing.”

This is the “learned helplessness” of Martin Seligman, who has emphasized that people can also learn optimism and get out of the despond trap (Seligman 1990). But helplessness in the face of control loss is not just learned. It is a natural response. The natural animal response to threat is to flee or fight, but if those fail, the animal cowers down and tries to stay as invisible as possible. It hides in a den or hole, or just crouches in the grass. (This is probably a main biological root of depression, though grief and loss are also important in that condition.) This is the passivity of people whose horizons are restricted and whose options are limited. Recently, Seligman’s coworker Steven Maier has learned that the response is mediated through the dorsal raphe nucleus (in rats and presumably all mammals; see Dingfelder 2009). This is a rather primitive and general emotional processor within the brain. Getting control and coping involves activity in the more recently evolved ventromedial prefrontal cortex, a structure highly developed in humans.

The control needs involve not only physical control of surroundings, but also *understanding* them. Like security, knowledge is a much wider and more basic need; every animal has to know enough to find food. But humans go much farther. We want simply to *know.* We enjoy learning facts simply because they may come in useful some day. We need to know what will happen. This is not just a want but a literal life-and-death need (Anderson 1996; Baumeister 2005). The desire to know and understand seems somewhat a separate system in the mind, though psychological studies show that it too grows from the control need. The need for knowledge is different from the need for outright social power. Enjoyment of learning appears to arise, ultimately, from the value of understanding the world for one’s control of one’s life. There may be two separate systems here; or, perhaps, we are merely judging components of one system by their different results.

The need for security can be sated in normal individuals. When they feel safe and accepted, they go on to something else. But the wider, derived control needs are somewhat open-ended; unlike (normal) thirst, hunger, or desire for sex, they do not get automatically satiated by gratification. Some people wind up constantly needing control: they are “control freaks,” “power junkies,” or “rigid personalities.” Some individuals, driven perhaps by deep insecurity, seem literally mad for power. Their need, like the fire in Ecclesiastes, is never filled, and the result has been a world history of disasters. Except for such people, Nietzsche’s claim that humans have a basic desire for “power” is simply wrong.

Fortunate those whose need for control is channeled into a need for understanding! They have the best of all worlds, a life spent in learning and in enjoying it. Possibly we can work at rechanneling the needs of the “control freaks” into healthy desire to accumulate more knowledge.

 Finally, a dramatic recent finding by Brandon Schmeichel and Kahleen Vohs (2009) shows that one’s values are critical to maintaining this sense of control. In a wide range of experiments, they showed that loss of self-efficacy was repaired by simply listing and explaining one’s core values. A sharp and thought-provoking contrast with pleasant words and reassurance emerged from these studies: reaffirming core values made people feel not only a lot better about themselves, but back in control, confident of their personhood. Nice words reassured them about their social situation and disarmed anger and sulking, but did *not* fix the low sense of self. This reminds us of the advice of the stoic philosophers, especially Marcus Aurelius: keep your principles and you can endure the world’s harms. Easy for him to say—he was Emperor of Rome!—but it seems to work even for those of us who have much less real control of our world.

Social Needs

“One of the unpardonable sins, in the eyes of most people, is for a man to go about unlabelled. The world regards such a person as the police do an unmuzzled dog, not under proper control.” --T. H. Huxley (Gross 1983:58)

Randall Collins (2001) postulates an “emotional energy,” not really either emotion or energy, but the inner state produced by rewards and recognition in social interactions. Every interaction produces some if this commodity. Positive energy accrues to those who get approval and approbation. Common English recognizes many kinds of emotional flow in interactions. Approbation, status, warmth, affection, liking, and other good things contrast with criticism, censure, annoyance, and disapproval. Worse are rejection, anger, fury, and hate.

Warm and close sociability is the highest pleasure. The naïve may think “sex” is the highest; the experienced will recall the difference between sex-without-love and sex-with-love. The social needs include needs for love, recognition, sense of a “place” in society, and just plain ordinary socializing. We humans love gossip (Dunbar 2004). Our favorite recreation is hearing about (and, often, interfering with) the lives of other people. This finds modern expression in reading novels, watching movies and TV, or obsessively following the lives of “celebrities.”

How much of a typical human's enjoyment is solitary? How much is simply the enjoyment of social contact? Good sex is more about personal intimacy than about twitching. Conversation and most artistic activities are social. Good food and drink are more than doubly good when shared. Of all pleasures, perhaps only meditation and the enjoyment of nature are better when done solo. Art, dance, and sports have an ultimately rewarding and pleasant aspect quite apart from their social side, but they are more fun with others. An Arab proverb says that “God does not count against your life the time spent in good company,” and modern medicine agrees. It is literally true that the more good sociability one has, the longer one lives.

We need social life so much that people will endure any abuse, oppression, and cruelty to avoid ostracism or life in a bleak companionless setting. Women endure abusive relationships. Children removed from unspeakable family situations cry to “go home,” especially if they are put in a cold, impersonal shelter. The abject conformity of much of 20th century life, with its mass media, uniform clothing styles, and monotonously identical shopping centers with the same chain franchises, is apparently preferable to loneliness. Isolation and anomie are frightening, and people do anything to conform to what they see as social expectations. Those who do not observe the conventions are enemies, or at least untrustworthy. This was even more true in the 1940s and 1950s than now, so the best analyses come from that period: Erich Fromm’s *Escape from Freedom* (1941) and David Riesman’s *The Lonely Crowd* (Riesman et al. 1950).

Incidentally, to anticipate a later section on “individualism” versus “collectivism,” the almost insanely abject conformists of Fromm’s and Riesman’s all-too-accurate accounts were precisely the people who talked most about “American Individualism.” The same is true today; those who claim to idealize “individualism” are those who are most paranoid about immigrants, homosexuals, Muslims, and so on and on. They endlessly agitate to outlaw all such deviant behaviors. They have even idealized junk food, simply because it is American, and denounce critics of junk food as “food Nazis.” The left-wing equivalents talk of “personal liberty” but enforce political correctness. All this proves once again the general principle that people idealize what they *want* for themselves, not what they actually have, and—conversely—tend to hate most in others what they secretly hate most in themselves (in this case, mindless followership).

All studies show that people are happy in proportion to their warm, supportive social group. Loners, rich or poor, are less happy than warmly social people. Change in social status makes the most difference in happiness. Loss of a loved one is the cause of the deepest grief, and that grief does not go away soon. Many people will not eat to live unless they are socializing. Meals on Wheels, an organization that brings meals to elderly or invalid shut-ins, has its workers stay to share mealtimes, knowing that people will often starve to death if they have no one to eat with.

Social place, social acceptance, social validation are all-important. Banishment and ostracism are the worst punishments short of death, and sometimes death is preferred; suicide is often the result of loss of social position, whether by shame (as in Japanese seppuku) or loneliness and isolation (as in many American and European suicides, especially of older people).

 Humans have a powerful compulsion to establish, maintain, and when possible improve one’s social place. People live for social approbation. The American individualist or independent self-made entrepreneur reacts with fury and despair to the least threat or challenge to his or her social standing. This is not merely “belonging” and is not confined to “love.” It is a matter of having a defined, stable, secure *place* in a social group. One needs to have a secure position, with status, role, group recognition, reciprocity, authority, and nurturance more or less reliably assured. Conversely, a chance word can ruin a lifetime friendship.

 All societies have countless rules and visible signs to tell who is “in” and who is “out.” Membership in the group is shown by everything from skin color and language to tattoos and ritual scarification. Status in the group is shown by the same: the higher-ups speak a different way (as Shaw’s *Pygmalion* reminded the world). Every society must have painful, unpleasant, or at least foolishly arbitrary markers of belonging. They are hard to fake, and no one would do them for individual satisfaction. These markers range from scars to uncomfortable clothing to rigid body postures to endless boring ceremonies. The obsessive watching of awful films and TV programs in the United States is arguably the same thing. One watches them to show that one will undergo any suffering in order to be “with it.”

 Individual nonconformists (even those that cannot help themselves, like the mentally ill) and highly visible minority groups are united in a category of “foldbreakers.” Such people are not only hated and despised; they are “unacceptable,” “inappropriate,” “disapproved,” “sinful,” “shameful,” and so on and on. Social rejection is a quite different matter from ordinary personal hatred. Individual hatred can be controlled, but social rejection leads to genocide.

Failure of mutual aid and support follow lack of personal closeness, or accumulation of minor hurts and threats. These weaken social bonds and make cooperation difficult. Businesses are torn by rivalries and bickering. Academic departments are almost always riven by petty jealousies and lack of close bonding. This is devastating to work, but it always seems to happen, and very rarely is anything done about it. The world at large is ruined by lack of solidarity, lack of responsibility, and petty annoyances. Religion and morality exist largely to minimize this, but often make it worse. They bond the members of a group together, but often interfere with bridging to other groups.

Many, perhaps all, of us stay alive only because of some goal beyond ourselves—helping our families, for instance, or living for an ideal. Viktor Frankl, surviving a Nazi death camp, found his fellow survivors to be those animated by such higher callings (Frankl 1959, 1978). Those who had nothing to live for did not live. The higher callings were family or social group or a life-project relating to improving the human world. Thus, these wider goals seem to be the highest level of the social need (see also Seligman 2006; cf. “self-actualization,” Maslow 1970). The degree to which this need for meaning is inborn is controversial, but unquestionably these concerns tap something very deep in the human mind. Franklian meaning therefore seems to come from—though not to end with—doing something for one’s group, and from having a real place in that group based on this self-sacrificing action. Even very young children feel terribly proud and pleased when they do something for others, and more so if they get some recognition for it. Franklian meaning is important enough to have become a very effective component of therapy for depression and other cognitive problems (Seligman 2006).

So people do “not live by bread alone.” They do not live for bread at all. For the human animal, life is about maintaining family relationships, social place, and overall social security. Bread is merely a means of staying alive for that end.

Control and Social Needs in Conflict

The needs for control and sociability lie behind the notorious cross-pull between autonomy and affiliation that defines the human condition. People desperately want and need freedom. But humans also desperately want and need support, social acceptance, and warm social life. These needs are always getting in each other's way, since living in society involves checking one’s more disruptive individual desires (Bandura 1986). Only the most sensitive of families or communities can give people a reasonable balance. Failure is deadly; a job with high demands but low levels of control over one’s work greatly increases the chance of heart disease (Soares 2008).

Humans need society, but they find social stimuli to be daunting, and strong emotion to be downright threatening. Any strong emotion, even love, can seem invasive or aggressive. It brings the affiliation vs. autonomy conflict to the fore.

This leads to social codes that enjoin low-key, gentle social behavior, and discourage open expression of emotions. Politeness and civility codes always stress the need to seem tolerant and calm. Almost all that are known to me strongly discourage open expression of emotion, especially negative and aggressive emotion. One exception—the idealization of “talking about feelings” in America in the 1960s and 1970s—withered with amazing rapidity. People learned that they not only did not want to hear about others’ feelings, they were actually stressed and frightened by them. Even positive emotions were stressful, let alone negative ones. By 2000, people were back to status quo ante: idealizing the strong silent male and the warm but tactfully reserved female. Stephen Pinker (2007) argues convincingly that human sociability requires indirection, exaggerated gentleness, and pulling emotional punches. Humans simply cannot handle bluntly direct communication.

A better resolution is empowerment. This concept has languished long in the realm of dreams—a high-sounding word that somehow says what we all know we need, but lacks much real definition. Finally the team of Lauren Cattaneo and Aliya Chapman have given it a working definition (see Cattaneo and Chapman 2010). They see it as an iterative process in the direction of “personally meaningful and power-oriented goals” (Cattaneo and Chapman 2010:646). These are a problem; one normally has to fiigure out what one’s long-term and short-term goals really are. Most of us go through life without thinking enough about that. Then, to achieve said goals, we need “self-efficacy [Bandura again], knowledge, [and] competence” (Cattaneo and Chapman 2010:646). One then has to act, and then think about how well the actions work—what impact they have. Ideally, this gives one mastery over one’s life and ability to deal with social situations (the article goes on to make clear how one can actually do all this).

All societies have some degree of hierarchy; the most egalitarian hunter-gatherer group recognizes its elders, its best hunters, and its best group leaders. Yet when real status hierarchies emerge, few like them, and all too many amoral power-seekers take

advantage of them.

In all societies, the irreducible need for autonomy and control plays against the social system. All social systems find ways of managing it, but the ways differ greatly according to local circumstances. The social construction of resistance, power, and autonomy is a compromise between the strong and the weak, as well as between control needs and social needs.

Social-place jockeying often takes the form conspicuous consumption, often miscalled “greed” but really a major sacrifice of wealth in the name of social showing off. Alternatively, social-place jockeying involves the most unpleasant and infuriating of all social games: the endless worries about slights and imagined slights, cutting remarks, and so on. These are managed, with varying degrees of success, by ignoring them, attacking the perpetrators, displacing anger onto weaker people (especially minority groups), joining a monastery, or trying to talk things out civilly. The last is the only one with much hope of success, but is rarely used, because it can cause major fights. “Honor” (and its violent consequences; Baumeister 1997, 2005) is notoriously a socially damaging coping mechanism. The drive for “power” in the Nietzschean sense, and the oppression of minority groups, both stem largely from this general social insecurity. Real co-work is actually the best cure; people who have to depend on each other will work things out eventually.

 This has parallels in other social animals. Gorillas drum their chests. Nightingales try to outsing each other; their night song is for the females, their dawn song for rival males.

Religions address group solidarity—even urging love or compassion—and attack the most notoriously bad coping strategies: selfishness, greed, and insensate drive for power. They also urge communicants to accept each other, and often to close ranks against everyone else. This is one more proof that religion is about social life, not about explaining origins or about managing “altered states.” Religion gets most of its traction from providing social place, support, and empowerment. At least, it should stop the cycle of social cuts and responses. Fascism, Stalinism, Maoism, and other fanatical secular movements have replaced religion in these areas in the last hundred years, but afford no improvement.

 In short, social science in the last 200 years has stood Hobbes on his head. Instead of society forming from the “warre of each against all,” the “warre” forms from society gone wrong. Humans are naturally social; they fall into civil war when social hate and rejection get out of control and economic problems exacerbate the conflict. When a human society actually approximates Hobbesian “warre,” it has often gotten there through social rivalries and perceived slights (Baumeister 1997).

Reformers often want to improve material conditions, since those are most concrete, most easily fixable, and most immediate. But, *pace* the economists, it is the social and control needs that actually motivate people. Material conditions are created through politics. Improving material conditions is certainly desirable, but must wait on dealing with political problems: solidarity versus hatred,active helping versus passive conforming. Improving material conditions would help more people faster, but governments, businesses, and organizations will not help unless political and social forces make them do it. Politics is about regulating social life. In spite of Marx and the “public choice” writers, it is not primarily about material interests or individual amoral power-maximizing. It is about social place and group competition. Politics and other conflicts, especially in hierarchy situations, are more about group hate than about rationality. Public choice theorists who think that political behavior is rational live in a dream-world.

If people have a fair, responsive government, they will solve their own material problems unless they are utterly destitute of resources. If they do not have a decent government, nothing helps much; they government rips off anything donated and the people sink into despair.

Individual Differences

Ashley Montagu, many years ago, wrote a book called *The Biosocial Nature of Man* (1973; of course he meant to include women; “man” was the general term then). He stressed the biological grounding of human sociability. Indeed, we are the heirs of millions of years of evolution as a social species.

One of the more thought-provoking findings of biology is that people are individuals all the way down. No two people, not even identical twins, are identical in anatomy and physiology. The differences in nutritional needs, psychological predispositions, and even functional anatomy between unrelated individuals can be very striking indeed. As early as 1956, Roger Williams, in his book *Biochemical Individuality* (1956), emphasized this point, on the basis of his pioneering studies of nutrition. He found that, among armadillos, even identical quadruplets had slightly different nutritional requirements. He was also the discoverer of several of the B-complex vitamins.

People differ considerably within even very narrow compass. My identical-twin nieces, raised together and doing everything together all their lives, have startlingly different personalities and interests. Genes make them broadly similar, but growth and experience have had effects. Those media stories of identical twins reared apart who gave their daughters the same name, liked the same pickles, and so on, are highly suspect. Take any two people from similar cultural backgrounds and you will discover a lot of surprising resemblances. Add tabloid exaggeration and even downright invention, and you get those stories.

There is still room for a lot of thought about why genetics “allows” so much free variation. Even dogs and horses vary. Humans have increased the range of variation by selecting fierce and meek strains of dogs, “hot-blooded” and “cold-blooded” horses, and so on. Humans are about as genetically homogeneous an organism as the world affords. We, like cheetahs, seem to have passed through a narrow genetic bottleneck not long ago, probaby at the dawn of modern humanity some 100,000-200,000 years ago. Yet we have not only a great deal of physical variation, but also—*cross-cutting* it—a great deal of variation in basic personality. Both of these cross-cut cultural variation, ensuring that everyone is truly unique. We have the full range from introverts to extraverts, neat to sloppy people, leaders to followers, scoundrels to saints, happy-go-luckies to perpetually terrified neurotics, wild thrill-seekers and adventurers to stay-at-homes who never try a different restaurant. Not a few sibling sets show almost the full range.

Brain chemistry and physiology differ between individuals (Damasio 1994). Differences in experience—so obvious to us all—thus work on differences already "wired in" (Harris 1998, 2006). The differences are subtle—matters of secretion of a bit more or less neurotransmitter, or numbers of neurons in some part of the brain—but they may have profound effects. It is worth reflecting, when one reads about the pathological cases reported by Damasio, that these cases do not contrast to some uniform "normal" which can stand as the one "healthy" brain. Normalcy is a matter of approximation and degree.

Over time, also, individuals change, for reasons not well understood. Basic personality is remarkably stable over the life course—the shy baby will probably grow up to be shy at 90 (Kagan 1998; Kagan and Snidman 2004)—but much else can change somewhat. Everyone with much time on this planet knows many who have “shaped up” and many others who unexpectedly “went wrong.” The clichés tell us that the former “had internal strength” or “were saved by love,” the latter “had a fatal flaw” or “fell in with bad company.” Actually, we don’t know much about it. In the one good long-term study I have seen, Emmy Werner and collaborators (Werner 1989; Werner and Smith 1982) found that a strong family with solid values predicts success even after early troubles, while a dysfunctional family or upbringing can lead to disaster even after a good start. Werner and her group also found that the military or the community colleges turned around many kids who were headed down a dubious path. Studies of responses to illness or to loss of a loved one show similar variation.

Religious conversion often does not seem to have much effect, contrary to stereotypes. One of my students, Jean Bartlett, studied religious conversion in California (Bartlett 1984), and found that people usually stuck with the faith of their parents or some extremely similar faith. Failing that, they shopped around until they found a sect that was congenial to their lifestyle. Theology had little to do with it. Practical rules, such as avoiding meat or alcohol, mattered much more. Seekers eventually sorted with people of similar educational background, class status, emotional makeup, everyday habits, and even musical taste. Few of these seekers even understood the theology of the sects they joined—let alone cared about such abstruse matters. To the credit of religion, some converts did kick drug and alcohol habits and turn their lives around. Most, however, sought a religion that let them do what they were doing anyway.

When the liberals of the 18th century fought and died for freedom of religion, many of them no doubt did so in the fond belief that, once people had a free choice, everyone would naturally see that the particular faith these 18th-century sages espoused was the "right" one. Things did not work out that way. Left to themselves, people opted for everything from Seventh-Day Adventism to Wiccan, depending on personal variables. The chef Louis Ude described the English as having "a hundred religions and only one sauce" (Anderson 2005) because religious uniformity was imposed—violently—on France. (Who imposed sauce uniformity on England?) In the modern United States, we have far more than a hundred, if we do as Ude did and count each sect separately.

Individuals differ so much that, when a market offers only one or two choices, one can safely infer that there is something very wrong with the market. People seem to want choices even when the differences are insignificant, as between commodities and brands that are tightly regulated.

These subtle differences between people may not make the obvious differences that cultural differences do. However, they provide a substrate for cultural interpretation. Even if two people were exposed to exactly the same cultural influences, they would come out with slight differences in behavior, because they would interpret and respond differently to the same stimuli. In practice, of course, they are never given the same experiences. Brilliant approximators that we are, we can always find common ground, and describe our culture in generally accurate ways. We all know that no two people speak English or Navaho in exactly the same way, or have exactly the same religious beliefs or personal habits. But we can communicate perfectly well and share understanding to a great extent.

These facts are rather devastating to much of social theory. Traditional anthropology, sociology, and related fields were usually based on the assumption of uniformity or near-uniformity among people in the group in question. Even the postmodern age, with its much more sensitive awareness of multivocality and diversity, has not really coped with the full implications of individual variation. We continue to talk about and relentlessly essentialize "blacks" and "whites" and even "Asians/Pacific Islanders" as if these were homogeneous populations.

Personality Shapes Knowledge

 Innate personality characteristics, in the good old Hippocratic-Galenic medical tradition, were known as “temperament.” Originally, the humors—blood, phlegm, bile, and black bile—were supposed to be in balance. Relative excess of one or another caused disorders of thought. The balance was the “temperament” in question. We still use the Hippocratic-Galenic language today, to describe personality, though we have abandoned (only in the last two centuries!) the explanation. In Galenic thought, having too much bile (*choler*) resulted in what we still call a “bad temper” or being “choleric.” Phlegm makes one “phlegmatic.” Having a lot of blood makes one “sanguine,” but real excess of blood makes one manic. Having a lot of these humors (especially blood) made one “humorous.” Black bile, *melancholia* in Greek, is the dead blood that clogs the bile duct and neighboring intestine in serious cases of malaria or liver disease. Having too much of it was thought to produce melancholy. Indeed, having malaria or hepatitis is not great for one’s mood.

Several modern theorists have worked on issues of temperament and of inborn personality dispositions. We have come surprisingly close to the old Galenic ideas. Carl Jung (1969) recognized that their value as emotional classification outlived the inferred mechanism via body fluids. Building on Jung, modern four-factor theories of temperament (Keirsey and Bates 1978; Myers 1980) recapitulated some of the old ideas. Jerome Kagan’s more free-floating theory of temperament has also continued the tradition (Kagan 1998).

Modern five-dimension theories of personality drew yet again on this system, and independently rediscovered more of it (MacRae and Costa 1989; Wiggins 1996). Today, the basic factors of personality in the standard system are openness, conscientiousness, extraversion, agreeableness, and neuroticism (MacRae and Costa 1989). Liberals, or perhaps more accurately moderates, are higher in openness than conservatives; thugs are lower in agreeableness than most of us; procrastinators are low in conscientiousness.

These five seem all real traits, but their opposites are not always such. In particular, a person may be less than conscientious because of born laziness, or because of defiant hate of authority, or because of inability to get her life together, or because of disease. A person who is lacking openness may be defensive, or just raised in a very traditional community.

In terms of this theory, the sanguine personality is, in general, extraverted, agreeable, not very conscientious, open, and not neurotic—though manic when carried to extremes. The choleric is extraverted, not usually agreeable, not very conscientious, not very open, somewhat neurotic in that cholerics are sensitive and easily angered. The phlegmatic is introverted, somewhat agreeable, not very conscientious, not open, and not particularly neurotic. Phlegmatics are the slow, lazy, easy-going but serious ones among us. The melancholic is introverted, not usually very agreeable, quite conscientious, usually open, and generally rather neurotic—more to the point, the melancholic is depressed, even to the point of mental illness (see Robert Burton’s classic *The Anatomy of Melancholy,* 1932 [1651]).

Those particular five are not necessarily cast in stone. There are several other systems, with three to seven basic factors. Cross-culturally, everybody seems to recognize extraversion, agreeableness, and conscientiousness, but not MacRae and Costa’s other two; conversely, many recognize honesty as a basic trait (De Raad et al. 2010).

A properly complex social life should provide lots of opportunities for different personality types to flourish. Another trait theory of personality, the Briggs-Myers theory (Myers 1980; McCrae and Costa 1989), is explicitly based on the assumption that personality polymorphy is desirable. Different personality types fit together to produce a successful society (Keirsey and Bates 1978 provide a superb discussion of this, and I hope Wolf et al find it). //n//

//n// Incidentally, the most sexist comment I have ever seen in a learned journal was a dismissal of the Briggs-Myers theory because it was developed by “a housewife.” In fact, Katherine Briggs (the developer of the Briggs-Myers theory) was a trained psychologist. In her day, the misfortune of being born female doomed her to “housewife” status.//

The five-factor evaluative dimensions are all judgmental terms. The older Briggs-Myers test carefully avoided this, and did not assess for highly negative traits, but this fact rather narrows its application. We often want to test for evil. On the other hand, telling a testee that he is at the bottom on agreeableness and conscientiousness will not win his confidence. This is not helped by the vagueness of these factors; one can be disagreeable either by being a general curmudgeon or by loving some and hating others, and one can be conscientious either by being honest and above-board or by being highly loyal. A mafioso might test very high in conscientiousness. A sorry commentary on the human race is that a person at the 50th percentile on the OCEAN test is not a particularly pleasant or likable sort. Humans are sociable, but perhaps more because they are scared of aloneness than because they like people.

Fortunately, today, personality psychologists are escaping the tyranny of the “normal.” Increasing numbers argue that various innate and early-learned predispositions create quite different types of personality, all of which are equally valid and valuable (Keirsey and Bates 1978; McCrae and Costa 1989, 1997; Myers 1980; Ozer and Benet-Martínez 2006). These psychologists glory in difference. They argue that a well-run enterprise should have people of several different types, mutually supporting each other.

Differences in Big Five traits correlate with everything from success in business to crime and addiction (Ozer and Benet-Martínez 2006; Wiggins 1996). Business successes are extraverted and agreeable, criminals are high in openness (e.g. to lawbreaking) and neuroticism.

In the human career, there has been a singular lack of convergence on a single personality type. I sometimes debate with my old friend, personality psychologist Dan Ozer, whether individual variation was random fluctuation about a middle point (his position) or actively selected for by disruptive selection (my hunch). In fact, natural selection has selected for a range of skills, personality types, and inclinations, among animals as among people. Max Wolf and collaborators (Wolf et al. 2007) have provided an explanation for some of this. They point out that animals differ in behavioral commitment to a long future. Some, like mice, follow a live-fast-die-young strategy; others, like elephants, follow a careful strategy to insure a long life. Now, if these differences may be expected to occur *within* a species, we would see personality differences, at least in risk-taking and in risky behaviors like aggression and combat. Wolf et al. provide mathematical models of how this could easily happen.

Daniel Nettle has argued that natural selection has operated to maintain a large amount of variation along these dimensions (Nettle 2006). Even animals display personality differences (Ley and Bennett 2007). Nettle argues from the differential successes of human types in mating and social life. Extraverts get more sexual partners but introverts tend to be steadier at staying with a mate. Agreeable people obviously do better than disagreeable ones in ordinary social life, but disagreeable ones may protect themselves better in bad situations or when conformity backfires.

We can see the advantages to hunter-gatherers of having different types of people in the group. Extraverts organize hunts, but introverts are better at lone searches. Agreeable people cooperate in the search, but disagreeable ones fight off raiders and enemies. Neurotics stay home and have visions, and may become curers. Openness leads to more exploration, but its opposite leads to patiently working over the same old root-and-seed patch, day after day. Conscientious people take care of others, but off-the-wall types and ADHD youths take chances on new hunting grounds, wander about spotting game trails, and imagine new possibilities for toolmaking.

Personality traits seem generally distributed in a vaguely “normal” way, in the statistical sense: they produce bell curves. So do the traits to be discussed below, like intelligence. But we usually have little knowledge of why this is so.

An interesting, but tentative, study by Aurelio Figuerdo and colleagues (2007) found evidence that the “good” ends of the Big Five scale (agreeableness, conscientiousness, etc.) correlate with health, good self-care, stable marriage, good care for children, and stable social life; this is not surprising (it fits with Big Five theorists’ findings). The investigators go on to see this as all produced by selection for stable family caretaking. Investing a great deal in a few children, rather than a very little in a very large number of young, used to be called “K selection” in biology, and Figuerdo et al. hypothesize a new genetic style of “Super-K.” Humans are very K-selected relative to, say, codfish or sponges, or even monkeys. Some humans appear to be more K-selected than others—though any genetic differences are blanked, in practice, by the horribly damaging effects on family life of chronic poverty and social instability. Poor people in traditional village settings tend to act K, or Super-K, but the slum-dwelling poor, homeless poor, and others in unstable contexts may become less K (or more “r,” to use the old jargon).

However, obviously, the “bad” ends of the Big Five would have been selected out of the human species long ago if they didn’t have value in raising children. Less conscientious parents may be more fun and rewarding. Less agreeable and open ones will discipline their children more, which may be necessary in many contexts. Neurotic parents will make sure their children take no chances. The group that prospers is the one that has enough variation that it is prepared for anything.

A long literature on Big Five traits as adaptive has now developed, especially since even the biologists have admitted that animals clearly show them. Every dog owner knows that some dogs are more extraverted, some more neurotic, and certainly some more agreeable, and finally some attention has been devoted to evolutionary aspects of this. Moreover, personality traits have various adaptive values in humans (Alvergne et al. 2010—a source which reviews the literature, including the animals studies). Extraverted males leave more children in polygamous societies, as one might expect. In one case, neurotic women had more children but took less good care of them; however, in this study it is possible that the women became “neurotic” because of having many children and inadequate resources, rather than the other way round (Barbara Anderson, personal communication).

Jerome Kagan (Kagan 2006; Kagan and Snidman 2004) adds concern about “high arousal” and “low arousal” types of people. The former are more nervous, excitable, and easily scared under some circumstances; “low arousal” ones are more relaxed, outgoing, and able to cope with stress. Kagan, however, wisely emphasizes the problems of simple categories such as “fear” or “arousal.” He points out that we are betrayed by such vague, general words. A stimulus may produce fear in one situation, not in another. Fear in a fish probably doesn’t feel like fear in a human. Also, there are different types of fear; a sudden encounter with a rattlesnake on a narrow trail is not the same as brooding over rising sea levels caused by global warming. Kagan also unpacks “self-esteem,” noting that an extremely ambiguous, complex set of concepts is measured in standard psychological studies by a ten-minute test (Kagan 2006:232).

 All this leads to a conclusion rather astonishing to anyone of my generation: personality cross-cuts culture, rather than being caused or formed by it (see below under Culture).

 Moreover, there are still many areas of personality left unsampled by the Briggs-Myers and Big Five measures. Courage is left out, to say nothing of the distinction between courage, bravery, and foolhardiness. Aesthetics is left out. It is a complex diminesion; some peole are highly competent, apparently “naturally” (whatever that may mean), at music or painting or other arts, but show no inclination to follow up and work at it; others are inept, but live by art anyway. I am one of the latter; untalented at music, I love it to the point of being utterly unable to live without it, and thus sing and play guitar a good deal of the time, in spite of the fact that no one but my wife can stand the result. Of those who are gifted, they take different tracks. My son the artist designs sophisticated computer websites, interfaces, and systems instead of painting.

 People also differ in levels of awe, reverence, devotion, and other spiritual emotions. Psychologists rarely want to touch this, though there are some studies of mysticism. Sociological studies routinely confuse religiosity in the sense of going to church (the ones I have seen were done on American and European Christians) with emotional spirituality. Going to church may measure nothing more than conformity, or boredom on Sunday, or peer pressure. It does not necessarily measure anything deeply religious or spiritual. (I am writing a book on religion, and defer further discussion and citation to it.)

 Motivation is also, broadly speaking, left out, though the received personality types do somewhat track it. Particular ambitions are left out. Above all, interest is left out. Why are some people interested in everything (like Leonardo da Vinci) while others are content to watch sports on TV forever? Why are some interested in philosophy, some in Civil War history, some in birdwatching, and some in sleeping in the shade? We can trace interest to influence—people usually pick up their interests from older peers, or parents, or sometimes from books—but we do not really understand more than that.

 As a professor, I found the most maddening, disappointing, and draining of my tasks was dealing with student disinterest. It is simply impossible for an ordinary professor, given the short contact times we usually have, to get most students interested in a subject. Many students are interested only in parties. A few gifted and charismatic professors can really whip up student interest, but this really is a rare skill and hard to learn. Yet, in spite of obvious need, there are—to my knowledge—*no* studies of why people differ in levels of interest in general, and precious few on why they differ in their hobbies and obsessions.

 The same is true of differences in intelligence. I have purposely left “intelligence” out of this book, because the literature on it is a nest of nightmares. But the point must be made here that there is still no believable evidence for significant differences in intelligence—however defined—between ethnic groups or any other large segments of the human race. Conversely, there are obvious and huge differences in both the level and the type of intelligence between individuals even within one family. Specific types of intelligence crosscut culture, bringing people close together across cultural lines.

 The much-vaunted “g” factor that measures “intelligence” and is hereditary remains awfully hard to pin down. Being quite verbal and utterly inept at math, I am living proof that there is no “g factor” that makes one good at both. I know many mathematicians who are not especially verbal. The hereditary component of “g” remains refractory when socioeconomic status is ignored (in spite of claims to the contrary in the more extreme literature).

Instead, people seem to show different interests, abilities, and energies. My university has math geniuses from China, Russia, America, and India, communicating perfectly with each other (but not with me). On the other hand, I am in blissfully perfect communication with Maya woodsmen and Chinese fishermen over plants, animals, and weather; we share a mentality highly attuned to natural kinds. Indeed, intelligences, personality types, culture, and genetic background totally crosscut each other, with absolute abandon. The horribly vexed questions concerning “intelligence” have prevented social scientists from looking at this astonishing fact. It requires explanation. Why do we have math geniuses occurring at about the same rate everywhere? Why do we have verbal artists in all climes and places? Why do we have poor simple souls, unable to learn even ordinary facts, in all cultures and communities?

Personality Gets Serious: Culture and Mental Problems

Recently, controversy has swirled around such terms as “autism,” “Asperger’s syndrome,” and “ADHD.” These show diagnosis creep: they are diagnosed more and more often, for less and less cause. When I was young, autism meant complete shutdown: a child who was unable to speak or interact and who banged his (more rarely, her) head on the wall. Now, via “Asperger’s syndrome” (“mild autism”), it is used to label anyone slightly unsocial, thus creating a “false epidemic” (Frances 2010; see also Grinker 2008). ADHD has similarly crept up on us (Frances 2010); suffice it to say it is diagnosed ten to twenty times as often in the United States as in European countries (Dennis 2006). Some have cynically commented that it is sometimes merely an excuse for drugging “uppity” children, usually minority members, into calm, or for saving taxpayers’ money by eliminating recess and playgrounds (Dennis 2006).

People have always recognized mental illness—a strange, often incurable inability to manage life emotionally and intellectually. Traditional cultures generally regard it as some sort of supernatural condition; the mentally ill are “fools of God” or faery-children or victims of demons. Modern psychology has not always done better. Heredity has long been known to be a factor, but environment is also certainly involved, since identical twin studies show only about 50% or less congruence. Now it appears that extreme malnutrition can be involved in causing schizophrenia. Famines double the incidence (Reedy 2006).

Social theory has undertheorized the role of personal differences. The fall of the Great Man theory, so popular in the 19th century, led to an overreaction. So did the failures of early psychology to produce good personality theories. This led to a social-science assumption that all people are the same, or have to be treated by theorists as if they were. Moreover, Max Weber and others showed that situations—especially, the nature and number of followers—greatly influence leaders. This led to an idea that any reasonably competent person could be a leader; all that was needed was available followers (see Vroom and Jago 2007). Good leaders—not only successful, but morally good—appear in all societies, and really differ, to varying degrees, from us ordinary folk (Zaccaro 2007, and related articles in that issue of *American Psychologist*). Unfortunately, poor leaders are also universal (Kellerman 2004), and truly evil leaders are not only universal but common and successful (Lipman-Blumen 2006). Particularly interesting are the leaders who start out reasonably tolerable, or even good, and progressively decline into horrific evil. Robert Mugabe of Zimbabwe is a recent example. Did he go mad, or senile, or did he simply get caught up in his own power? Other leaders seem in hindsight to have had fatal flaws that led in the end to apparently insane behavior. Zhu Yuanzhang, the brilliant founder of the Ming Dynasty and one of the most fascinating characters in history, was clearly paranoid-schizophrenic. He declined from erratic but spectacularly successful youth into mad old age. The same could be said of Emperor Theodore (Tewodros) of Ethiopia in the 19th century. Mao Zidong became more extreme and murderous throughout life.

In every culture, evil leaders can appeal to group hate. This always attracts vast numbers of people, especially young men willing to die for the cause. By contrast, leaders who want to do good have to depend on skilled and reflective secondary leaders who have the knowledge to carry out the mission. Whether the campaign is public health, economic development, organized military effort, or education, a leader-for-good has to rely on a pyramid of other leaders. Public health requires highly trained, highly motivated, independent, self-reliant medical personnel. Education requires similar ranks of teachers. This is notoriously rare, providing yet another reason why evil triumphs in the world. Institutions theoretically help the situation, providing platforms and training possibilities. Unfortunately, institutions become corrupted easily, by bad leaders or simply by ordinary foot-dragging and corner-cutting. Hierarchy, too, has its costs.

Age Shapes Personhood

Finally, age, life status, and other developmental factors shape the way culture plays out in individuals. The Big Five personality traits change over the life track; people get better (thank goodness), becoming more agreeable, open, conscientious, and and less extraverted and neurotic. However, all the first four of those decline dramatically from 10 to 13, picking up slowly after 14 or 15. Neuroticism rises during the same period, but only in young women; in men it just steadily and slowly declines, as it does in women after 15. Parents of teenagers will not be surprised by these findings (of Soto et al. 2011).

The developmental cycle in individuals and in families changes all the ways culture is experienced. Children have their own subcultures. Youths have theirs, and are maximally open to learning about wider cultural matters—theirs and others’—but are also at the most headstrong stage of life. Aging brings wider life experience, and theoretically brings “wisdom.” However, it notoriously makes most people more rigid and defensive—“crotchety,” we used to say. Few indeed are those who can keep open minds and keep learning after 60. This should make worrisome the increasing dominance of world politics by the very old. (The average US Senator is now around 70). Older people often identify more and more tightly with a reference group that often is shrinking, or folding back on itself; they may return to the group of their childhood, or become more caught up in the micropolitics of their work or neighborhood. Rare, but not unknown and certainly valuable beyond all wealth, is the elder who can keep broadening his or her perspective and humanity throughout life.

Simple Pleasures

Sudden successful fulfillment of an urgent need is one main source of human pleasure. We all know this about sex and about cold beer on a hot day, and practically every culture seems to have a proverb equivalent to “hunger is the best sauce.”

Arousal—whether by stimulants or by dangerous sports—can be a pleasure in its own right. The pleasures of sex seem usually to involve more effort in heightening desire than in satisfying it.

Feeling in control is a good feeling; pushing one’s sense of control to or beyond the limit (as on a roller coaster or in extreme sports) is exciting, and not just because of the physiology of “adrenaline rushes.” Learning and understanding satisfy a need and are truly enjoyable. We humans like to whip up curiosity and then satisfy it; consider the pleasure of mystery tales. Almost everyone seems to have a hobby: some one thing they want to learn about just because they enjoy learning.

Normally, however, such curiosity is structured by immediate need. People, like all other mammals, are usually interested in things only to the degree that they have a material or social reason to be interested. Throughout history, the vast majority of people, when faced with the need to know about anything beyond their social group, have simply accepted conventional wisdom or ancient book-learning. Always there is some interest, explaining the slow but steady progress of knowledge in all societies, but only in the west since 1500 has the drive to accumulate new knowledge become a major industry. The origins of this remain obscure, but correlations with the expansion of trade, business, and religious enquiry are obvious.

Among academics, learning is often a goal in itself—a pure pleasure, not just a way of knowing enough to cope. Academics forget that this is unusual, and make sour remarks about students who have a normal, instrumental attitude toward knowledge.

A professor who has built her life on analyzing the proteins in the fur of the two-toed sloth can never understand how students can fail to be absolutely fascinated, and can be hurt and angry when students persist in being bored with sloth proteins. What is astonishing is how many students *do* become interested in them if the teacher is inspiring. Truly, social charisma can do *anything.*

Some of us even have made a hobby of understanding everything! If only life were long enough…. Yet, worldwide, even among academics, the most interesting thing is always one’s social group, and gossip remains the major topic of conversation (Dunbar 2004).

Throughout history, hedonists have lived for their key pleasure, puritans have lived to stop them. The hedonist lives to eat. The puritan eats to live, and lives to blame the hedonist for immorality. Some people have sex only to produce children, others only for pleasure, others only as part of a love relationship. Such “revealed preferences"—the things people actually do, or spend their money on—keep surprising us.

Happiness in an activity can come from many sources, only one of which is the intrinsic pleasure of the activity. More often, the happiness or pleasure comes from social approbation. Something intrinsically unenjoyable seems pleasurable because “everybody does it,” or because we get respected for doing it. In fact, the whole point of many activities is that they are so unpleasant, difficult, and demanding that others are impressed by our ability to do them at all. Just as believing the preposterous is a great way of proving one is truly religious (Atran 2002, 2010), so torturing oneself to follow the latest media fad is a great way of proving one is part of the group. (The technical term for this is “costly signaling,” and it is almost universal among animals.)

Extreme sports are an example. Some people climb mountains just because they enjoy the activity and the view. Most of us who have this persuasion climb rather small mountains. Others want to triumph over nature, or over themselves. The most serious climbers, though, usually seem to have social approbation on their minds, however much they may also enjoy the peaks. They want the respect that comes from doing a “hairy” climb, especially if they can be the first to solo up south face in winter, or something of that nature.

Once a need is satisfied, further satisfaction is not usually pleasant. Our bodies tell us when we have had enough to eat, enough to drink, enough sex. They err less than you might think; eating 100 calories more than you burn up, every day, will make you gain a pound a month. Very few people do that.

The major exception here is the control need. It has no obvious satiation point. This is fine when one asserts control by knowing. It is less fine when one feels the need to control everyone and everything in the vicinity.

Money does indeed fail to buy happiness; it can buy “life satisfaction”—relative content with one’s life—but real positive feelings depend on “fulfillment of pscyhological needs: learning, autonomy, using ones skills, respect, and the ability to count on others” (Diener et al. 2010). In other words, on social and control need satisfaction. Even the “life satisfaction” seems to be more about keeping up with the Joneses than about the pleasures of wealth, for rising incomes do not cause notable rises in it, unless one moves from genuine want to genuine comfort.

On the whole, most of us are content to hold even, but people find real meaning in more demanding activities. The old German formula for a good life, made famous by Sigmund Freud, is “work and love.” Most people who seem deeply satisfied with life do indeed get their satisfaction from these two things (see Frankl 1959, 1978). They also get their real social place from those two, and social place is far more basic and deeply important than happiness or satisfaction. Thus, even correcting someone at a task is often taken as a deadly rejection, and produces anger that often seems highly disproportionate to the scale of the correction. This is one of the reasons administrators often burn out.

Embodied Thought

 A long-standing problem for western metapsychology has been the separation of mind and body. This separation is sometimes unfairly blamed on Descartes, but Plato was already fatally infected with it, and so has Christianity been, ever since its earliest centuries. Almost everyone condemns it today, but few have really considered an alternative, beyond pointing to neuropsychology—a field relatively young.

 A female friend of mine, a cancer survivor, once said of her cancer: “I felt my body had let me down, and I was sort of mad at it.” The idea that one could think of one’s body as separate from one’s self, and the idea that said body could be an “it” without a gender, were both strange to me. I have since asked many people about this, and found that most women seem to feel that way; most men feel that they are in their bodies and that their bodies are emphatically male. But there are striking exceptions.

The best comments I have heard on the subject of self-embodiment come from friends and students in the world of dance; female dancers I know are thoroughly in their (gendered) bodies. The most thoughtful, extensive, and sophisticated commentary I have read on such matters is Raymond Gibbs’ *Embodiment and Cognitive Science* (2006). Gibbs constructs a whole psychology on the basis of knowing not only that the mind is in the physical brain, but also that the brain is constantly receiving enormous amounts of feedback from the body. Not only do we experience cold and heat, taste and smell, sound and light, but we also have massive and continual proprioceptive feedback. We know where we are in space, what muscles are moving, which are tense, which are relaxed, which are readying for action, and so on. We are aware of physical states caused by hormones, though most people are not aware of the hormonal basis of these states. The wonderful, warm, tender feeling of holding a child is caused in part by oxytocin release. Hormone specialists may think of this when they hold their kids, just as Buddhist meditators may be acutely conscious of heartbeat, digestion, and breathing, but most of us just go with the feeling.

 Obviously, disembodied thought simply isn’t possible for humans. Even the sages of old often commented on the way indigestion colors cognition. More recently, we have learned that smiling makes you happier—in fact, holding a pencil between your teeth makes you happier, because it forces your lips into a smile-like shape! (See Lyubomirsky 2007.) Frowning, of course, has the opposite effect. It is extremely doubtful whether we could think at all without tides of hormones, neurotransmitters, and other chemical data coming from the 97% of our bodies that is *not* brain tissue.

 Marcel Mauss (1979; the French original dates from the late 1930s) continued this line of thought by showing how thoroughly culture is embodied. How we walk, swim, dance, and even breathe is culturally conditioned. His modest talk started a whole field of anthropology, one that has produced some of the most exciting new material in recent years. Unfortunately, this work is outside my purview here (Bruno Latour, 2005, provides a wonderful follow-up and updating).

Consciousness

“Consciousness” is one of those infuriatingly ambiguous words that deserves better. It needs definition.

Never was I more convinced by a book than I was by Daniel Dennett’s *Consciousness Explained* (1991). I started it convinced (*contra* Dennett) that humans had a distinctive “consciousness” that machines could not approximate. I finished it completely convinced that Dennett was right in maintaining that not only could one conceivably build a conscious robot (though no one has done it), but that the whole concept of “consciousness” was in sorry shape.

Jerome Kagan has recently unpacked the word “consciousness,” listing four ways the word is used—roughly, sensory awareness, cognition (rational thought), active planning and execution, and the ability to use symbols and abstractions (Kagan 2006:123).

I would prefer to restrict the word to its proper medical use: being aware, as opposed to comatose. Consider the very frequent claim that only humans have true “consciousness” (Dennett 1991). Obviously this is ridiculous, given the normal use of the term. Even a philosopher can tell if her dog is awake, asleep, or in a coma.

Several vague meanings of “consciousness” have slipped in when people maintain that animals lack it. First, users of the word may still be deluded by the long-discredited Cartesian view that animals lack minds—Descartes was thinking of souls (in French, he wrote *âmes*). Of course, Descartes did not invent this idea; it comes from Plato and from Christian theology. Second, and more serious, “consciousness” has been used by some to mean the higher-order representations that humans constantly make. This would be reasonable if “consciousness” did not already have its ordinary meaning of “awake and aware,” but it does, so the term causes nothing but confusion when used for a different concept.

Another meaning of “consciousness” is “deliberately attentive.” We use this one when we say that so-and-so “is so busy with her work that she is totally unconscious of all around her.” Of course we don’t mean that she is literally unconscious; we know that if we called her name, or played some music she hates, she would immediately respond (with great annoyance in the second case!).

Then there is “being self-conscious.” Even this has two completely different meanings: either being conscious of self, or conscious of making a fool of said self.

Some claim that nonhuman animals are “self-aware” or “self-conscious” if they rub at colored spots placed on their foreheads when they look in a mirror. Animals that do not do this are not “self-aware.” However, most mammals do not recognize “self” by sight but by smell. Confront a dog with a mirror for the first time, and you will see the dog start at the strange “dog,” then sniff at it, and immediately lose all interest. Dogs recognize their self-scents on any objects they have touched, and they recognize the scents of their packmates. Conversely, take a crow or an elephant, which use sight more, and they *do* rub at colored spots on themselves, when they see them in mirrors.

So “consciousness” can mean “non-comatose state,” or “awake and aware,” or “deliberately attentive,” or “able to make simple plans,” or “able to make higher-order, complex plans,” or “aware of paint spots on one’s forehead.” Trimming this back leaves us with two well-established and very different meanings: (1) non-comatose; (2) directly, immediately aware on several levels. The second is too well established to drop, but is horribly vague. If I am driving while carrying on a conversation, most of my driving is being done at a subconscious, or even unconscious, level. My brain is working hard at it, but I am not “consciously” thinking about it. As traffic gradually thickens, I have to concentrate more and more on the driving, until eventually I have to stop talking. There was no one point at which I shifted from “subsconscious” to “conscious” driving. I merely had to use more and more of my brain on the task. The same is true of monitoring conversations at a party, working in the yard, or doing anything of the sort.

 Philosophers and behavior biologists must clean up their act on usage of this word. In the meantime, saying that only humans are or could be “conscious,” or similar philosophic tags based on vapid definitions, is ridiculous nonsense.

Self?

From the various social experiences they have, people construct selves. "Self," in English at least, is another highly ambiguous concept. What does a person mean when she says "I'm not myself today" or "this is not the real me you're seeing"? Who is she, then? And when someone says “I have to tell myself to argue less,” who is the “I” who is telling the self?

And how do we "make up our minds"? Who is it that makes up a mind? Does one make it up as one makes up a story, or as one makes up a bed?

One meaning of "self" is everything wrapped in my skin. Obviously, this is not the self implied in those familiar taglines, which seem very similar to the aforementioned comment of the woman whose body was an “it.” The "self" of the taglines appears to be the core of things that are the "real me," as opposed to transient concerns like being hungry, or being nervous about a manuscript submission. The Buddhist idea of "self" is the exact opposite: the “self” is the accidental and trivial, while one’s deep core is something that transcends selfhood and can thus be reincarnated in another, different “self.”

Arthur Rimbaud said: “I is another” (*je est un autre*). This was not bad grammar: he saw the self was different from some true inner being.

Psychologists have dealt variously with these matters. Every psychologist seems to have a different scheme. Antonio Damasio, for example, distinguished a proto-self (physical being), a core slef (basic feelings) and an autobiographical self (conscious higher-level processes; Damasio 2000). All these neat schemes fail to satisfy. A normal human feels herself to be single individual, not a bunch of selves doing different things. Yet, the same individual knows she is a “different person” in different contexts—working at her day job in a child care center or unwinding in a night club at 2 a.m., for instance. She is the same person, but she has many schemas for acting in particular places, and they can make her seem very different indeed. This paradoxical fact has led to thousands of pages of philosophical and psychological speculation.

Yet another meaning of “self” is the socially defined persona that develops through interaction, as opposed to the deep biological personhood that presumably exists underneath that. Evidently, “self” is merely a convenience-term for a lot of traits and concepts. There may be no unity in there—no phenomenologically unified individual. Philosophers have argued at vast length over this (notable is Derek Parfit’s brilliant *Reasons and Persons,* 1986). However, as practiced meditators know, concentration and dropping of internal barriers can bring up one’s total personhood. Because of this, I suspect that, even without meditation, a totality is always there, and always brought to every situation. The fact that some part of the totality is not immediately conscious of some other part of it does not make the totality much less real. If so, then “self” changes all the time.

However defined, the self is socially constructed, as George Herbert Mead pointed out long ago (Mead 1964). The folk theory of a deep biological personhood noted above appears to be deeply flawed. Even the core inside, the basic person that remains constant from childhood to old age, was originally constructed in the bosom of the family or comparable orientation group. The wider “self” that is the sum total of one’s fully-developed personhood is far more obviously social. It is the result of a long series of interactions between its bearer and his or her "signficant others." (Mead coined that term, but he did not use it to mean "sex partners"; he used it to mean everybody we interact with, so long as they are important enough to us to affect us significantly.)

The cultural psychologists and cross-cultural psychologists have not failed to point out that the concept of “self” is extremely different in different societies, depending somewhat on experience and somewhat on cultural drift. Individuals within societies may differ widely as well. This makes the concept of self even more problematic. These psychologists talk of “self-schemas”: our ideas of what a self is and how selves differ. Perhaps such cultural ideas are real in a sense that the self is not.

Individuals are socially constructed. There is a simple test in social science that many of us have used in class. It consists of nothing but the question “What am I?” followed by 20 lines. The students are instructed to list 20 things that they are—their names not included.

 They *almost always* start with kinterms: I am a son, father, wife, sister.

 Next, if they are American, they list their occupation. If they are not American-born and raised, they usually say where they are from: French, Genevan, Roman, Shanghainese. Then the order reverses; Americans list where they are from in the third group of lines, others list their occupations.

 If there is space left, they generally go on to hobbies: skier, wine-taster, videogamer, guitarist.

 That usually fills 20 lines, but any normal person could go on for hundreds of lines: dog-owner, former circus-fan, maker of gourmet potato salad….

 The point of this is to show you that *you are social to the point of being socially constructed.* By a social definition of self, your essential being is your sonship or daughtership, your job, your social place.

 Emmanuel Levinas (e.g. 1969) built up a whole theology and philosophy from this perception. For him, we are made from interactions, and thus the others in our lives are literally infinitely important to us. Without them there would be no *me.* I would never have survived a day, let alone learned to talk or walk. We owe everything to each other, and Levinas’ God is in the interaction spaces.

Experience?

 The full slipperiness of the word “experience” emerges from reading Martin Jay’s *Songs of Experience* (2005). Jay focuses on uses of the word in a narrow universe: philosophical writings from Montaigne to Foucault. Most of his book focuses on the first two-thirds of the 20th century. Yet, this occupies him for over 400 pages, and this is just an overview. “Experience” has been used to justify fascism, Marxism, and everything in between. Many of the grave sages were seeking “pure” experience, whatever that is. But there is no such thing. Two people may see the same dog, but they will not think about it the same way. In fact, when I am thinking in Spanish or Maya, I do not see the same dog that I see in English. I am so used to the languages that *perro* makes me think of a grubby street-cur, and *peek’* makes me think of a small, scruffy, lovable but dirty pet. *Dog* makes me think of my own big, cute mutts.

The connotations change with the language. The dogs themselves accommodate: mean when ill-treated, humble and gentle in Maya village conditions, or active and enthusiastic when spoiled with pet-store goodies.

 A devotee of “pure” experience might focus on dogness across cultures, and recognize—correctly—that we really all see the same animals. Constant interaction with dogs shapes our experience more than culture and language do. Conversely, a radical culturalist would note that *dog, perro,* and *peek’* are totally different and unrelated words, and conclude that culture is arbitrary and incommensurable. A cultural anthropologist like me will conclude that dogs are dogs but people see them rather differently, according to what they—the dogs *and* the people—have learned.

Time matters as much as culture. I see and experience dogs differently now from the ways I did 60 years ago. Anglo-American culture sees dogs differently over different generations. “Mind” and “thought,” as seen by different types of philosophers or psychologists, are even more different than cross-cultural “dogs.” Some deny the reality of experience because it is undefinable and cannot be “pure,” or they cultivate weird experiences simply to have them, or they discuss experience devoid of emotion (Jay 2005). Others say there is only language (or “text” or “discourse”)—forgetting, among other things, that we have developed music, dance, painting, and many other arts specifically to communicate the things we can’t say in words. As the dancer said when asked to explain her dance, “If I could explain it, I wouldn’t have to dance it.” (This folktale has been hung on every significant female dancer in modern history; no one seems to know who really started it.) Still other sages—notably of the Frankfurt school, according to Jay—tell us that experience today is a pale shadow of what it once was. I somehow doubt that my experience of sex, or good wine, or a back rub is all that much less real than that of a medieval peasant or a Pleistocene gatherer.

Philosophers everywhere hate the fact that we cannot have perfect knowledge, pure experience, and absolute truth. Anthropologists, however, frequently revel in the fact that our knowledge is ultimately incomplete and is shaped by our cultural and personal “experience.” One would blame these “pure experience” worries on Plato if one did not know that Chinese Neo-Confucians, Hindu Vedantins, and others around the world have the selfsame issue. I think philosophers must be drinkers of vodka instead of red wine. They want the pure distilled experience, shorn of all taste, smell, color, texture, and indeed of anything except the gift of rapid passing-out. A rich, complex, multilayered, multi-textured, subtle drink is not for them. Especially since wine takes longer to produce oblivion.

Inner Light?

 Mystics have always held that the human mind can know ultimate truth. As the Quakers put it, people have an Inner Light: People can contact some Higher Power or inner awareness of higher powers, to get a unitary vision of the Good. The philosophers’ “truth, beauty and goodness” come together in one thing. This may be revelation, or Dao, or *hozhoo* (the Navaho concept that unites truth, beauty, morality, and health in one word). Whatever may be real beyond the brain, there is most certainly something within the brain that makes us aware of, and sensitive to, Plato’s philosophic trinity of “truth, beauty, and goodness.”

This raises the question of whether people are innately “good” or “bad.” Certainly they are innately sociable, desiring harmony, pleasantness, and other social goods. Certainly they are also defensive and sometimes irresponsible or selfish. The Chinese have had a longstanding dialogue about this, since Mencius took the positive view (Mencius 1970) and Xunzi (1999) the negative one in the 4th century BC. The evidence suggested to the Chinese, and to us today, that Mencius was right: humans are basically sociable, with the unpleasant aspects of the human condition being defensive reactions to social threats and slights and to social insecurity generally. This still leaves Xunzi a large opening for his arguments, and he is by no means dismissed today. The Bible gave us a world that moved from original sin to Cain slaying Abel. Theorists from Xunzi to Hobbes (1950 [1651]) in 17th-century England saw humans as being in a state of “warre” (as Hobbes put it) because of the natural human tendency toward violence and noncooperation. Nietzsche, Freud, and Foucault have kept this theory alive.

Both agreed that social conditioning is necessary to bring any human goodness out. Both made a major virtue of education. Mencius thought it would bring out the good, Xunzi that it would control the bad.

What is *not* reasonable is the idea that people are “naturally” anything very specific. People “left to themselves” will not be good or bad; they will be dead. Social life is a physical necessity, at least for babies and children. It automatically shapes people, through culture and instruction.

Thus, hopeful philosophies based on the “natural” human drive to learn, or to be virtuous, or to be religious always fail. The drives may be real enough, but, inevitably, culture either brings out those drives or stifles them. The hopeful Quakers, the humanistic psychologists of the 1950s, the Kropotkinian anarchists, and others assuming natural human good have been bitterly disappointed throughout history. Even the saints of old often defended narrow interests by deadly force. (Standards of sainthood got pretty lax in the Middle Ages.)

 However, the sour philosophers, from Xunzi to Hobbes and Freud, also fail to predict anything interesting. They can always point to the odd sociopath or psychopath as “proof” of human baseness, but even Xunzi knew that the vast majority of people have their worst tendencies trained out of them (cf. Baumeister 1997, 2005). The common claim that “people are only out for what they can get” is as silly as the fond dream of universal peace and love just around the corner.

Closest to truth was the Chinese philosopher Mencius, who taught that people are naturally prosocial, but that bringing it out requires nurturance, support, and empowerment. Evil is unnatural, but common and easily picked up, even by failure of good training, let alone by bad training. Similarly, in the ancient western world, evil was a mistake. “Satan” is from Hebrew *shaytan*, “untruth” or “lie”; the Greek *diabolos*, which gives us “diabolical” and “devil” in English, means the same. Biology gives us a world in which we can and must calculate moment by moment whether to help or harm, and gives us a high level of defensiveness. Culture tells us how to do the calculations. Then each one of us must do the calculations for the task immediately at hand. Evil often comes from mistakes—often the perhaps-prudent one of taking an innocent remark amiss. Without major efforts to teach them how to respond courageously yet forbearingly, they will respond with anger, hatred, or despair. This is the cloud that hides the inner light.

Explanations

 One might note how progressive restriction of level of explanation can operate in analyzing foodways (see Anderson 2005a):

At the most basic biological level, we need the calories, protein, fats, vitamins, minerals.

We then need to avoid poisons and stay healthy.

We then need to figure out how to get all that for minimum effort or expense—to do “optimal foraging,” in the jargon.

This means, in an agricultural society, looking at crop ecology and other agricultural issues.

In a civilization, one has to worry about money and prices.

Then, that done, food always gets involved in social bonding: sharing, reciprocity, generosity. It marks religious and ethnic affiliation. It diffuses among neighbors.

It marks class, region, occupation, gender, age, and so on.

On a still smaller and more restricted level, it marks occasion: birthday, Christmas, business deal.

It allows individuals to show off and jockey for status.

It reveals social knowledge via ordinary etiquette.

Then, at all levels, it is affected by contingent histories and just plain accidents, including personal taste.

 Social scientists have explained social systems in dozens of ways, ranging from the sublime to the ridiculous. We will find it useful to classify these, very roughly and crudely, into four types.

Mode 1 consists of rational need-satisfaction theories. Most of them are broadly materialist. These include straightforward biological functionalism: society seen as a way of getting food, shelter, and reproduction. It includes more complex materialist theories like Adam Smith’s cultural evolutionary dynamics, Marxism and other political economies, “rational choice theory,” and modern enviromental and ecological theories.

Mode 2 consists of explanations resorting largely to human instincts or innate tendencies. People clearly have inborn behavior. A smile is a smile everywhere, even if the Mona Lisa had her own brand.

Mode 3 consists of explanations that are broadly idealist—not in the sense of having high ideals, but in the sense of living according to ideas rather than material needs or evil wants. Most religious leaders thought, and think, this way. In western social science it was the view of Immanuel Kant, and since he essentially created most of modern social science, he had a truly profound influence on us all. His straight-line intellectual descendents included Dilthey, Boas, Parsons, Lévi-Strauss, and most of the other makers of modern sociology and anthropology.

 Social functionalism, from Marx to Durkheim and the later functionalists, is a Kantian offshoot with considerable cross-fertilization from Mode 1. Social functionalists see that a society needs communication systems, a law code, a calendar, a leadership and power system, allocated roles, status and prestige, morals, festivals, and so on. These emergents cannot be predicted directly from physical needs; they have a social and interactive history.

 Mode 4 is a broadly empirical tradition. Pure empiricists hold that one can simply observe and count behaviors, and get along by inferring minimal thought-processes behind the actions. Pure empiricists form a grand chain, from John Locke to B. F. Skinner. Locke was the least extreme, and in fact is really more an ancestor to Kant—an early scholar of cognitive processes. Since Kant, empiricists have been less and less able to resist taking account of thought processes. The pure-empiricist trend in social science ended with Skinner’s attempts to equate pigeon behavior in the lab with language learning (see Skinner 1957, 1959). This was so patently hopeless, and so memorably demolished by a famous review by Noam Chomsky (1959?), that the pure empiricist program could not survive. However, modern experimental psychology, especially the heavily biological forms like neuropsychology, are derived from this lineage. They now take explicit account of ideas and mental phenomena, however (Damasio 1994; LeDoux 1996).

All four of the above have merit. Theories, as Michel Foucault (2007) reminds us, are a tool kit, not a religion. Every worker needs a whole set of tools. *Unity comes in the result—fixing the house or the world—rather than in the means*. You can’t fix even a simple toy with only one tool, and social theorists might reflect on that.

Theorists find their favorite level to explain. Biologists like the whole-species level. They prefer to explain the things that all people do everywhere. Human ecologists and political scientists are more restrictive, but still prefer the big picture: variations and history dynamics on a world scale. Interpretivists and cultural anthropologists like to look at cultures. Psychologists (except those who are basically biologists) like to look at individuals. To get the whole picture, one has to integrate all these.

IV. How We Don’t Know: Cognition Confounded

Explanations exist; they have existed for all time; there is always a well-known solution to every human problem—neat, plausible and wrong.

 H. L. Mencken (1920:158)

Heuristics, Biases, and Other Cognitive Problems

Cultures encode a great deal of wrong information, and the most obvious way to explain it is through natural human mistakes. Culture can operate as a vast distorting medium. Much cultural error is motivated, often by cynical motives, but most of it is probably natural—the result of heuristics and biases in human thought. Many errors of thought occur simply because a wrong explanation seems more plausible than a right one. Knowledge stemming from revered elders is passed on, believed, and remembered because its value and accuracy is chronically overestimated. Knowledge coming from enemies or strangers is slighted.

The most obvious case is belief in magic and supernatural powers. Since ancient times, philosophers and psychologists have observed that humans tend to assume agency until proven otherwise; if it rains, somebody must be making it rain. This is so natural to humans that it is hard to stop, and then each succeeding generation piles a new finding about rainmaking or astrology or black magic on top of the old ones.

Sometimes a completely arbitrary cultural belief becomes institutionalized and lasts forever. Science is, of course, far from immune. About half the science I learned as a child is disproved now. Racism and its variant make up the largest and most obviously false class of formerly-scientific beliefs. But there are others, less obviously wrong and not much less pernicious.

Cultural training can be condition whole categories of thought in fascinating ways. For example, American children are trained to see simple causal relationships, because parents love to explain things this way. This leads the children to some wonderful bits of folk functionalism: “Lions are to go in the zoo,” “clouds are for raining,” “a hole is to dig” (Bloom and Weisberg 2007:996, with additions; see also Hood 2009:98). Children in other cultures do this less often. Bloom and Weisberg call this “promiscuous teleology,” a phrase that could apply to all too many functionalist explanations in social science!

Humans are prone to systematic mistakes both in “hot cognition”—emotional thought—and “cold cognition,” more coolly cognitive processing. Humans are not good at calculating probabilities or other numerical matters. They are not good at intuitively understanding sampling. They are easily tricked by almost any statistical manipulation, as politicians all know. (The classic book *How to Lie with Statistics* [Huff 1991] has gone through dozens of editions.)

Modern psychology has identified so many limits to human understanding that we can no longer use the model of rational individual utility-maximizing that has dominated so much of social science since Hobbes. Though Bacon and Locke had made insightful and detailed comments on human foibles in rationality, the overwhelming majority of western philosophers and scientists believed people were basically rational, up through the 1970s. About that time the tide began to turn, with *Human Inference* by Richard Nisbett and Lee Ross (1980) a major landmark. Since that time, the pendulum has swung far in the other direction, and now there are books appearing almost daily on how irrational people are and how much their perceptions are distorted. (Some landmarks over the years include Ariely 2009; Anderson 1996; Chabris and Simon 2010; Elster 1983; Kahnemann, Slovic and Tversky 1983; Thaler 1992). Dan Ariely has become a national radio and TV personality for his particularly outstanding research on it.

We have learned how prescient was David Hume’s observation that “reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them” (Hume 1969 [1739-1740]).

 Analysis of the limits to thought go back to the ancient Greeks, who saw how easily people fall into emotional distortion of reality. Most of our current knowledge in this area was foreshadowed by Plato and Aristotle. Indeed, the rationalist-empiricist view developed by Hobbes and Locke was a self-conscious rebellion against earlier irrationalist views of thought processes.

 The current conventional wisdom is that we should at least know the limits of our understanding by bringing all these unconscious biases to consciousness. Dan Ariely has advocated this position in his bestselling and truly excellent account *Predictably Irrational* (2009). The problem is that Ariely takes well over 300 pages to give an account of some of the major ones, and leaves countless more untreated, while the other volumes cited above list dozens more problems. It has taken me 30 years of heavy reading to get even some purchase on this burgeoning area of psychology. Thousands of learned articles and several dozen books have treated it. There is little chance of anyone, let alone everyone, knowing all the limits to their rationality. We must indeed stick to the time-honored roll of careful thought habits: take as little as possible on faith, check everything, and so on. But this, pursued relentlessly, would leave us without the benefits of cultural tradition, which is still a better guide than our inevitably limited personal experience. There is no escape: we have to take some chances. But we are now well on our way to seeing why culture happens. One main reason is to correct these biases—*or to use them creatively to sell useful ideas.*

Kant introduced a more balanced critique of rationalism. Most basic in some ways was Kant’s realization that humans seek patterns and structures in everything. The origins of this, which Shermer (2009) calls “patternicity,” are not hard to find: it is the recurrent symmetrical pattern that distinguishes the snake from the grass, or the leopard from the spots of light and shade in the forest (Gombrich 1960, 1979; Shermer 2009). Our ancestors’ lives depended on instantly detecting patterns like this, and assuming them as a default. Hence our love of patterns in art, and probably our love of landscape pictures in general (Gombrich 1960, 1979). It is notoriously difficult, if not impossible, for humans to produce truly random lists of numbers or anything else (Hood 2009). We cannot help imposing patterns.

Some of our subconscious cognitive processes get fairly amusing. Andrew Elliott and Daniela Niesta (2008) found that men are more attracted to women’s pictures when in red frames than without. Red attracts and excites; it is the color of romance. They point out that we have the full cultural baggage here—valentines, shocking pink underwear, “red light districts,” and all. One might add the Chinese use of red as the color of marriage and of religion, and similar associations with red in cultures around the world.

It is not clear whether this is partially inborn or is purely a cultural matter. There is an obvious biological prime: flushing when excited. A woman blushes when romantic or excited, so reddening excites the male in turn. The associations of blood, fertility, and health are also obvious. Elliott and Niesta cite youth and strength, the menstrual cycle, and so on. They also duly note the red rumps of estrus females among the primates, but this seems doubtfully related.

We have to use “heuristics and biases” (Ariely 2009; Dawes 2001; Kahneman, Slovic and Tversky 1982; Nisbett and Ross 1980) to process knowledge. We then have to give it structure—systematize it—so we can retrieve it. Thus are born *cognitive* and *structural* theories of knowledge.

Even such a seemingly trivial fact as the long-standing existence or presence of something is enough to make us see it more favorably. Traditions, familiar objects, the existing social system, and anything else “time-tested” is seen more favorably than comparable but newer and less familiar items (Edelman et al. 2009). Anyone who owns a dog and cat will know that humans are not the only animals with this bias. It is probably universal among higher animals, and there are obvious reasons for that universality. This is sad news for reformers and radicals, but they should borrow a leaf from the book of many clever innovators, and claim that their reforms are *restoring* the glories of old, or the proper faith, or the old-fashioned moral standard. Similarly, anyone selling a new invention is well advised (and, indeed, is often advised—by advertising agencies) to claim that it allows one to do better what one has been doing all along. Above all, people believe what they want to believe (Anderson 1996; Dawes 2001; Nisbett and Ross 1980; Pronin 2008; Seligman 1990).

 Self-serving and over-optimistic attributions dominate life and lead us into gambling, marrying appalling spouses, and other mistakes. Among other things, “we believe that our weaknesses are so common that they are really just part and parcel of normal human fallibility, while our strengths are rare and special” (Fine 2006:7). We take credit for our successes, blame others for failure, and attribute the worst to them (Tavris and Aronson 2007). Bad people, or people with a guilty conscience, are prone to see the world in negative terms, partly as self-justification: “everybody else does it too.” People exaggerate the difficulty of tests, problems and hardships they have survived or overcome, especially if they feel they succeeded (Azar 2007).

Huron (2006) emphasizes that memory is not about the past but about the future (see also Schacter and Addis 2007). It tells us what to expect. Most of us have had the experience (famously reported by Piaget) of finding out that one or another important “memory” was false—a story overheard, not a fact remembered. All of us have had the experience of exaggerating and simplifying memories. This is done partly to defend self-image, but partly to make prediction easier.

People can be terrifyingly loyal to hierarchic superiors. Stanley Milgram’s famous experiments involving simulated electric shocks to victims (actually co-experimenters) are well known. Students gave what they believed to be real shocks, as requested by experimenters, even when the supposed victims were showing major distress. Only a few students refused, and they were the born rebels—the independent-minded, nonconformist ones. Recent studies show nothing has changed since Schachter’s time (Burger 2009). The implications are clear enough, and fit perfectly with all we know about genocide and torture (Baumeister 1997; Staub 1989).

People overweigh advice from sympathetic quarters(Nisbett and Ross 1980). Republicans believe Fox News, Democrats believe *The Nation*, and no amount of exposure of mistakes makes them doubt. (I deliberately picked those two sources because of their notoriously frequent trails of misinformation; apologies to readers whose oxen are gored!)

Humans systematically miscalculate or ignore probabilities (Nisbett and Ross 1980). We cannot, in the normal course of things, carry out the more complex operations required by rational choice theory. As Richard Thaler says, “...an economist who spends a year finding a new solution to a nagging prolem, such as the optimal way to search for a job when unemployed, is content to assume that the unemployed have already solved this problems and search accordingly. The assumption that everyone else can intuitively solve problems that an economists has to struggle to solve analytically reflects admirable modesty, but it does seem a bit puzzling (Thaler 1992:2).” When presented with a simple, clear, present benefit (like catching a fish or cutting taxes), we do not think much of the hard-to-calculate future (when fishless seas or unpoliced streets confront us).

Love, good luck, and even the event of one's birthday may temporarily distort thought processes. We are aware that we should never shop at the grocery store when hungry, never go to a bar when trying to quit drinking, and never flirt with an enemy spy of the opposite sex unless we are in a thoroughly sexless mood. We may act differently after hearing a Puritan minister from the way we act after hearing an ad for a trip to Las Vegas. Neither “rational choice” nor “stable preferences” are obviously present in such cases.

One example of a wrong but useful heuristic is the Fundamental Attribution Error: our tendency to assume that, when people do something, it is because of their stable personalities rather than because of the situations they are in (Kahnemann, Slovic and Tversky 1983; Nisbett and Ross 1980).

People are also prone to think that the unreal is real if they talk about it a lot. Money is really an abstraction—a counter for exchange values—but we keep thinking that the coins and papers in our pockets really are money (rather than just tokens that we trustingly accept as if they were real wealth). We are all too prone to believe that the skyrocketing value of stocks and houses during bubbles is real and is a measure of true intrinsic worth—only to have our illusions shattered and our pockets cleaned out when the bubbles burst (Tyran 2007—note he was writing before 2008!). For this reason, financial advisers and stockbrokers actually do worse than naïve persons who just pick stocks by buying into any companies they have heard of (Gigerenzer 2007). “Irrational exuberance,” in Keynes’ phrase, takes over, and common sense goes out the window, leading to repeated boom-bust cycles (Stix 2009). Similarly, bringing money into a social situation immediately ruins it for sociability by turning it into a commercial transaction (Ariely 2009; Sahlins 1976).

Humans are less hopeful about gaining than worried about losing—a bias of obvious utility if one are choosing between picking more berries and getting out of the way of the bear that is also picking. This is actually wired in the brain (De Martino et al. 2006); the fear center in the amygdala kicks in when loss is threatened, and the frontal lobes try to integrate this animal response with rational knowledge.

Ethnic and gender stereotypes take on a horrible life of their own. Asian women students keyed to think “Asian” do better than average on math tests, but if they are keyed to think “woman” they do worse than average (Carpenter 2008). Black students react similarly to keying. Women do better on math tests if keyed to thinking of themselves as “students” rather than “women.” One can use this to a limited extent to improve school performance, but, alas, it more often seems to cut the other way; people’s expectations of themselves and others are devastatingly compromised by conscious or unconscious biases. This phenomenon is known as stereotype threat, and is the subject of an excellent recent book, *Whistling Vivaldi,* by Black psychologist Claude Steele (2010), who has done a great deal of the research, especially on Black vs. white stereotypes and stereotype threat.

 Steele and others also point out ways to get around it. Steele’s title comes from a Black reporter who whistled Vivaldi as he walked down the street, thus keying white passers-by into thinking “scholar” rather than “mugger.” A dramatic study by Steele’s sometime coworkers Geoffrey Cohen and associates (Cohen et al. 2006; Steele 2010:152ff) showed that getting African-American students who had been falling behind other groups to write a simple essay on African-American values at the beginning of a school semester improved their performance throughout the whole semester; it closed 40% of the gap between them and the white students.

 Steele also deals with the question of identity, including how one tells that one is an African-American in the first place. He tells the story of a Black writer, “black, both his parents were black, and…all of his ancestors were black as far back as the eighteenth century” (Steele 2010:64), who passed as white all his professional life. This certainly reveals the insanity of American “race” classification as well as anything can. Obviously, the vast majority of his ancestors were in fact white, or he could not have passed. But “one drop of blood” makes you black in the United States, unless you don’t bother to remind people of it. So Steele doesn’t even think twice of calling all those ancestors “black.” Having a few such cases in my own family (indeed, one in my own ancestry), I can relate, and feel the irony quite close to home. Fortunate those who get to choose what “race” they are.

 Of course identity is even messier when one is an “American,” an Arab, an engineer, a dog-lover, a Republican, a cancer survivor…. Every one of which categories has its own stereotypes, for good and ill. And as Steele points out, even the most ridiculous distinctions can lead to prejudice. Biology is clearly against us; chimps fight rival groups. Rhesu monkeys like their own group members and dislike outgroup monkeys (Mahajan et al. 2011), so there is little chance that those stereotypes will usually be for good.

Human cognition is complex, but it greatly reduces the unmanageable complexity of the world (Boyd and Richerson 2005; Gigerenzer 1991, 2007; Gigerenzer et al. 1999). Thus science is never exact, but at its best is useful. It is always easy to critique a scientific conclusion or rule for being too broadly stated, too precise, too firmly based on “average” conditions, too little aware of variation, and so on. If it were not all of those things, it would be useless. We have to class rattlesnakes together, or face the need to treat every rattlesnake as a totally new phenomenon requiring investigation—not a formula for survival, especially in hunting-gathering societies. Similarly, our ancestors could not treat every banana or other food as a totally new item, and for that matter we can’t either. Our fondness for making sweeping generalizations and tight classifications is born of necessity. Science may have all the problems alleged by grave philosophers and postmodernists, but at least it reduces the world’s complexity to partially-manageable levels. Many of the problems are the costs of its benefits; it has to oversimplify and oversharpen to be useful.

 A recent exchange between Daniel Kahneman and Gary Klein has greatly clarified this (Kahneman and Klein 2009). Gary Klein has long studied the nature of expertise and expert decision-making, and thus has been impressed with the extreme accuracy and comprehensive success of natural decision-making.

The two had little to disagree about, however. They recognized that both errors and phenomenally successful predictions are common in this world. They agreed that reliably making correct decisions about complex matters must follow from much experience with such decision-making, in a setting where it is actually possible to observe, understand, and control the situation enough to use the knowledge derived from that experience. Such is the case in chess, and usually in firefighting—a domain much studied by Klein. It is not the case in making decisions about people on the basis of interviews or similar assessments, an area studied by Kahneman. One does not know the people well, and people are notoriously complicated, hard to understand, and different among themselves.

Expertise and competence matter. Consider chess-playing: Klein has done a great deal of work on chess experts, and how they can manage to foresee many possible moves ahead from a difficult configuration on the board. Klein could no doubt do well at understanding the thoughts of people who sold their stocks just before 2008; Kahneman would do better at understanding the many more who did not. Klein points out that experts who take pains and care get it right, at least when the situation is more or less predictable. Kahneman points out that nonexperts cutting corners, and everybody in situations where prediction is thorny, often get it wrong.

Overall, we often go with the easiest algorithm until it is proved wrong, then go to the next easiest, and so on, rather than starting out with the most sensible. The full roll of heuristic distortions is far too large to treat here (see Ariely 2009 for the latest and most accessible account to date).

This is part of a wider truth. Work on developing artificial intelligence has shown that human thought can be approximated only by creating a system with a number of rules that allow fast, reasonably accurate inference and extrapolation from small bodies of data. Again, consider a child learning the meaning of a word: the word is first used for one item, then rapidly overgeneralized along the most plausible or cognitively salient dimension (Tenenbaum et al. 2011). People are amazingly good at inferring dimensions and mechanisms that matter. The costs of the system are many, but the alternative of knowing everything exactly would be impossible in finite time. We do the best we can. I am reminded of the Chinese definition of intelligence: “You tell him one part and he knows ten parts.” Tell him 10% of the story and he can infer 100%.

Self-serving biases and emotion triumphing over reason are more common and deadly, though. These we shall now consider in more detail.

Dreams and Delusions

I once planned to have lunch at a charming town I remembered on a familiar road in Canada. I recalled fine old ponderosa pines shading the town. I reached the spot, found no town, and searched for it. Then I realized that I was a hundred miles north of the nearest ponderosa pine. I finally remembered that I had seenthe town only in a particularly vivid dream I had had shortly before. If I were a Runa, or a citizen of traditional China or ancient Rome, I might have assumed the town was real and I had seen it on a soul-journey when my soul left my body during sleep. As it was, I merely missed lunch, consoling myself with the lesson learned.

 Truly, the human animal is so susceptible to believing dreams, stories, false memories, and visions that it is hard to see how we ever get anything right. (Although that one case was my only episode of being fooled by a dream.) Only repeated interaction with the real can tell us. I know my dreams are dreams because I always wake up and find the same old reality, whereas the dreams are different every night. If I had consistent dreams I might never figure it out, like Zhuang Zi, the Chinese philosopher who dreamed he was a butterfly and then wondered if he were really a butterfly dreaming he was a man.

 Visions—waking dreams, hallucinations, or simply vivid imaginings—are also universally part of the human condition. Humans do not need drugs or meditative training to see visions; simple sensory deprivation will do the job. The active brain simply has to have input. Floating in warm water in a totally dark and soundless room causes visions or waking dreams.

We do not know why people and other higher animals dream or see visions. The old Freudian notions are inadequate; dreams are more than subverted sexual fantasies. Even more hopeless is the common belief that dreams are just mental noise or vacuum activity. Dreams involve a vast amount of mental effort, enough that they would have been selected out of existence millions of years ago if they hadn’t contributed something worth their huge energy cost. The dreaming brain uses about as much energy as the waking brain. In fact, they are known to serve some functions. They are certainly one way of dealing with worries and fears. They have also been experimentally shown to be involved in processing, storing, and re-coding of information for better memory.

 Culturally, they are of enormous import. Virtually every society believes that dreams provide insights into reality. The insights may be cryptic and obscure, or may be simple memories of soul-travel. Hilario’s Runa culture is not the only one to believe that nonhumans’ dreams are important to us as well as our own.

Related to dreams are visions that result from trance, dissociation, or mystical states. These, however, are usually much more predictable and clearly culture-driven. Visions are notoriously prone to cultural construction and interpretation. We see what we expect to see. This greatly increases the credibility of religion—at least until one compares across cultures, and finds that fundamentalist Christians see Hell, Buddhists see Buddhist deities, Native American traditionalists see spirit bears, and so on according to training.

Agency, Anthropomorphization, and Essentialization

 The clearest and longest-recognized delusion of the human is our default assumption of active, wilful agency. We assume that anything that happens must be due to some being actively willing it. Ever since Hume and Kant, and even since the ancient Greeks, philosophers have seen this and used it to explain the universal human belief in spirits, gods, and other unseen agents. Every book on the social science of religion now features it (e.g. Atran 2002; Hood 2009; Shermer 2009, commenting on Hood, calls this belief “agenticity”).

Humans everywhere are innately prone to see spirits and ghosts, to expect simple physical relationships even where reality is more complex, and to think that the “mind’ or “soul” is a disembodied thing separate from the brain. All this makes it difficult for children to learn some of the basic concepts of science (Bloom and Weisberg 2007; Hood 2009).

Related is our fondness for anthropomorphization—seeing others as like ourselves. Humans see dogs as like people, other people as like their own social group, and other members of our own social group as like their personal selves. Again, Kant noted this, and saw it as another case of aggregation or assimilation (Kant 1978; cf. Hood 2009 for modern psychological findings). Of course, the opposite, overdifferentiation, did not escape his attention. We are just as likely to see a rival human group as “animals,” “inhuman,” and so forth. Dog haters see dogs as mere instinct-driven machines.

 Essentialization is another form of assimilation. Bruce Hood (2009) uses the example of a murderer’s sweater; Hood has done much experimentation, trying to get people to wear a sweater that Hood (dishonestly) tells them was worn by a murderer. Practically no one will wear it. Countless experiments of this kind have been done, and the results are predictable. Children very early come to this mind-set, and hold to it tightly (Hood 2009). Conversely, Hood found that people would treat sweaters of people like TV’s “Mister Rogers” as almost holy relics. Indeed, the relic cult in Europe, so savagely mocked by Edward Gibbon and Mark Twain, stems from the same sort of thinking.

Essentialization also takes the form, so common in social science, of assuming that all French or all Samoans or all middle-aged white males are “the same” in the ways that matter. They share a cultural essence. No amount of disproof seems to shake this belief, which propagates endlessly through too much anthropology as well as through popular and semi-pop journals, radio shows, and social commentaries generally. Recent sorry examples of this have ranged from left-wing to right-wing. The left critiques “neoliberalism” and “colonialism”—as if these were perfectly homogeneous, perfectly defined mind-sets. The right attacks “immigrants” and “secular humanists” as if they were all the same (and all essentially evil). Native Americans have become an “essential” group in the last 100 years—before that, they thought of themselves as quite different “tribes.” Now they have a mystic Native American cultural essence that supposedly unites them. Some perfectly serious spokespersons have emerged who are overwhelmingly Anglo-American by ancestry and entirely so by culture; possession of one remote Native American ancestor allows these individuals to claim an indefinable but all-important essence.

America, in spite of its notorious “individualism,” is a locus classicus for this sort of cultural essentialism. It is, in fact, hard to imagine politics without essentialization. It also has pernicious influences on social science.

Overoptimism

“We walk blindly into the precipice, after putting something in front of our eyes to prevent our seeing it.” --Pascal (my translation; cf. Pascal 2005:52)

The expectation that people are rational is in fact one of those bits of overoptimism noted by Fine (2006), Tiger (1980) and other grave authors. Positive illusions” (Taylor 1989) are perhaps the most pervasive, distorting, and insidious bias. People believe the world is better than it is (Taylor 1989; Tiger 1980) and fairer and more just than it is (Lerner 1980). This leads to countless overoptimistic plans and schemes, and to a human tendency to gamble on even quite long shots. Countless fisheries have been ruined because fishermen and even scientists made assumptions based more on wishful thinking than on fact (McEvoy 1986). As a partial corollary, people are prone to the sour-grapes illusion: they dismiss what they can't get as hopeless or worthless (Elster 1983).

However, excessive optimism is useful. One Pyszczynski has said that it is “a protective shield designed to control the potential for terror that results from awareness of the horrifying possibility that we humans are merely transient animals groping to survive in a meaningless universe, destined only to die and decay,” no more important than “any individual potato, pineapple, or porcupine” (Fine 2006:28-29). This existential flight seems less believable than the down-to-earth explanation offered by Lionel Tiger: If we weren’t overoptimistic we’d never have children (Tiger 1980). It is hard even to start the children in the first place unless one is overoptimistic about the other party in the case; love is blind (Murray et al. 2009 showed this in a depressingly fine series of studies). Optimism about having children is like parental love itself, which, as Nasir ad-Dīn al-Tūsi pointed out 800 years ago, is necessary, since raising children without it would be so onerous and chancy that no one would do it (Nasir ad-Dīn Tusī 1964).

Mood states influence thought about quite irrelevant matters. Psychologists manipulating (“priming”) mood find that providing happy stimuli makes people more positive, and vice versa (Fine 2006). A generally optimistic mindset—cognitive and emotional—has effects on all aspects of behavior, and even on health; happy people are healthier and apparently live longer than depressed ones (Lyubomirsky 2001; Seligman 1990; Taylor 1989).

Optimism was necessary to our ancestors to set out on a hunting-gathering foray, attack a mammoth, move camp in search of better berrying grounds. By contrast, existential angst had zero survival value before the Left Bank café was invented. (Less aged readers may not know of “existentialism,” a “philosophy” born of Jean-Paul Sartre’s musings in the Left Bank cafés of Paris. It taught that life is meaningless and suicide a sensible option. Sartre must have been responding to the prices at those cafés.)

Optimistic people are healthier and do better in the world than pessimistic ones, which has caused some of the psychologists who study this question to advocate a policy of convincing oneself to be optimistic (Seligman 1990; Taylor 1989). Jon Elster (1983) questioned whether people can so easily convince themselves of something so dubious, but the record of fisheries and other resource use shows that people can convince themselves of the most patently absurd overoptimism.

One corollary is that, when we do let ourselves see problems in the world, we tend to blame them on people we dislike, rather than on fate (Lerner 1980; Taylor 1989). A hierarchy of hates—ideological, class, ethnic, racial, religious, or gender-based—develops. Scapegoating, blaming the victim, demonizing one's opponents, and similar games are the result.

Levels of optimism and pessimism, like other aspects of personality, are partly hereditary; about 50% of the variance in normal mood settings is explained by genetics. Thus, much of our attitude toward life, and thus that whole side of information processing, is out of our control altogether. The balance between optimism and pessimism is specifically set in the amygdala, which regulates fear and similar emotions, and the anterior cingulate cortex, the upper brain’s great gateway and traffic station. Messages from the amygdala are processed there, especially in the front part of it, and it is key in deciding whether a person overreacts to positive ideas and images or to negative ones (Sharot et al 2007). One wonders what to make of the brains of those of us who are chronically pessimistic about some things and chronically overoptimistic about others.

Avoiding Impossible Cognitive Tasks

“We shall not have much Reason to complain of the narrowness of our Minds, if we will but employ them bout what may e of use to us; for of that they are capable: And it will be an unpardonable, as well as Childish Peevishness, if we undervalue the Advantages of our Knowledge, and neglect to improve it to the ends for which it was given us, because there are some Things that are set out of the reach of it” (Locke 1979 [1697]:45-46).

On a typical day, a normal human must balance work tasks, attention to family, personal recreation, satisfaction of needs for food and sleep, and maintenance of safety and security. A compulsively “optimal forager” would have to find—every day—a diet that would supply optimal amounts of protein, carbohydrate, fat, liquids, fibre, 15 vitamins, and about 20 minerals, and various other nutrients, all at minimal cost. There are actually linear programs that do this for animal feeding operations. One could, in principle, do it for humans. In fact, I knew of one well-meant attempt to help the poor by posting a best-nutrition-for-cost diet around the less affluent parts of one Canadian city. The diet was dreary. No one adopted it.

A person truly trying to make optimizing choices would be in the position of Buridan’s donkey, who starved to death between two equally attractive bales of hay because he could not make up his mind which to eat first. Buridan’s donkey was fictional (no real one is that dumb), but many humans do seem to spend their lives paralyzed by inability to choose. This is because the human case involves more than just food.

Human heuristics and biases make eminent sense if one is an evolving hominid—a small-brained creature of emotion, quick reaction, and frequent terror, trying to make a living in a fantastically complicated world of berries, lions, antelopes, grass, vines, and deadly snakes. For a creature with a fully evolved big brain, in a world of cars and computers, we are probably too easily scared, too easily optimistic, too labile and emotional, and too quick to oversimplify the world.

Gerd Gigerenzer, a leading authority on this issue, has become more and more convinced that our heuristics and mental shortcuts evolved to make decisions possible in real time. He and his associates have shown over the years that intuition very often beats rational calculation. Gut feelings often beat conscious evaluation; simple heuristics beat complicated decision algorithms. For example, the simple strategy of searching till you find a satisfactory *X*, instead of a perfect *X*, makes all the difference (Gigerenzer 2007). This is not to say the mistakes are good. Sometimes they are terribly costly. But usually they balance out.

 Many have sought hopelessly for the perfect mate, the perfect religion, the perfect job, and the perfect restaurant, ultimately to give up and find happiness with the best we could realistically get. (Still, I have to admit, the search sure was fun.)

*In summary, we humans are very good at getting things right, but we are even better at getting things usefully approximate. Most of our major mistakes in understanding the world are entailed, at least in large part, by our successful strategies for simplifying it enough to make it manageable.*

Emotion the Great Disturber

“The heart has its reasons, which reason does not know.”

 -Pascal (tr. Roger Ariew; 2005:216)

Emotion is the great base of all mental activity. It is what we share most clearly and solidly with all higher animals. It is not only necessary to our well-being; it *is* our well-being. Well-beingness is a feeling.

Love, friendship, grief, depression, jealousy, envy, and many other emotional and mood states constantly affect us (Anderson 1996; Baumeister 2005; Marcus 2002; Stets and Turner 2006; Turner 2000). Illnesses and other environmental influences stress us, influencing our moods. Growth and aging constantly change us. Yet it has been undertheorized or minimized; Kant, for example, said rather little about it (Jay 2005:70).

In marriage, love holds couples together and enables them to deal with the inevitable problems of a relationship. Presumably, beings concerned only with rational self-interest would merely mate and part, and abandon the young, as crocodiles do. This works fine for crocodiles, but human society would not survive it.

Reason so completely depends on emotion that people often come to an emotional conclusion and then selectively marshal facts or “reasons” to support it. The connection is mediated by several mechanisms, including rapid diffusion of neurotransmitters to nearby neurons before the orderly flow that drives serious thought can begin (Heine et al. 2008). Often, reasons are invented post hoc to justify feelings. This was noted by sociologist Steve Hoffman in regard to the Iraq war and the health care debates of 2009 (Bryner 2009). He found that people first made up their minds about these public questions, largely on the basis of party loyalty or similar social influences, and then came up with supporting reasons.

There is a subset of psychologists who prefer to restrict the term “emotion” to humans, but this seems untenable. To be sure, my dogs do not feel the subtle shades of educated sensibility that Marcel Proust experienced on eating that famous madeleine, but they do have loves, likes and dislikes, jealousy, envy, anger, delight, and disgust, just as clearly and strongly as humans do (Bekoff 2007). The differences are in cultural elaboration of responses, not in the basic emotionality. Restricting “emotion” to humans makes no more sense than refusing to refer to animal “legs” or “stomachs.” At the very least, canine love seems deeper and more profound than that of the celebrities one sees on magazine covers, who tend to change partners every year according to publicity needs. It seems odd that Enlightenment and post-Enlightenment thought often refused to credit animals with emotion but also claimed that animals showed unbridled passion—lust, rage, and so on. In fact animals are neither emotionless nor hyperemotional.

Any lingering doubts about animals were recently removed by discoveries in neuroscience. The universality of emotion is clear from the fact that the same brain regions react the same ways in humans, monkeys and dogs; emotion is truly wired in (Marcus 2002; Bekoff and Pierce 2009). How far this goes is still unknown; I doubt if mice have much complicated emotionality, and reptiles seem to me to have nothing more than mindless reflexes. But no one really knows.

 Emotions frequently overwhelm people. The results are very often foolish and self-damaging in the extreme, as everyone knows who has ever been in a star-crossed love situation. (That would be about 90% of adult humanity.) Subtle emotional conditioning can change people’s reactions without their understanding why. Sales staffs take advantage of this by playing soothing music, burning incense, and doing anything else that will create a tranquil, blissful mood in the customers. Good politicians are masters at whipping up crowd emotions.

 William Sewell (2005:188) develops a suggestion by Clifford Geertz that humans are so emotional “*because* the most rational” of animals. Our complex brains, with their widely distributed processing, inevitably involve complex linkages of emotionality in any complex linkage of reasoning. Sewell emphasizes Geertz’ point that people are “high strung” and blown by emotional crosswinds (Sewell 2005:192), and would be incapable of organizing and managing their lives without culture to structure and direct emotion.

 Grave philosophers, since long before Plato and Aristotle, have focused attention on how to regulate the emotions. One classic European solution is to damp them down to nothing—to be “rational” in the sense of “unemotional.” This goes back to the elite Stoics, but was not really taken as a serious possibility among ordinary people until the 19th century, when economists concluded, wrongly, that people are rational individual maximizers of material welfare.

More common has been attempts to fine-tune emotion by cognition. Some call this controlling the beast within. In modern jargon, we could say it involves using the resources of the whole brain to help the front brain with its thankless, demanding job. Cultural and social interactions thus become all-important in defining, structuring, fine-tuning, scheduling, and otherwise handling emotions, as famously pointed out by Arlie Hochschild in *The Managed Heart* (2003, original edition 1983). This properly belongs under “culture,” and will be discussed there anon. However, it is necessary to point out here that managing the heart does not always work. In fact, it is notoriously difficult, and prone to extremely frequent breakdowns. Martha Nussbaum (2002) feels that emotions are easy to control. She is a cool, composed philosopher. Many of us are not.

These debates have prompted a “hedgefoxian perspective” (Vohs et al. 2008), with reference to the classic Greek poem by Archilochus: “The fox knows many tricks; the hedgehog only one—one good one.” People can and do use both strategies, sometimes knowing many ways to deal with a problem, sometimes focusing narrowly on one way of dealing with many situations. Emotions help either way. Philosophers have also weighed in on the issue (Frank 1988; Gibbard, *Wise Choices, Apt Feelings*, 1992; Nussbaum 2002) are notable among the many.

Brain scans now show, unsurprisingly, that both emotion and cool reason enter into moral decisions, but the proportions are different. Actually *doing* something, especially if it is harmful, evokes more emotion. Letting things happen, considering things in the abstract, going with a default option, or rather passively helping evoke less emotion and can be left to reason (Azar 2010a).

 All noticing has some degree of evaluation attached (Hammond 2006; Zajonc 1980). All cultural knowledge and cultural representation also has an evaluative component. Unconscious assessment of the positive or negative emotional qualities of an item or situation is done before a person reacts to it (Zajonc 1980). There is a vexed question of what "emotion" is. Zajonc is referring to gut feelings of good and harm, not to the complex and self-conscious feelings we usually call "emotions." Gut feelings of fear, anger, desire, grief, shame, delight, and so on are instinctive; we are born with them and we share them with all higher mammals. The complex self-conscious mood-states of human love, hate, and so forth are created and managed by individuals in the light of cultural and social knowledge as well as gut reaction. Richard Lazarus (1984) challenged Zajonc, not on the basic findings but on using the term “emotion” for the impulses found. Modern usage tends toward Zajonc’s, but the definition question remains open.

Jon Elster notes the passionate feelings often aroused by Bach’s Goldberg Variations (but chooses not to discuss them at length). The unique pleasure we feel when we hear complex patterns resolved musically, or see them expressed visually, is a distinct kind of feeling (see Huron 2007, and for comparable observations about visual art, Gombrich 1979). It involves much of the brain, and especially certain regions of the temporal and motor cortex that are not very basic to either emotion (in the normal sense) or cognition. The core of the experience is satisfaction at seeing an inference of pattern confirmed by a prediction fulfilled (Huron 2007).

Culture (a shorthand term, remember, for what we learn from our parents and peers) tells us how to talk about the emotions. Thus, emotion terms vary from language to language. Some languages name emotions not named in other tongues. However, the emotions themselves depend more on common humanity and on individual differences in tremperament and life experience (Ekman 1992; Osgood 1975; Stets and Turner 2006).

One (more) proof that humans are complex biological organisms rather than rational economic calculators is supplied by the embodiment of emotion (Niedenthal 2007). Most of us know that we can make ourselves happier by smiling, and make ourselves angrier by deliberately putting on an angry face—a frown or snarl—or by tensing up and hulking over whatever is annoying us. Merely holding a pen between one’s teeth, thus forcing a smile-like pullback of lip muscles, makes a person happier. Conversely, holding the pen with the lips forces one to purse one’s lips (as in disapproval rather than smiling), and that is enough to reduce enjoyment of life. Still further, doing a task with back straight and body pose alert makes one prouder than if one does exactly the same task with body slumped (Niedenthal 2007). Mom and your first-grade teacher were right after all. Sit straight, children.

Unpacking “Love” and Loves

Positive emotions tend to get lumped as “love” in English and many other languages. The great cognitive psychologist Jerome Kagan (2006) admonishes us to unpack simple cover terms for psychological states, and see their full complexity. If we do this with the English word “love,” we realize that we are talking about many quite different feelings. There is a common emotional ground: intense affection for and interest in a specific person or thing.

Still, the emotions associated with that enthusiasm and intensity can be very different indeed. I love my wife, mixed green salad, and early medieval poetry. Obviously, these three kinds of love are phenomenologically different. Even love for the same individual may mean different emotions at different times. My love for my oldest daughter, now 45, is certainly a different set of feeling from my love for her when she was newborn.

There is a delightful Spanish Renaissance song about a peasant who loves three things: Inés, ham, and eggplants with cheese (which Inés obligingly cooks for him). The poet assumes that his sophisticated readers will laugh indulgently at the foolish young swain who can’t tell a noble passion from a satisfied stomach (Alcázar 1961:167; my translation and discussion of it have been incorporated by David Kronenfeld into his book on cognition: 2008:212-213).

One can distinguish, within the space covered by the word “love,” *at least* the following quite different emotions or feeling-states. (Various other minds have animadverted to this sort of listing. A somewhat different list with some other possibilities is found in Kemper 2006, and Hatfield et al. 2007 have a whole list of types of erotic love.):

Erotic infatuation

Familial love: parents and children, siblings, relatives

Friendship and companionship

Dependency (loving someone solely because one depends on the person; a major part, though by no means all, of an infant’s love for parents; common in erotic relationships also)

Enjoying good food and other physical comforts

Familiarity love: love for a pair of old shoes, or an old bathrobe, just because they are so familiar

Love for wild nature: flowers, mountains, deer, flowing water

Aesthetic love for great art, music, literature

Love for all humanity, or even all beings, as taught by world religions

Love for knowledge and wisdom: philosophy, social theory, baseball statistics

Spiritual love (for God or functional equivalents, for natural wonders, and so on)

Love for principles: justice, truth, helping

Patriotic love: a strange emotion. It seems to be basically passionate loyalty to leaders transferred to an abstract concept (the nation, state, or flag).

All these loves have subdivisions. Erotic love, for instance, varies from wild passion—considered a major medical problem in olden times (Wack 1990)—to calm, quiet bliss (Hatfield et al. 2007). In a lasting marriage, erotic infatuation generally gives way to companionate love. There are many whole books on how to revive the infatuation, indicating a pent-up demand for that. A love affair or marriage, if it’s any good, involves a range of loves: erotic attraction, friendship, trust, mutual dependence, familiarity, and so on. We get used to thinking that way, and have trouble unpacking “love.”

Familiarity love typically increases with time, but sometimes we get to hate familiar things more and more, and sometimes a worn shoe is just a worn shoe. Usually this depends on whether the shoe has been worn in pleasant or unpleasant contexts (hiking shoes may be loved, formal ones just thrown away when a bit frayed) but sometimes the logic of familiarity love escapes us. Children are particularly unpredictable in this regard. Contemplate any young child’s choice of favorite stuffed animal, and the way such choice may change suddenly for no apparent reason. “Loving” things like a familiar pair of old shoes, or a favorite food, involves awfully minimal interest. Boundary phenomena define a category, so we cannot neglect the old shoes.

Aesthetic love is so vague as to be almost a “garbage-can category.” Love for Bach’s harpsichord music seems pretty far from love for Tolstoi’s novels or Navaho rugs. Even within music, love for Chinese opera seems hard to square with love for Chinese classical music (which is slow, soft, and mostly solo), but Chinese music aficionados adore both.

Patriotic love involves loving an abstraction, in an oddly impersonal yet passionate way. This seems a very human thing; one can imagine a dog trained to die for a flag, but not to understand the abstract concept of “the nation” behind it.

In English, and in many other languages, the word “love,” by itself, is always understood to mean boy-girl. It does not even include parent-child love, let alone a gourmet’s love for *poule de Bresse*. One particularly benighted recent article on Darwin and psychology, for instance, restricts “love” to reproduction, listing only love for mate (singular) and kids (Nesse and Ellsworth 2009). Psychologists of romance also restrict “love” to couples (Sternberg and Sternberg 2008; Sternberg and Weis 2006). Some are even more extreme, considering teenage crushes as “infatuation,” not love. All these limitations are truly culture-bound. They exclude not only the hapless teenagers, but also temporary affairs, polygamous relationships (which can be deeply loving in China, Korea, and elsewhere), polyamory in general, and indeed everything except middle-class Anglo-American ideal mating. One would think that no one ever has positive emotions outside of erotic passion and, perhaps, mothers’ love for babies. There is very little on fathering, and, to my knowledge, not a single study of grandparental love (as opposed to the evolutionary significance of grandparenting).

Even romantic love has only recently been studied beyond the level of simplistic boy-girl mating (Sternberg and Weis 2006). Rusbult et al. (2009) have recently shown that couples flourish in proportion to how much each member thinks the other brings out his or her “ideal self.” This not only presents a relatively new subject for scientific research (novelists have long noted it, of course) but meshes with Viktor Frankl’s writings and other works that speak of the deeper desires of the human animal for ideals, life commitments, and true personal meaning in life. We are most different from other animals when we are most involved with lifetime visions and projects.

This, however, somewhat ignores the fact that each love is different. It often occurs that one passionately loves a person for reasons A, B, and C, then in the next affair passionately loves a person for reasons X, Y, and Z, then in yet a third affair loves a person in a quiet, gentle, non-“passionate” way.

The western world has had a positive, romantic idea of erotic love since the Greeks and Ovid. Others have different ideas of it, and their knowledge might well be taken into account by modern psychologists. In the Middle Ages, romantic love, at least if it became “severe” enough to interfere with ordinary life, was often considered a form of melancholia or other mental trouble, and treated by doctors—or sometimes philosophers (Burton 1932). This was especially true in the Near East. Here is the Arab physician ‘Ali ben ‘Abbās (c. 994) on dealing with this vexing illness: “On the Treatment of Love…. Such patients should undergo a moistening regime…. They should take baths, moderate horse exercise and anoint themselves with oil of violets. They should look upon gardens, fields, meadows, and flowers, listen to sweet and low sounds as of the lute or lyre, and their minds should be occupied by stories or pleasant and interesting news. But they must also have some work or business, so as to keep them from ideness, and from thoughts of the loved ones, and it is good to excite them to quarrel and argument that their minds may be yet further distracted” (Kamal 1975:421).

Perhaps the best balance is found in another Arab work, *The Ring of the Dove* by ibn Hazm (1953). Ibn Hazm was a sober, serious judge and a leading authority on Islamic law. That did not stop him from writing perhaps the most urbane, tolerant and wise book ever written on romance—one which, incidentally, gives equal place to homosexual and heterosexual love, without making an issue of it. The book is a useful corrective to the extremist concepts of Islam now all too visible in the media. Ibn Hazm covers everything from happy lifelong mating to obsessive and dangerous infatuation, with appropriate notes on treating the latter.

A vast amount of ink has been spilled on how love “evolved”—usually, I fear, by people who do not know much Darwinian theory. This literature is inadequate even for boy-girl love, and ignores every other sort. We all know now that fairly big breasts and a small waist attract men because they show reproductive fitness, and that men and women everywhere want someone who will listen to them and be sympathetic and kind, but we know surprisingly little more about even this best-studied of types of love. We know a good deal about parent-infant bonding and early love, but there are mysteries here and many ridiculous claims in the literature (see Anderson 2007). We have no clue—beyond the obvious facts known to the ancients—about how human family bonding with older children and grandchildren is maintained. The family dog’s love for us is rather better studied than our love for him (Serpell 1995; “Lord, help me be the person my dog thinks I am” [bumper sticker]). Showing how humans and mice are alike does not tell us how love evolved; we want an account of how humans and mice are different. One doubts if a mouse wants someone who brings out his or her ideal self.

The literature on romance reaches amazing heights of of ridiculousness. Great effort has been expended on a quest to find human body scents that attract the opposite sex. This quest remains futile, yet biologists claim that love must be a chemical process. The BBC (Murphy 2009) reported one Tim Jacobs as saying: “Unfortunately all this doesn’t seem to leave much room for romance.” Well, yes, if it were true. But we have plenty of hard evidence that love is about listening, caring, sharing ideal selves, living together and accommodating, and much else that is romantic—and *no* evidence that natural body smells are involved except in the well-known negative way. An actual expert on the matter, Tristram Wyatt, writes: “[S]o far, no [human] pheromones have been conclusively identified, despite stories in the popular press” (Wyatt 2009:263). The human animal is wired to like natural-disinfectant smells on skin, hence the popularity of perfumes, most of which are based on disinfectant chemicals like lavender, jasmine, and rose oils. Musk is an exception—an animal sex attractant—so one cannot rule out human sex attractant chemicals. Certainly people are more sensitive to natural scents than we used to think. Studies show people recognize their children’s and loves’ odors. But romance survives.

David Buss, once the champion of extreme simplicity in regard to male-female attractions (women want wealth, men want reproductive vigor), now admits that men have many disparate strategies for attracting women (Buss 2009:143-144). The insights of evolutionary psychology, cutting through common sense to the real core of things, have ended with a lame admission that common sense was right all the time.

Many languages are sharply different, focusing their words equivalent to “love” on the parent-child bond. This too involves a range of emotionalities. Some parents live for their children; others dutifully love their children without being much interested in them as people—especially once they have left home. Cultures that focus on parent-child love (as in Polynesia, and on the island of Chuuk; see below) sometimes have different words for the other emotions in the “love” camp. Ancient Greek unpacked “love” into *eros* for the obvious*,* *agape* for ideal selfless (nonsexual) love*, caritas* for compassionate love,and the verb *philein* for general strong positive affect. The latter in turn had derivatives like *philadelphia* for “brotherly love” (a quality rather rare these days in the city named for it…). There is also *storge* “friendship,” and still other words for mothering. Already in the 18th century, Johann Herder, a major ancestor of anthropology, discussed various German loves and love-words in the late 18th century (Herder 1993:115-6).

All this means that “love” is a very difficult concept to use as “a motive.” Jesus clearly meant for people to “love one another” in the familial and companionate senses—a broad spirit of warm, accepting sociability. Yet countless millions of Christians over time have interpreted it as meaning that their prime duty was to kill anyone who disagreed with them, or even anyone who looked different.

Real love for particular persons leads to caring and responsibility, unless one is fearfully disempowered, but obviously some kinds of love lead more directly and seriously to this than others do. Family love (*not* erotic love) stands out as by far the most important motivator of care. Companionate love is a strong second. Caring for the environment is a lower priority (if it is a priority at all) compared to taking care of one’s family. If my family was starving and I had to catch the last members of an endangered fish species to keep them alive, I would do it, though I realize that, to the world, the survival of my family may matter less than the survival of the fish. Worldwide, millions of people are faced with essentially this choice. Poverty forces them to catch fish, or cut down forests, to feed their families, though they may know that the end result of overuse is starvation for all.

 Love and caring may lead to active warm interest, but often we are interested in something we don’t really love—as I am interested in social theory without exactly “loving” either the theory or society itself. In fact, most of us are interested in murder (at least to the point of reading mystery novels), and we certainly do not love that. Conversely, the dependency love noted above usually goes with relatively little interest in the recipient, or with a very special kind of interest. A newborn baby loves its mother and is intensely interested in her, in immediate personal ways, but obviously is not prepared to ask about her life story and hobbies. Most of us know loving, long-standing married couples that have no intellectual interest in each other’s lives or thoughts. Such couples are notoriously prone to break up when the kids leave home—they have nothing left to talk about.

 Mystical experience is a part of intense erotic love for some (many?) people, but need not be, and mystical experience without love is common.

 The development of love in humans can be roughly divided into stages, following Freud and Erik Erikson (1950) but without their specific theory commitments. Babies and young children love without much understanding of those they love, or even knowing enough to seek understanding; they love from dependence and because of nurturing, care, and contact. Teenagers tend to have brief, intense infatuations based on often rather superficial reasons, such as the conventional attractiveness or the popularity of their loves. Their friendships are often similarly based and similarly transient. Adults love from sharing, mutual friendship, longstanding commitment, trust, and the like. Finally, a highest stage of erotic love, reserved for a fortunate few (or more—no one seems to know, involves a real mutual interest—seeking for knowledge of what will really please the other, seeking for knowledge of the other’s life and interests, but holding one’s own and expecting a return. This sort of lifelong-learning love also plays across other attachments: to friends, career, landscapes, art, even machines.

Hedonia and eudaimonia

 Following Aristotle and his time, psychologists now distinguish between two very different kinds of happiness (Waterman 2007). Hedonia is just good immediate fun. Eudaimonia is the happiness, or satisfaction, that comes from having a deep life commitment. Evolutionarily, this would have been one’s genetic destiny—children, and in a long-mated species like ours, normally also the other parent of said children. By extension, humans have come to see life careers as meaningful. Probably this evolved, and long ago: hunter-gatherers had to feel eudaimonia for hunting and gathering, to motivate them to go out and get food for their families.

 The obvious difference between hedonia and eudaimonia is that eudaimonia often isn’t much fun, but in the end is a lot more satisfying. Parents, not only human ones but even higher animals, find young children are often an appalling trial, but more wonderful and delightful than all the “fun” in the world. Many of us find our careers to be like that too. I am perpetually being told to stop working and have some fun for a change; I can’t get it through people’s heads that I enjoy my work more than “fun.”

 Some people seem wired for hedonia, some for eudaimonia. Many people maintain a balance, but some seem interested only in immediate fun and unable to sustain commitments, others live for long-term goals and find transient pleasures quite unsatisfying. Personality theories have sometimes noted this difference, but we do not really understand it.

Simply being interested is an extremely important, and extremely undervalued, mood-state. Normal people are overwhelmingly interested in their social world, as we have seen. Many are not very interested in anything else, though most people seem to expand their interest to take into account their work and work environments. Some few, but reliably one or two in every group, displace much interest onto nature. This becomes institutionalized as “science” when rapid expansion of a trade-and-commerce economy leads to floods of new information, as in Athens, early Islam, medieval China, and the western world since 1400.

Moods: Aesthetic, Spiritual, and Unclassifiable

 As noted briefly above, of all the powerful mood-states, the ones we associate with aesthetic and spiritual experience are the least explored. Mountains, waterfalls, and sunsets are notorious for evoking such feelings. Human cultural creations, and our differential reactions to them, are more interesting, because they are even harder to explain. Rembrandt’s and Monet’s paintings do things to us that calendar art just doesn’t do. I have seen perfectly normal, tightly controlled people break down and sob on contemplation of a Monet landscape.

Most of us are familiar with the incredibly powerful, complex, rich experiences evoked by Mozart’s Requiem, Beethoven’s Ninth, and so on, to say nothing of African-American spirituals, Indian ragas, and Peruvian traditional music. A small literature on musical experience—the best of it reviewed in Aniruddh Patel’s *Music, Language and the Brain* (2008)*—*makes a beginning at understanding the musical drive involved, but says little about the emotional states. Touch, taste, and smell can be evocative also.

 These feelings are always used in the service of religion, hence the worldwide association of religion with great art. However, atheists and agnostics are as moved by Beethoven and Monet as anyone. Aesthetic feelings are quite different from standard meditative feelings (which run heavily to calm and peace), though extremely powerful mystical experiences are often associated with music.

 A vast range of odd moods and feelings are little theorized because they seem not quite “basic emotions” but are not “rational” either. Some are labeled in other cultures but not in English. Consider nostalgia. We have an English word for it, but a Polish word that covers the same general ground actually labels a subtly different emotion (Wierzbicka 1992, 1999). Nostalgia has only recently received any attention at all; a review article now opens it to serious work (Wildschut et al. 2010). Is it an emotion, a mood, a feeling, a feeling-state, a vague cover-term for a mishmash of sensations? Yearning, longing, gentle sadness, painful uncertainty, and even fairly obvious things like embarrassment are in need of similar treatment.

 Another to receive recent treatment after much neglect is compassion (Goetz et al. 2010; Oveis et al. 2010). Somewhere between love, pity, empathy, and care, it is a mix of emotionality, cognitive orientation, moral and ethical thought, and gut reaction to others’ sorrows. It has a separate representation in the brain and in phenomenological experience from love (Goetz et al. 2010) and is different from pity in that it does not assume a superior station. It is, of course, the basis of Buddhism, and has been explored in detail by Buddhist philosophers. It certainly deserves much more attention from western philosophers and psychologists. Its converse, pride (Oveis et al. 2010), is a more mixed state, including arrogance, justifiable self-esteem, vainglory, sense of worthy accomplishment, puffed-up vanity, laudable confidence…we not only don’t know what to call it, we don’t know whether it’s good or bad.

The English language seems to have troubles dealing with such complex states, and the psychological and anthropological professions have more troubles than the language does. No doubt the future of those fields, and of philosophy, includes more serious inspection of these extremely important mental sets.

Rational Evaluating: Trust and Competence

In addition to emotions, we have to evaluate others in a more rational way, as co-workers, trustworthy allies, friends, trade mates, companions. This involves trust above all. This often means not trust in the honesty of another, but trust in the other’s social abilities. The most respected people in a society are usually those who are most obviously competent at handling social relationships. They can de-fang a conflict, or marshall the troops if de-fanging fails. They become leaders, or at least politicians. Americans think that wealth makes leadership; it doesn’t. Money can buy a great deal of power and status, and political power almost guarantees some affluence, but—even in America—a country’s political leadership is far from identical with its roster of the richest 400.

Most people locate themselves in the middle of a space defined by virtue and competence. They are far from Gandhi but usually even farther from Hitler and Stalin. They are competent at what they do, but not great virtuosos. In that space, they do as well as they can by families, friends, and trusted coworkers, but hate their enemies and rival groups.

The real variability comes in how they deal with new acquaintances, especially potentially important ones like dates and workmates. Here extreme hope and extreme wariness meet, and betrayals or sudden rejections are common. The “third date” is proverbial. So is the end of the honeymoon. Typically, after about six months, no only marriage but any close relationship hits a rocky period, as people move from seeing only the good to seeing the whole picture. It is at this point that aggressiveness may come out, but true cooperativeness and cooperation also depend on this critical period.

Emotional and intuitive responses vie with attempts to follow social norms and assess people coolly in regard to how well they will actually do as companions and helpers. Emotion notoriously gets in the way of this task. Fancied rejection is particularly disturbing, calling up all the most vigilant and tense emotions.

Emotion, however, can equally well *serve* this task. The “moral emotions” (Turner and Stets 2005, 2006) do much of the work. Shame, guilt, regret, moral outrage and revulsion, grief or anger over mistreatment of others, the sense of responsibility (a sort of “emotion”), and related social considerations are basic and necessary to social survival. Yellow-rumped warblers do not feel shame or moral outrage. Dogs feel shame, or at least know enough to hang their heads and tails when they have done something that might incur punishment. They are empathetic enough to whine when they see other dogs suffer (I have seen this many times), but not social enough to feel much outrage about it. Only humans are social enough to empathize with the plight of suffering slum-dwellers in India, let alone suffering animals in Brazil, and feel outrage at the bad treatment thereof. Only humans (and relatively few of them) feel guilt about eating a member of another species.

Turner and Stets (2005; 2006:545) trace the role of social emotions through the entire social net, from situational norms to corporate unit norms, institutional norms, ideologies, and abstract values systems. One might for instance see, in a church organization, the informal rules of a local congregation; the rules for church behavior; the wider expectations for church membership; the ideology and morality of the church; and the ultimate highest-level values (universal love, submission to God, and the like).

Fear and Not-So-Rational Evaluating

“When all are isolated by egoism, there is nothing but dust, and at the advent of a storm, nothing but mire.” --Benjamin Constant, as quoted by Stephen Lukes, *Emile Durkheim: His Life and Work* (1973)*,* p. 197. (Apparently this is a long quotation chain, since Constant said he was inspired by one H. Marion.)

Negative emotions center on fear (LeDoux 1996; Marcus 2002). It is also a complex emotion with many forms. Fear of rejection is a major problem for humans. The core of a human life remains weak, helpless, and frail. Freudian and neo-Hobbesian theories tell us that we are savage, licentious, and powerful. We are not. At every human's very core, deeper than love or hate, deeper than learning or feeling, is that fundamental helpless dependence.

Newborns have a surprising amount of mental activity, both innate and developing; they are far from “blank slates.” But they are fairly helpless, their brains are only ¼ grown, and they need to learn a great deal. Thus, we cannot point to a “default mode” for the human animal. Any human, even one a week old, is already the product of a specific environment. Any adult has laid down ¾ of his or her brain under intense pressure from the environment, especially and most saliently the social environment. The brain actually grows and develops according to experience (Doidge 2008 gives a good popular account of recent findings). Innate responses are critically important, but only a start. Humans develop their individuality by defining it relative to their caregivers. They must negotiate sociability and individuality, connection and resistance. They must protect themselves against any hurts. They are in a position of weakness when they do this. Any caring act is gratefully received, and often reciprocated in so far as possible. A young child subjected to abuse or harm has little recourse; worse, she has little sense of power or independence. The child can do nothing but receive, uncomprehendingly, whatever random or systematic harm the world may offer.

It is important to realize that the vast majority of our basic learning—language, morals, coping strategies, the whole business of living—is done before we are capable of adult rational thought. Our basic strategies for dealing with people and problems are set before we can analyze or evaluate them. It is a rare adult that can change such early-overlearned ways.

Years pass, and the child becomes an adult—more or less able to control the fear and anger, but also more or less beaten and broken by life's vicissitudes. Often, the active eager enthusiasm and the desire to help and please are early casualties. Even more often, getting along with social superiors requires mindless conformity or blind subservience. Rarely, the child finds a mentor who wants to develop some spark of special ability.

We were all children, and we all have within us the desperate fear of aloneness, the desperate need of social support, and the desperate need to be cared for. We all remember, at gut level, the child's way of coping with isolation or with cold, controlling authority: a breakdown into sobs or temper tantrums. Much "adult" behavior seems little more than a thinly-veiled repetition thereof. Growth is expected to strengthen people, make them independent; it often does the opposite.

The need for warm, accepting social life, and for a place in it, is clearly prior, and fear is deepest when this is threatened. Hunters and gatherers depended on the group above all, to keep them from other fearful things: lions, hyenas, huge snakes, and the other perils of ancient times. My biological anthropology mentor Sherwood Washburn used to say in his lectures: “a lone monkey is a dead monkey.” As he knew, the same is true for people.

Fear is based in the amygdala, a very ancient structure buried deep in the brain (LeDoux 1996, 2002). Messages from it project to other areas. These messages dominate other thoughts till one copes with the threat. Since no animal is ever completely safe and secure, fear always has some salience in the brain. Once a real or imagined threat is actually present, reaction is immediate—well before conscious recognition of the threat. The amygdala sends an immediate message to motor and other cells, and before one has quite realized that that long thing is a snake, one has leaped back. Fear, then, is *dominant, irrational (or pre-rational), and preemptive* (Franks 2006, esp. pp. 56-59; LeDoux 1996).

The more serious and immediate the fear, the more it animates the back brain—the center of raw animal terror. The front brain, which would only deliberate too long, loses control; the back brain takes over with more visceral, immediate reactions. (Specifically, energy shifts from the ventromedial prefrontal cortex, which integrates emotion and reason, to the periaqueductal gray, which just yells RUN; Mobbs et al. 2007. See also Franks 2006.) This explains why people become markedly less rational when they become prey to major fear. This undergirds religion; we assume scary beings because it seems the safest bet (see Harvey 2006:15).

Everyone fears uncontrolled or uncontrollable things more than ones over which we have at least the illusion of control. Hence people are far less worried about driving, even when drunk or on icy roads, than about flying (which is almost totally safe—those rare crashes are well-publicized because they are rare). People are less worried about suicide than murder, though in the United States suicide is twice as common as murder.

In general, risk is seen in intensely emotional ways—naturally enough!—and thus processed under the compulsion of strong feelings, rather than cool reason (see thorough review by Lowenstein et al., 2000).

Culture structures risk perception. Americans fear irradiated foods used safely for decades in the rest of the world. Europeans fear genetically modified crops used safely by Americans for years. Few Americans or Europeans are scared any longer by witchcraft, which used to terrify them, and which still terrifies millions in other parts of the world. Some Americans and Europeans fear devils, at which others laugh. Tornadoes are rarer in the southern United States than in the Midwest, but do more damage in the South, because people worry less and prepare less than do those in the Midwest. Media attention keeps people overly aware of airplane crashes, and thus prone to overestimate the number of them. Other salient problems are underestimated.

We are also less scared of small-scale events than of huge catastrophes, even though routine small-scale things like car crashes and heart attacks kill many times as many people as the catastrophes do (Douglas and Wildavsky 1982; Kluger 2006). Terrorist attacks, however rare, are more threatening than food poisoning, though the latter kills twice as many Americans every year as terrorism did on 9-11-2001. Kluger (2006) points out that Americans fear mad cow disease and bird flu, neither of which has killed even one American, but do not show much fear of far commoner diseases. He also points out that we habituate to common threats, and so tend to ignore them. We may recall, also, how slowly Americans and Europeans came to fear tobacco, responsible for about ¼ of all deaths in those continents before very recent declines.

Obesity is a major risk factor in several of the leading killers of Americans. Concern over obesity is now great, but attention has focused on food rather than exercise. Probably 90% of effort and 99% of media attention is devoted to food, especially fad diets, the least successful way of dealing with obesity. Yet the current obesity “epidemic” in the United States is clearly due largely to lack of exercise. American foodways have indeed gotten worse—more junk food, bigger portions—but by far the major relevant change in American life in the last two or three generations has been the replacement of outdoor recreation by TV and of outdoor hard-work jobs by highly demanding jobs involving very long hours at desks. Obesity has increased most among children who have no outdoor recreation opportunities—those in inner-city slums, for instance—and among working-class groups where the change in work has been rapid and disruptive. Yet, human cognitive flaws, aided by the diet industry and the women’s magazines, have managed to keep attention totally focused on dieting. Thus does culture take over, determining what to fear and how to fear it.

Social Fear

The worst fear is not of losing life but of being socially rejected, just as the greatest hope and desire is for social approbation and doing social good. Thousands of people die willingly every day because of social reasons: soldiers dying for comrades, suicide bombers dying for the cause, and on and on.

Attack on one’s social place amounts to having one’s deep essential personhood attacked. Everywhere, personal attacks, especially on what one thinks is one’s essential self, cause the deepest and deadliest wounds and the deepest and deadliest anger. This is why sexual and verbal abuse are so absolutely damaging to children, and, in fact, to adults. Children raised with warmth and security can tolerate a great deal of correction, criticism, and even punishment, but children cannot bear the deeply insulting criticism they get from angry or vicious parents and peers. From soldiers to corner gangsters to suicide bombers, people cheerfully brave horrible death to avoid social scorn and win social respect. People who cannot find a secure place—children raised with continual disruption, especially—usually become timid, unable to accomplish anything, unable to start out in life. Abuse makes victims more selfish (Zitek et al. 2010), more aware of their ability to harm; it also teaches them how to deal with problems—by abusive violence. Bullied children become bullies. The most oppressed groups, if they become dominant, often deal with their own ethnic problems by genocide.

People treat harsh judgments more seriously than positive ones. Framing an event as an actual loss makes it much more stressful than framing the same event, with the same outcome, as a failure-to-gain. Activities in which the best rather than the worst is crucial—friendship, knowledge, and perhaps life (when you recall it on your deathbed)—tend to get played out and thought about as if they too were limited by the worst case. A chance remark or silly behavior is ignored and dismissed if thought to be a mistake, a joke, or a careless slip, but is a deadly insult if interpreted as a slight. This may make sense if the remark really was so intended, but people all too often assume that it was, even if it was not. Notoriously, such interpretation can depend on the interpreter’s mood and background, rather than the perpetrator’s intent. Teenagers, whose social skills are just developing, are particularly famous for this. Insecure individuals whose whole social place depends on social acceptance take chance remarks as deadly cuts. The most insecure may even test people by provoking them into making sharp remarks, then take these as deadly. Lifetime friendships fail because of a chance word or lost letter. Shakespeare’s *Othello* reminds us that gossip and slander campaigns are fatal.

People assume that there is a kind of Liebig law operating in human affairs. Justus Liebig proved (in the 19th century) that nutrition is limited by any nutrient that is in short supply: a plant or animal can grow only up to the limit set by the scarcest nutrient. People often assume something comparable in social life: a single bad word or act or personal trait is fatal, destroying or limiting all the good in that particular person or line of activity. Nonconformity to social and cultural norms is generally the worst, most dreaded Liebig limit to a person, in people’s eyes.

This is, indeed, sometimes the case; a person who is perfect except for an occasional tendency to get drunk and spill all is fatally flawed for intelligence work, and a person who sometimes (however rarely) gets uncontrollably violent is untrustworthy in almost any situation. But humans overextend the Liebig rule, especially to whole groups. Islam is currently feared and hated in much of the United States, though the vast majority of Muslims are reasonable enough individuals.

People tend to interpret slights and bad behavior as far worse if it is “immoral.” “Unfair” or “inappropriate” or “out of line” slights provoke far more outrage than ones considered normal, justified, or at least within bounds. To be sure, insecure people will hold *any* sharp remark to be “unfair” and morally wrong, but most of us can tell the difference, and bear (with plenty of hurt) a condign but not wholly unjustified remark. Anonymous editorial comments on my manuscripts hurt, but if they are reasonable I take them as necessary teaching, even when they are harsh. Unfair remarks just make me angry.

The weakest response is sheer passivity or depression—collapse from fear or hopelessness (Bandura 1982). Chronic fear leads to, or perhaps *is,* depression. Depression is not a “depressed” state but an active, aroused one, and it is characterized by severe but consciously repressed anxiety. Among other things, it interferes greatly with learning—as does ordinary fear, and often ordinary sadness. This is a huge factor in American schools, in which a large percentage of children are suffering from various forms of prejudice, discomfort, abuse, or rejection. To the degree that they are depressed or anxious, they fail to learn.

People may, instead, react to fearful and stressful times by seeking reassurance or by escaping. Hard times may diminish most spending, but they do not greatly reduce spending on drugs, alcohol, and gambling. More hopeful, perhaps, is the rise of religion in such times, but often it is of the Taliban and Al-Qaeda form. Indeed, those movements are clearly the reflex of those who are harmed by modernization in their unevenly-changing societies.

Passivity and tuning-out occurs in all times if people are subjected to oppression or disparate power and social injustice, as the ancient Greeks agreed and as virtually every political theorist since has confirmed. The pathetic need of such passive people for reassurance, support, and listeners—or, failing that, for alcohol and so on—proves that we are dealing with depression and grief here, not genuine apathy and lethargy. Modern America’s turn away from grassroots society, so well described by Robert Putnam (1993, 2000), is a clear case in point.

As defensiveness rises, people resort to “weapons of the weak” (Scott 1985). The classic “coward’s weapon” is treachery and betrayal. It is particularly likely when a person is desperate and simply has no safe or congenial course of action.

Thus, people naturally follow any leader who is good at organizing defense against these dreaded others. They are also prone, but less so, to follow a leader who builds alliances and organizes good works. Similarly, in ordinary life and friendship, they choose friends who will reassure them, not threaten them. This means they prefer people who are like themselves, at least in those key dimensions. They will avoid those who are unlike themselves, but also they will tend to avoid people who are socially inept, nonconformist, or insensitive. They will avoid angry and hostile people, unless they feel they need or can use such for defense against the feared structural opponents.

So we have a continuum from passivity through treachery to scapegoating and finally violent defensive aggression. People tend to be assertive and independent in their more strictly individual interests, but conformist and either passive or collectively aggressive in social matters.

Often, people could gain more by working together, or just by working alone, but engage in zero-sum or even negative-sum games out of sheer spite. This spite comes, ultimately, from fear.

Differences in socialization and social fear lead to differences along two main dimensions: Responsibility-irresponsibility and hope-anxiety. With more irresponsiblity and anxiety, plus natural defensiveness, people become more and more prone to fall into social hatreds and scapegoating. Again there are two dimensions: hating actual enemies vs. scapegoating, and bottling up hatred vs. acting it out. The only cure that has worked over time is social interaction in situations where people had to depend on each other, and thus make each other grow up morally.

Human good is thus limited by conformity, though conforming to the good also occurs. People tend to assess each other by looking to their worst traits, on the theory that those will limit performance, much as the most scarce nutrient limits the growth of a plant in Justus Liebig’s classic model.

The Failure of Hobbesian Theories

All the above gives us a particular view of human evil. Most evil would seem to be due to challenge to personhood, challenge to social place, and innate fear of structural opposites. There is no place here for any sort of “natural human badness” or “drive for power” or Hobbesian “warre of each against all.” Left to themselves, people are a sociable, outgoing lot. Bad behavior is usually caused by fear based on actual attack or threat, or by fear based simply on perceptions of difference. It is the latter that explains the real cases of “warre of each against all.”

Moreover, the vast majority of human evil is social, not individual. Far from a warre of each against all, human history and human grief are a war of my tribe against yours. For every good old-fashioned personal murder, there have been probably millions of deaths in war, genocide, extermination campaigns, gang turf wars, racist lynchings, and other social episodes. Almost everyone will die willingly in a defensive war, and a significant percentage of humanity will die willingly (in sucide bombings, gang fights, and so on) simply to take a few of their supposed enemies along with them. Group hate is more deeply felt and serious than individual (Jost et al. 2003; Jost 2006).

This being the case, the *last* thing humanity needs is a social contract to bind people under a king—Hobbes’ famous solution to “warre.” What humans need is more individualism, not less, and above all they need more tolerance, more caring, and more mutual aid. They cross-cutting networks instead of top-down hierarchic groups. The latter—the sort of regime Hobbes wanted—invariably generate we/they hatreds.

When Thomas Hobbes wrote this line and went on with his famous remark that "the life of man in his natural state is solitary, poore, nasty, brutish and short," he was describing what he saw in the English civil war. He was also conditioned by his belief in the Wild Man or *Homo sylvestris*, Europe's mythical hairy savage (Hobbes 1950/1651:104; on the savage, see Bartra 1994). His description of the civil war is not much exaggerated. But the war was the result of religious hates in a complex kingdom, not of human nature showing its true self.

Hobbes’ *Leviathan* postulated a world of “savages,” out for their own welfare, and thus in competition: “the life of man in his natural state solitary, poore, nasty, brutish, and short” (Hobbes 1950 [1651]:104). Seeing this as undesirable, the savages would get together and rationally put themselves under a king, to ensure peace.

Critics of contractarian theories from Hume onward point out that a society of Hobbesian savages, each living for himself (note that masculine pronoun), would not be able to get together to form Hobbes’ social contract. Any nascent society, once it got beyond the immediate kinship level, would melt back down into Hobbes’ “warre of each against all.” In a real Hobbesian world, the first two people who got together would take over—they would gang up on all those “eaches,” one at a time, and kill or convert them. No need for a contract or a king. Something like this does in fact normally occur in lawless settings.

Moreover, Hobbes got it exactly wrong about killing. Modern totalitarian societies—where people have indeed put themselves under the control of an autocrat—have the bloodiest records of any societies in history. The small-scale societies that Hobbes thought were “savages” often have raids and battles in which people kill each other, but such societies rather rarely commit genocide or other mass murder, and never display each-against-all “warre.” They do indeed kill fairly often, but, like other societies, their killing is generally in socially organized campaigns against structural opponents. Whether to call these “wars” has occasioned some controversy; most, e.g. Guilaine and Zammer (2003) and LeBlanc and Register (2002), say yes; others, e.g. Raymond Kelly (2000), define war as formal war conducted by states, thus defining the small-scale societies out. Either way, there was a lot of killing, but it was group against group—self-sacrifice and all.

History confounds many a glib generalization. When Dennis Mueller tells us that "man is an egoistic, rational, utility maximizer" (quoted in Little 1994:489), and claims to be able to predict political behavior on the basis of this principle, is Mueller seriously maintaining that there is no difference between Hitler and Gandhi, Stalin and Martin Luther King? Is he seriously maintaining that we could have predicted the entire course of 20th century politics on the basis of such an assumption? One might rather suppose that, if Hitler had indeed been a sober accountant of material utilities, the 20th century would have been quite different. (No doubt Hitler was maximizing his own insane utilities, but no one could have predicted them.) Mueller goes on to argue that people obey the law only for fear of being caught by police. But if this were true, someone would have to make the policemen do their duty, and then we are in an infinite regress trap. As the Romans said, *quis custodiet ipsos custodes?* Who will guard the guards?

Indeed, people often violate moral rules, but they violate rules that protect self as often as they violate those that protect others at the expense of self! Self-destructive immorality ranges from drug abuse to the bizarre fad of self-cutting that has recently swept high school campuses. People sometimes hurt themselves to hurt others, as when teenagers defiantly mess their lives up to “get back at” their parents. Morality thus often acts to curb people’s strange tendencies.

People can be quite irrational in the pursuit of social success, too. Deaths from fad diets are common, and deaths from excessive plastic surgery are coming into the record. More common is dying through showing off—driving excessively fast, for instance. This is especially true of those just branching out from the family’s bosom; anyone who believes humans are rational has never raised teenagers.

Most societies actually depend on assuming that large numbers of people will *not* act in their self-interest. This can be for good or ill. We would like to think that altruism is the commonest form of social irrationality, but suppression of women is, alas, another case. I am one of those who believes that women are suppressed by sheer force or threat, but it is sadly clear that women often internalize their oppression. There are countless women, fundamentalist heroines of "submission," who passionately defend their right to be kept down, repressed and exploited.

Weak but angry people very often develop a cringing, groveling adulation of powerful people, especially powerful and evil people. We all remember the fawning weaker kids who followed the schoolyard bullies around. On a world scale, this becomes the fanatical loyalty aroused by Hitler, Stalin, and their ilk. The philosopher Martin Heidegger is a fascinating case in point; he combined philosophical brilliance with a cringing worship of Hitler and Nazism (Bourdieu 1991, Sluga 1993).

Hate and hates

Probably the worst problem resulting from social fear is displacement of hate and fear onto minorities or other scapegoat groups. Group hate seems genuinely wired into the human brain, according to behavior biologist R. A. Hinde (2007). Most feared are structural opposites: people within one’s society who are markedly different in some salient way. This can be skin color, religion, ethnicity, class, or simply nonconformity. It can even be sports rivalry. From the Blues and Greens of ancient Byzantium to the Soccer War between Honduras and El Salvador, competition for fun has often led to competition of a serious and deadly kind.

*It is a total myth that people hate and fear strangers; it is their own, their visibly different own, whom they hate and fear.* There appears to be a genuine inborn human tendency to dislike and fear structural opposites. Culture, however, defines those.

Group and social hatred causes millions of deaths from genocide, aggressive war, intolerance, structural oppositon, structural violence, and the like. The various theories that blame such phenomena on rational self-interest or economic motives cannot be sustained. The costs of war and genocide are too extreme to bear and too obvious to miss. The very symbol and definition of group hatred is the suicide bomber—the modern version of the berserkers and battle-frenzied warriors of old. Sacrificing one’s life in order to take out a few enemies of one’s group is the human condition. We have seen, above, how this evolved as part of human sociability. *We are a species doomed to group conflict unless tolerance and valuing diversity are promoted as major virtues*.

Ordinary individual hatred is bad enough, leading to everything from wifebeating to barroom brawling. Murder, to pick the most extreme and best-studied result of individual tension, is usually over control issues or social “honor” (see e.g. Baumeister 1997). Both of these bring us right back to society. Contrary to public myth, murder is not usually for gain and it is *very* rarely the act of a demented “mass murderer.”

 Hate famously unites, and is famously the most effective but most dangerous way to unite people. The problems of communism are in large part due to the fact that Marx saw one could most successfully unite the working classes by whipping up hatred of the other classes. This led to hate becoming a virtue, at least in such settings as Mao’s China, with predictably disastrous results. One problem is that it is easy to hate other people who constitute an imagined threat, but hard to hate the system. The fascists and communists failed to get people to hate “capitalism” or other analytical abstractions, and found it much easier to get them to hate Jews or intellectuals.

 Hate, like love, means various things. A critical difference, unfortunately overlooked in the literature (e.g. Sternberg and Sternberg 2008), is between individual hate and group hate.

The typical, if not universal, case is for culture to construct defensiveness as group hate and individual cantankerousness of some form. Then, mere participating in one’s culture can trap the best of humans into evil ways. Every culture has to include defensive strategies, and people readily get trapped in these. The really evil tend to be products of culture *and* controllingness *and* meanness *and* insecurity—insecurity about social place, so that they are easily hurt and scared.

Hatred of a treacherous enemy is phenomenologically and behaviorally a very different thing from hatred of a traditionally despised minority. I remember from my childhood in the south and midwest how many whites liked the African-Americans they knew, got along well with them, and even worked alongside them, but still deeply hated “Black people” (they used a stronger word) in general. German hatred of Jews in the 1930s was similar; Hitler seems genuinely to have hated Jews in a personal way, but most Germans seem to have had a dutiful cultural hatred that was not a personal emotion. Descriptions of the genocides in Rwanda and Cambodia often portray the killers as being animated by a sort of hysteria that led them to do things they did not really want to do to people they had previously liked. Cultural traditions and evil leaders, not actual personal emotion, led to “hatred” and murder (see e.g. (Baumeister 1997, 2006; Staub 1989). Indeed, the (otherwise) nicest may be among the most intolerant, because they are the most successfully encultured.

 One classic situation that provokes group hate and massacre is takeover of land by a strong group from a weak one (Kiernan 2007). Such settler or colonial wars frequently lead to extermination of the landholding group. Native Americans were reduced in population about 95% by 1900—mostly by disease, but a large amount of the death was from massacre and lopsided “wars,” and many groups were exterminated systematically and completely. Australian Aboriginals fared the same. The Mongols and Tamerlane’s Turkic fighters depopulated whole regions and recolonized them. Ben Kiernan, in his great work *Blood and Soil*, has traced dozens of such cases, with a cumulative death toll well into the hundreds of millions.

Society traditionally condemns “selfishness” (including “greed”) very harshly, and hate crimes all too often lightly or not at all. Genocide has been barely condemned, or downright praised, throughout much of history. Consider all the traditional idolization of warlike heroes and conquerors. Consider the feeble and often failed attempts to prosecute genociders in international courts; proceedings never happened at all (as with Stalin and Mao) or came so slowly that the genocider died peacefully in bed before trial (as with Pinochet).

This explains why one finds such maddening differences in evaluations of things like material wealth and patriotism, and why sensible people have always contrasted innocent enjoyment of material things with greed, patriotism with chauvinism, religion with bigotry, and sociability with social climbing.

 Fortunately, though group hate is universal, genocide is rare (B. Anderson and E. Anderson, work in progress). It occurs largely under three conditions: when a war is on, when a majority group is downwardly mobile in both economic and social dimensions, and—most common of all—when a tyrant is insecure and whips up group hate to consolidate power. All three of those conditions held in Germany in World War II.

Group hate is the true original sin—the deepest, most basic, most universal, and most evil of the evils wired into our brains. It also fits the root meaning of “Satan” and “devil”: Hebrew *Shaytan* and Greek *diabolos* (whence “devil” and “diabolical”), both mean a lie, a false claim.

All our good agendas have run afoul of the inability of people to work together. This lack of solidarity is caused not by individualism or selfishness or the “warre of each against all,” but by the mutual hatred of blacks and whites, liberals and conservatives, rich and poor, and all the other invidious groupings. The world is being torn apart by increasing hatreds. In the United States today, the comments anonymously posted at the ends of online news stories show all too plainly how true this is, and how clearly it is the factor responsible for the collapse of concern for the common good. We cannot even get voters to maintain police and fire protection, let alone roads and schools. The problem is largely one of getting people to stop trying to starve opponent groups of taxpayer-funded benefits. Voters seem quite happy to vote themselves out of even minimal public safety if they can take opponent groups down with them.

Disgust

Another, quite different, negative emotion is disgust (Rozin 2007; Rozin and Fallon 1987). Recent research (Jones 2007) finds that disgust is more innate, less strictly learned than we thought. Thus, it has evidently evolved, presumably to prevent higher animals from eating dangerously contaminated items.

What is most interesting is the carry-over from disgust at filthy foods to moral disgust. The physical act of rejecting sickening food—curling lip, preparing to spit—is actually shown, quite unconsciously, by people in a state of moral disgust (Chapman et al. 2009). We recognize this in saying a person’s “lip curled” when moral wrong “left her with a bad taste in her mouth.” This can lead to strong needs to feel pure, and thus reinforce moralities of purity (Horberg et al. 2009). Humans can be genuinely physically nauseated by Nazism and similar outrages (Horberg et al. 2009; Jones 2007). I strongly suspect that this disgust at cruelty has deep evolutionary roots, like disgust at filthy food. When did it start? Do chimpanzees or bonobos feel it? Chimps can be horribly cruel, but do they have to overcome deep revulsion, as humans do?

 Recent work shows that there are significant differences in the form and occurrence of disgust over filth, over sexual morality, and over fairness and other basic moral issues (Tybur et al. 2009). Basic disgust—the familiar emotion described above—is clearly a response to disease-bearing filth, and we tend to feel it largely in connection with major sources of microbes, like excrement and pus. Disgust over sexual peccadilloes and moral lapses feels different and occurs in different situations, and causes something we might better call “outrage” or “contempt” rather than “disgust.” Tybur et al. (2009:122) present a useful test that will allow you to break this out. Of course culture enormously influences what is “disgusting,” let alone “immoral.” Things that make people physically sick in one culture are enjoined as necessary and praiseworthy behavior in other cultures. Remembering Herodotus, I wish Tybur et al. had put “eating one’s dead parents to give them respectful burial” in their test.

The Usual, Low-Affect Round

Fortunately, we manage most of the time without such violent emotions. We live stable, predictable lives, or try to. We keep options open, wait patiently for opportunities, learn what we need or what we can, try to make the best of it…folk wisdom is full of such phrases. If people actually worked for happiness all the time, this world might be a better place. In fact, people seem rarely to work for happiness. Most people don’t have the luxury. They spend most of their time working to survive—a process that leaves little time to think about happiness per se. Much (if not all) of the rest of their time is taken up coping with troubles. This includes ordinary daily cares, including such problems as self-defense against social hurts, and shoring up one's self-image. It also includes far more serious troubles: coping with war, death of loved ones, ruin of a marriage.

Enlightened self-interest and enjoyment of life are luxuries. The vast majority of people, including affluent ones, must prioritize immediate crises. They cannot wait for perfect information, or even for time to deliberate. Governments have much the same problem: they cannot afford to wait decades for the final word to come in on global warming, public health, or any other major problem.

Hence, people cope by winging it, by improvising, and above all by going with their preconceived biases and algorithms and heuristics. This is why evolution has selected for integrating emotional reaction and cognitive processing. Reaction without guidance is mad, but cognition without fast reaction is too slow.

People endure. We still do not understand what teaches people to bear suffering and trouble, and often to rise above their troubles. Mutual aid, integrity, and sheer personal strength are known to arise from learning in a supportive but challenging family environment (Werner 1989; Werner and Smith 1982). We can only wonder at the quiet heroism of such people as labor organizers, inner-city teachers, and small farmers. No one is paying them much respect; no one is rewarding them heavily. Yet they do dauntingly hard jobs, for low pay, often under appalling conditions.

This simple, straightforward, work-and-keep-your-word life seems to be a natural and human one: its own reward. It naturally arises in small, mutually-dependent social groups.

 There is a myth that humans are highly competitive. This myth traces directly to the competitive streak in American culture, so devoted to sports and business. In fact, games are not “real” competition, and most people know the difference. Chessmasters are certainly not an exceptionally combative lot. Football players and boxers are a different story, but even there, most audiences can tell play from normal life, however involved players may be in the savagery of the game. TV violence is directly and highly correlated with real-world violence, but those actually influenced by TV to become violent seem to be generally those few people who have a hard time telling fiction from reality.

 Humans do, of course, sometimes compete for mates, for power in hierarchic systems, for attention, and for scarce resources in general. They may even enjoy the competition. They do not, however, do it nearly as much as some theorists naively think. Most of the time, people are cooperating, conforming, or just living their normal lives. As with aggression and rational material self-interest, the point is not that humans are not competitive, but that competition is selectively deployed. People compete when they have to. In play, they compete because they want to, but this does not mean they enjoy the real thing very much. They compete for mates just long enough to get a stable one, since people usually know that a stable relationship is what gets them the most sex and the most descendents. Successful hunters in hunter-gatherer societies, and successful money-grubbers in urban ones, get much sex outside of stable relationships, but they too must often depend on stable mutualistic relationships rather than brute competition to get love and care and descendents. The one exception to this generalization is that people are constantly jockeying for better social recognition and social place.

V: The Failure of Rational Choice Theory

The human “…is not so much a rational as a rationalizing creature. That is, he does not act or work towards conclusions by the careful sifting of evidence but acquires them by some irrational process, subsequently glossing over the logical delinquency by secondary apologetic argumentation.” (Robert Lowie, *Primitive Religion,* 1948, p. 288.)

1. Rational Choice and Its Discontents

All the foregoing is fatal to theories of human action that are based on assumptions of rational self-interest.

To be sure, we make rational choices much of the time. Anthropologists notoriously undervalue this, explaining too much through “culture” or “blind tradition” when rational choice is actually at play. (Since I am an anthropologist, be warned about what follows! I am trying my best….) People may be rational only when they have exhausted all other alternatives, but when reduced to desperation they will actually think things through. And rational calculus is ideal for economic tasks when everything is indeed well known and specified.

Rationality exists within a wider shell of social life and sociability, including culture (Polanyi 1957) This in turn exists within a still wider shell of emotional reaction—the basic mood and feeling responses of the animal, the beast within.

No one seriously thought people were rational until the mid-19th century. Previous to that, every social thinker or philosopher realized that people were creatures of impulse, belief, emotion, and unreason. Rationality was a goal and an ideal. It was promoted especially by the ancient Greeks and the Enlightenment sages. It was not even an ideal in the Middle Ages; people then valued belief and mystical illumination. The Renaissance valued the complete person, and warmly involved rather than coldly disengaged. Machiavelli’s cold rationalism shocked Renaissance readers almost as much as his amorality did.

In formal economics today, “rational self-interest” means calculation of means to maximize overall “utility.” This implies careful, serious, precise calculation of the best means for achieving clearly determined ends. The actor knows exactly what he or she wants, what means to achieve it are available (the “feasible set”), and exactly what the relative values or probabilities of success are. “Utility” is defined as anything the actior wants. This puts the goals of action outside the theory. They are taken as given. The theorist looks only at whether the actor is taking the most reasonable route to satisfying them. Unfortunately, first, this reduces the theory to gibberish, since the economic theorist can simply postulate any number of mysterious goals, thus explaining away all misprediction or miscalculation (Anderson 1996; Mansbridge 1990; Taylor 2006).

A major problem occurs when people (including, all too often, economists themselves) confuse the formal sense of "rational"—coolly maximizing self-interest—with the everyday, ordinary-language meanings of the word. Ordinary language contrasts it to behavior that is "irreducibly expressive, routinized, or other-directed (Green and Shapiro 1992:184)." Some allow mindless and even mistaken behavior to be "rational" if it produces an optimal result (Green and Shapiro 1992:24). This allows anything to be “rational.” The universality of that sort of rationality is hard to question. The universality of cool rational self-interest is impossible to sustain. Thus Donald Green and Ian Shapiro, in *Pathologies of Rational Choice Theory*, have attacked "thin rationality" as tautological and "thick rationality" (Green and Shapiro 1994:18-20)--the idea that only money and power matter--as plain wrong.

As Jane Mansbridge has written, "Some rational choice theorists equivocate on this point, most of the time making the false claim, and backing off to the vacuous claim under critical fire (Mansbridge 1990a:20)." Mansbridge quotes one of these modelers, Dennis Mueller, as claiming that human behavior follows from conditioning, according to principles "familiar to 'anyone who has ever trained a dog (Mansbridge 1990b:255, quoting Dennis Mueller).'" It is very doubtful if Mueller has ever trained a dog. Those of us who have actually done so realize that, while simple conditioning works in the laboratory for such things as getting a dog to salivate at the sound of a bell, actually training a dog in the real world depends on rewarding the dog with affection or punishing it with disapproval, and also on dealing with higher-order behaviors and representations. You cannot train a dog for real tasks, which are cognitively rather complex, by Pavlovian stimulus-response links. Material reinforcements are usually necessary but never sufficient; a dog trained without affectionate attention turns savage. The dog tells us exactly the opposite from what Mueller is saying.

To most of us, in normal life, "rational" means one of two things. First, it means "unemotional," in a good sense. "You're not being rational" is held to mean "your thoughts are distorted by emotion." (Actually, it usually means “you're not agreeing with me.")

Often, we extend this usage to assume that wanting money, food, clothing and shelter is "rational," while doing things for religious, emotional, or cultural reasons is "irrational." For example, in one of the first applications of rational choice theory to political science, Anthony Downs wrote: "...If it is rational to vote for prestige, why is it not rational to vote so as to please one's employer or one's sweetheart? Soon all behavior whatsoever becomes rational because it is a means to some end the actor values. To avoid this sterile conclusion, we have regarded only actions leading to strictly political or economic ends as rational” (Downs 1957:276, quoted in Green and Shapiro 1994:52). I would prefer to go all the way with modern economists, and not with Downs, in maintaining that it is indeed rational to vote with one’s sweetheart. Downs thought "political" behavior is strictly about personal power. In this he was very wrong. (See Marcus 2002; Simon 1995. Materialist explanations are often associated with Marxism, but are not limited to the left. They remain persuasive among economists of all stripes, from the last Marxist holdouts to conservatives such as Downs and Milton Friedman. Marshall Sahlins (1976) used the phrase "practical reason"—not "rationality"—to refer to the classic tough-minded position that humans work only for money and power.)

This utilitarian idea underlay the classical economic distinction between "necessities" and "luxuries." However, many of us learn from life that it is best to give up inessential necessities so as to keep the essential luxuries.

The classical distinction implies that we *really* want the money and material comforts, and we don't *really* want the other stuff—we just think we do. This bit of folk psychology (masquerading as classical economics) does not deserve the effort of refutation. Not even God can distinguish a "real" want from a want we only think we feel. Certainly Downs knew perfectly well that people work for the approbation of their friends and loved ones.

Gary Becker opposes rationality to various other things: “...custom and tradition, the compliance somehow induced by social norms, or the ego and the id” (Becker 1986:117, quoted in Green and Shapiro 1994:186). This is actually a good start at a "rational" definition. Becker has moved progressively toward accommodating such things as conformity, social pressure, guilt, and desire to please into his models of rational behavior. Moreover, he now admits (dare I say: a bit lamely?): "My work may have sometimes assumed too much rationality, but I believe it has been an antidote to the extensive research that does not credit people with enough rationality” (Becker 1996:155-156).

Economists and others also tend to confuse "rational" with "self-interested." Some even confuse "self-interested" with "selfish." For some economists, it would appear, the rational person occupies his or her time trying to rip off his or her fellow citizens, freeloading on the public good (the famous "free-rider problem"; Olson 1965.)

 “Self-interest" is not necessarily "rational." People do irrational things every day for impeccably selfish motives. They make stupid mistakes. They act from passion of the moment, without reflection. They endanger their lives for short-term, trivial pleasures. This has led some modelers to drop the "rational" and talk only of self-interest (Mansbridge 1990b:255); this, however, makes modeling impossible and brings us back to the vapid claim.

Rational choice theory depends on a folk psychology that sees people as acting on their beliefs to satisfy their desires (Frank 1988; Rosenberg 1992). The language of "beliefs and desires" is inadequate in and of itself (Rosenberg 1992).

Yet a third definition of rationality, identified in contemporary writings with the economic philosopher Jon Elster, focuses on a quite different issue: Rationality critically involves people being able to take one step backward in order to take two forward. Elster likes to quote the French phrase *reculer pour mieux sauter,* “step back to jump better.” New information should powerfully influence such choices. If Robinson Crusoe learned how to make a fishnet, he could decide to catch fish by hand, dry them, and then go without fishing for a few days while he wove a fishnet (Elster 1993:144-146; see also Elster 1989).

Rational-choice theorizing might better seen as normative. Unfortunately, while clearly a liberal vision by comparison with autocratic and totalitarian ideas (Holmes 1990; Mansbridge 1990a), it is not a norm that deserves to be accepted without a hard look. Economists are trying to sell an ideal: the ideal of the isolated, competitive person. Sociability and emotionality are downvalued. Cutthroat competition and social irresponsibility are seen as inevitable (Olson 1965) and even desirable (Becker 1996; for problems with these approaches, see Elster 1989, Green and Shapiro 1994, Sen 2010).

The more highly specialized and extremely complex the rational-choice models become, on the whole, the less believable they are. As calculations become more complex, there is more opportunity to mix emotion and mistake into the equations. Ten calculations provide, other things being equal, ten times as many chances for mistakes as one calculation. (See Russell Hardin 1988:8-10, on the need to invoke “bounded rationality” in accounting for ethical choices).

All forms of rational choice are subject to the criticism that they require certainty about the world—at least about one’s feasible set and one’s goals. Modern rational choice theories have developed beyond this, and can accommodate risk and uncertainty. “Risk” refers to a chancy situation with *known* risks, like roulette, or like entering a forest where you know that exactly one out of a hundred people is eaten by a jaguar. “Uncertainty” refers to true ignorance of the situation; one does not know whether the forest has jaguars or not. Humans fear being out of control, and especially being ignorant even of how one could exert control. So uncertainty is harder on people than risk. Turning uncertainty into risk, and risk into certainty, is always a major goal of real-world learning and research.

Until we have such certainty, it is often rational not to act "rational." The best way to maximize our immediate utility is to wing it. Spending inordinate time calculating the absolute best course of action is irrational. Sometimes there is no optimum to find; at best, it might take years to find it (Elster 1989; Green and Shapiro 1994). The beginning of an infinite regress is here: rational-choice diehards say we have to calculate—rationally, of course!—when and how much to optimize....

More fatal is the difficulty of separating goals and ends in human action (Whitford 2002). Almost all human goals are only way-stations on the route to higher-level goals. People are not always sure of exactly what their goals are. Some goals are culturally absorbed, and—again—only partially known on a conscious level. Others are vague: one starts out the day to do something—anything—and gradually falls into doing some particular thing because of trivial contingent factors.

People also naturally try to accomplish several goals with one act. I tend to use a rough “rule of three”: For people to do anything really important, they have to have about three good reasons. Calculating rationality in such cases is difficult at best, and impossible (at least in real-world circumstances) if one of the reasons is a higher-order goal while the others are not.

Herbert Simon wrote that people resort to “bounded rationality” (Simon 1967). That phrase is something of a cop-out; it lets us use the word “rationality” for intuitive approximations and inspired improvising that are not really rational calculations. Some users of the “bounded rationality” concept imply that people somehow rationally calculate when not to calculate. This is another “infinite regress trap” that needs no discussion.

 Short-term vs long-term tradeoffs are intractable problems for rational theorists. Gary Becker (1996) alleges that drug addicts and alcoholics are those who value the very short-term; they act for immediate enjoyment. The non-addicts think more of the long term. Quite apart from the absurdity of this as a full explanation of addiction, it is not even a good partial explanation, since it tells us nothing of *why* people differ in this regard. It merely restates the fact that some people are addicts, in pseudo-economic language.

If the Darwinian anthropologists are right (and they are), is the fact that many of our goals and many of our means of achieving them are set by our genes, without our awareness. Our prehistoric ancestors evolved in a world of vast and unknowable dangers. They could not analyze the best way to get an ideal mate. They could not accurately predict storms, climate changes, or predator attacks. They evolved to be increasingly able to deploy rules of thumb, applied by inspired intuition. Such behavior usually outperformed rational calculus when people were fleeing bears or taking advantage of an unexpected opportunity to shoot an antelope.

The human tendency to stick with the tried and true is “irrational” (as pointed out by the sociologist Randall Collins, 2001:171f), but it is surely sensible. Risk-taking is bad enough in the stock market and other economic spheres. In daily life, everyone learns sooner rather than later that the known and safe is generally a better bet than the unknown and chancy, even when the potential payoffs of risk-taking are huge. Most of us learn this the hard way. “Experience keeps a dear [i.e., very expensive] school, but fools will learn in no other,” said Benjamin Franklin.

Some have argued that emotions are deployed in the service of reason, or are rationally managed. I have no idea what lives these sages live, but suffice it to say that my own experience is quite the reverse. My life and my family’s and friends’ lives would certainly have been profoundly different and vastly better if these grave experts were right. I can only wish that people could learn to use emotions that way (on this issue, see Frank 1988; Gibbard 1992; Nussbaum 2001; Sen 2009; and on the general case Stets and Turner 2006).

Politics is dominated by emotion, not by rational choice (Caplan 2007; Westen 2007). We would like to think otherwise, but the facts are clear. Drew Westen points out that an intuitive assessment of a candidate’s character is probably a better way of assessing her than a considered take on what little the media usually present of the candidate’s actual positions. Not only do we have imperfect information; the candidate has no way of knowing what emergencies will arise. The unexpected is the rule. So we are wise to trust our intuitions (cf. Gigerenzer 2007) in choosing a candidate who can be trusted to lead and choose wisely if things suddenly get tough.

The paradox of "self-interested" behavior in which the group defines the "self-interest" has often been raised, but only partially expounded. It deserves more attention by social theorists. In many groups, it is self-interested to do something against one’s self-interest, because that shows you will do anything for the group, and thus gets you accepted (Atran 2002). The more self-harming or self-endangering the behavior, the more loyalty it shows. Judith Rich Harris (1998) has stressed the importance of the peer group, and thoughtfully criticized the enormous (irrational!) underestimate of that importance in most psychological literature. And peer groups typically insist on such tests.

By contrast, people are amazingly sloppy about material and monetary goals. Chimpanzees throwing darts at a board—in actual experiments, computers generating random bets—routinely equal the best stock analysts in predicting the stock market. Usually, buyers’ and sellers’ errors correct each other in the stock market, so it seems to be performing rationally, but its true character is revealed when people rush to one extreme or another, generating boom and bust cycles.

Every con man knows that a con game requires a willing sucker—someone who wants to believe the unlikely. Political “spin” artists propagate the most amazingly improbable beliefs in the teeth of universally publicized evidence to the contrary. People also put up with "users"—Individuals who demand special favors and are highly incensed if they don't get them—instead of driving them off, as rational choice theory and “cheater detection” would predict. The warm, friendly con artist, the confident, sophisticated "dude," and the appealing user never lack for willing victims. They take advantage of deep social instincts that always seem to outweigh rationality.

A final insight is provided by experimental economics: people primed by exposure to pictures of money, or word games involving it, later act more selfish, calculating, and “rational” (in narrow economic terms) than people not so primed (Vohs et al. 2006). This is related to the observation that economics students act more selfish and calculating than other students (Henrich et al. 2004). The experimenting teams speculate on the evolutionary contours involved; presumably humans evolved in a world in which *some* things were scarce—food in a famine year, for instance—and thus evolved an ability to slip into rational self-interest when sociability became suicidal. If true, this would prove that “irrational” sociability was *normally the more rational course* in terms of personal action for successful reproduction, since natural selection made it the default.

Of course, one can say, with Jon Elster (1989:48): "Being irrational *and knowing it* is a big improvement over being naively and unthinkingly irrational" (his emphasis). This is perhaps true, but to save the general theory, one must specify how people actually choose. Otherwise, rational choice is almost to the level of the old story of the man who got into the burning bed because "it seemed like a good idea at the time" (Fulghum 1991).

Grave authors have argued over whether the "ultimate" goal of humans is happiness, self-preservation, Darwinian reproduction of the species, or virtue (Sidgwick 1907). But recall Viktor Frankl's "meaning." People have to live *for* something: a family, an ideal, a dream, even a pet—something beyond and outside themselves, to which they have *committed themselves* (Frankl 1959, 1978). If it is necessary, for our self-interest, to have higher interests in mind, how do we calculate utilities? And, by definition, it would be impossible for a selfish individual, desperate for Franklian meaning, rationally to choose impassioned commitment. We cannot rationally force ourselves to be happy, any more than we can obey the command to be disobedient (Elster 1983). A state trying to maximize welfare can only provide opportunities—“the pursuit of happiness.” It cannot "make" its citizens happy. Some states have given their citizens the pathological "meaning" of fanatic loyalty, but they cannot "make" their citizens find Franklian meanings.

The final and ultimate finding in this chain is that people are made happier by spending on others than by spending on luxuries for themselves. Elizabeth Dunn and coworkers (2008) performed several experiments and also asked people who had won lotteries and otherwise gotten unexpected windfalls about their happiness levels. It turned out that money does buy happiness—if you give it to someone who needs it. Spending on self soon grows wearying.

An argument by Paul Bloom (2010) that morality owes much to rational and logical thought fails to convince me. He maintains that morality has been carefully thought out by many grave minds throughout history. Anthropological evidence does not confirm this. Morality is learned through culture, and changes only slowly, in response to people learning from daily interaction that people are getting helped or hurt. The strong emotional reactions to these helps and hurts are what matter. The supposed reasoning of philosophers like Immanuel Kant and John Rawls is rather widely said to be largely apologetics for their pre-existing, basically Christian, moral positions. Both Kant and Rawls come up with versions of Jesus’ Golden Rule as their moral touchstone.

Finally, Amartya Sen (2009, esp. pp. 176-193) has turned his brilliant gaze on rationality, but again he assumes too much of it in people. He knows that human history has seen many more genocides, senseless wars, and unnecessary famines than policies grounded on anyone’s genuine material self-interest or justice, but he writes in hope that we will be more reasonable.

Rationality Limited and Defended

“Now, in his heart, Ahab had some glimpse of this, namely: all my means are sane, my motive and my object mad.” -Melville (*Moby Dick,* chapt. 41, last page)

Rationality, at least in the ordinary sense of the word, does exist. The trouble with it is exactly what Ahab saw: it is often put to the service of irrational ends. Extreme anti-tax agitators become so blinded by minimizing their tax bites that they forget that without taxes they would have no police, fire, or armed forces protection. Rational maximizers of income or prestige or calling may literally work themselves to death; I have known several people who did exactly that.

People are perhaps most rational when pursuing intangible ends. No one is more rational in the narrow sense—rational about planning the means to get to a specific goal—than a patriotic soldier undertaking a dangerous mission or suicide bomber planning the details of her bombing run. I have heard terrorists described as “animals,” but never is a human more human—more rational, careful, and moral—than when devising a plan for self-sacrifice in the name of religion or group hate. Conversely, some people rebel just to rebel, without being rational about it and without pursuing a higher goal. And we do not understand them, either.

Microeconomic theory provides good descriptions and tolerable predictions of human behavior in the business world, and commercial farming—even the small-scale peasant farming once thought to be "irrational" (Barlett 1980, 1982). Even simpler cultures that lack money, or any concept of a general and fungible currency, have their production, distribution and exchange activities that can be analyzed by economic theory, or by the spinoff of neoclassical economics known as optimal foraging theory (Smith 1991; Smith and Winterhalder 1992). Much of the time, people really are choosing after conscious deliberation of the alternatives, and really are choosing the best way to get what they want. In short, rational-choice models very often work. Their failures, unfortunately, are often in precisely the situations where we most need to know what we are doing.

Old models that talk as if "society" or "culture" or "the mob" acted are simply wrong, and are now thoroughly superseded. Moreover, where once anthropologists thought that people in a given culture mindlessly conformed to that culture's "rules," we now know that culture always offers choices, and we know that individuals have considerable scope for independent action and for strategic and tactical choice (see e.g. Bourdieu 1977, 1990). If rational-choice models are inadequate, at least they save us from the mystical, mass-action-at-a-distance models that once bedevilled social science.

Microeconomic theory is much better at modeling problems than at predicting what solutions a given society will invoke. (Hence the need for macroeconomic theory.) The Tragedy of the Commons is easily modeled by microeconomics, and is remarkably universal. Successful strategies for preventing it, however, differ considerably from place to place. Each cultural group draws on its own history and on its own preferred methods of coping with social problems. Some groups invoke religious taboos, others use taxation, others use force. In some *very* abstract sense, all these ways might be seen as equivalent. In real-world terms, an activist or developer or politician might find it very hard to see the equivalence. We cannot predict from strict micro theory what a given society will do.

On the basis of such findings, Michael Taylor, formerly a rational choice theorist, has qualified his stance. Experience with Native Americans and their utter devotion and dedication to their land was a major factor (Taylor 2006). He found that the Native people often would not take, and sometimes genuinely did not want, any financial compensation for land lost. It was irrelevant; the land was gone. They kept fighting for land rights, but did not see anything as replacement. Taylor noted that this “irrational” stubbornness worked well enough to allow them to hang onto a few fragments of land; individual rational choosers gave up and accommodated, and wound up worse off in the long run.

The failure of rational self-interest to predict all of human behavior explains the curious fact that early-day writers from Aristotle to Gibbon seem so much more accurate and in tune with their subject than modern ones. The early ones recognized the importance of emotion, and explained everything from economics to the fall of Rome with that in mind. The moderns tend to seek rational explanations for grand human actions, and they fail.

Donald Calne has advocated rationality as a norm rather than a fact, in his book *Within Reason* (1999). Like Calne, I see rationality as a desirable ideal to strive for—rather than an abstract mathematical concept, a vague something-we-are-born-with, or a coldly calculating selfishness. Unlike Calne, I do not see it as separable from emotion. I also have, perhaps, a livelier sense of the difficulties of avoiding irrationality, especially the irrationalities of hatred and prejudice. We need more than rationality; we need some emotional management. But we do need the rationality. Unfortunately, people usually do the most rational thing only after exhausting all available alternatives.

George Marcus (2002), pointing out much of the above, counseled politicians to go with emotion, and rather downplayed rationality. This I believe is a mistake. It would be enormously better if we were more rational—not in the sense of individual selfishness, but in the sense of thinking about what we were doing. The best hope is probably Alan Gibbard’s: “Wise choices, apt feelings” (1992). We can control our emotions enough to make them work for us; we can damp down hate and viciousness, work on love and care, and otherwise improve ourselves, as counseled by philosophers from Aristotle and Confucius onward. We can then use emotion in its proper role, motivating and shading cognition. The result would be more reasonable choices—not for individual self-interest, but for the common good.

We can now harness the enormous power of computers to get far, far closer to adequate information than we could in earlier times. This not only will make decision-making easier; it will allow us to go more safely with hunches and intuition and insight. The computers “have our backs.” They have enough stored data to let us check our hunches at a few key-clicks.

Southwestern Native Americans tell stories of the creation of the world by Wolf, the elder brother who did everything right, and Coyote, the younger brother who did everything foolish. Often, they end a story with the line: "We should have followed Wolf, but we followed Coyote." People are not very stupid, not usually very bad, not very selfish--but the stupidity, evil, and selfishness interact, and in a multiplicative, not additive, way.

 Summing up all that has gone before, we find that people act above all for social reasons: acceptance, love, care, position and status, regard and respect. They act emotionally, for emotionally-given ends.

Even when they do work for money, they often work counterproductively. They often act foolishly because of simplifying assumptions or because of prejudice and hate. Competition should theoretically cause the most rational to succeed, but this fails if competition is imperfect or if all the competitors are equally wrong-headed.

 On the other hand, they can be highly rational in pursuit of these goals, and structuring institutions by assuming rational self-interest usually works up to a point. People want money for social and status reasons more than for “material wealth,” but they do want money, and thus raising or lowering pay scales does matter, even when people are religious enough to choose God over Mammon. The point is not to deny rationality but to see it as only one way to move toward goals. The problem with rational choice theory has been the insidious and thoroughly wrong assumption that people work simply for material wealth or for ill-defined “power.”

PART 3: LARGELY ABOUT CULTURE

VI: Culture

"Nor can it be but a touch of arrogant ignorance, to hold this or that nation Barbarous, or these or those times grosse, considering how this manifold create Man, wheresoever hee stand in the world, hath alwayes some disposition of worth."
Samuel Danyel, poet, 1603; quoted in Penguin Book of Renaissance Verse, ed. David Norbreak and H. R. Woudhuysen, 1993, p. xxii.

Culture from Interaction

 From all the above, we can construct culture. It is rooted in biology, developed from individuals, and constructed by interactions.

 Today we are fairly used to respecting other cultures and finding every culture worthy of respectful attention as a creation of the human spirit. This valuing diversity, as opposed to judging every culture according to how similar it is to our own, is a very new thing. In spite of foreshadowings like Danyel’s beautiful quote above, the idea of valuing diversity was basically invented by one man, Johann Gottfried von Herder, a German theologian of the late 18th century (see Herder 2002). It propagated through anthropology. Herder influenced the German Enlightenment thinkers who inspired early ethnologists like Adolf Bastian and Franz Boas. The normal human way, unfortunately, is still to consider “different” as a synonym for “inferior.” This not only prevents mutual respect; it prevents the biased ones from learning valuable knowledge.

One of my teachers, Clyde Kluckhohn, used to say “every man is like all other men, like some other men, and like no other men.” (Of course he meant “person”—that was back when “man” had its original meaning, “person of either sex.”) Common humanity is overwhelmingly important; we are almost genetically identical across the species. Individuality accounts for much of the rest, and even identical twins can differ substantially. When we are “like some others,” we are often like them because of common experience, similar placement in a kinship system, or common work history rather than because of shared culture. Still, culture—one of the things that makes us “like some others”—is hugely important.

“Culture” is anthropologists’ shorthand for knowledge and behavior learned and shared in large groups. It allows people to satisfy their wants and needs—not always a good thing, since so many people want, and even seem to need, to harm their fellows.

This knowledge need not be a systematic, unified whole; it need not be completely or thoroughly shared. It is usually useful, but much of it seems elaborated for play, mere curiosity, and other “irrational” reasons, and much—possibly the biggest chunk—deals with defense against real or imagined threats from other human groups.

Most higher animals have society (communication, interaction, structure and all), but none has much in the way of culture. Songbirds usually learn much of their song repertoire, all intelligent social animals learn much of their social and food-finding behavior from their comrades, and apes and border collies can learn hundreds of words. But this is a far cry from even the simplest society’s roster of myths, religious beliefs, songs, games, and other complex forms. (For full discussion of theories of what culture is, the classic survey is Kroeber and Kluckhohn 1952; for more recent thought, see Atran and Medin 2008:143-159.)

Culture is not mindlessly transmitted. It is, rather, *negotiated*, in endless ongoing dialogues (Bourdieu 1978, 1990). “Negotiate” is the perfect word, because it is from the Latin for “the opposite of leisure” (*neg-otium*). Creating culture is not easy and not always fun. Conflict and debate are the breath of cultural creation. More widely, it grows from interaction with the world, especially work and other everyday necessary practices. It is thus both highly accurate and highly embodied. It often exists at a rather less than totally conscious level (a good recent discussion of this is Lauer and Aswani 2009).

Similarly, in creating culture, a society summates small-scale ideas and coping tactics into grand strategies and shared knowledge systems. Every culture, even the simplest, encodes an incredible amount of knowledge. Much of this is expert knowledge. The simplest hunting band has to know the habits of game animals, the time of ripening of fruits and seeds, the distance to water holes, and every rock and sand dune in the territory they cover. Larger cultural groups, especially if they possess writing, can amass unlimited information.

Why bother? What good is culture, that it should have evolved and become so dominant in *Homo sapiens*?omoHomfucit That question was dramatically answered in 2010, when the relevant theorists organized a contest to see what model of social learning would allow the most and fastest adaptive learning in a complex situation. All the social learning and evolution theorists assumed that the best would be a mix of social learning (culture) and independent learning and original thought. They were all beat into the ground by a couple of graduate students, D. Cownden and T. Lillicrap, with a model assuming almost pure cultural learning and virtually no originality. Their strategy “relied nearly exclusively on social learning and weighted information according to the time since acquisition” (Rendell et al. 2010:208). In other words, abject conformity beats thinking every time, especially if you seek out the latest stuff to conform to. Teenagers normally live that way, and apparently they are not as wrong-headed as their elders usually think.

Culture and Other Social Emergents

 Sociologists from Comte through Durkheim have defined their field as the study of “emergents.” Society emerges from human interactions. It cannot be predicted from examining individuals. “Emergents” seem mystical in some sociological writings, but are perfectly straightforward and sensible things.

They arise from ordinary interaction by actual people. Max Weber put it strongly: “Interpretive sociology considers the individual and his action as the basic unit….the individual is also the upper limit and the sole carrier of meaningful conduct…. In general, for sociology, such concepts as ‘state,’ ‘association,’ ‘feudalism,’ and the like, designate certain categories of human interaction. Hence it is the task of sociology to reduce these concepts to ‘understandable’ action, that is, without exception, to the actions of participating individual[s]” (Weber 1946:55). On the other hand, analyzing culture makes us look very hard at how emergents can take a life of their own. They may persist over thousands of years, as the English (and even the Indo-European) kinship system has, being reinforced by usage in every generation. Individual reduction works fine for humans, and indeed is necessary, so long as one is reductionist about *thoughts and acts* but not about *rules and institutions* (Weber 1946).

Societies must not only deal with emotions and mistakes, but must cope with the “emergent” problem of managing all of them in interpersonal situations. Communication, interaction rituals (Goffman 1967), social structure, and other classic emergents are, in part, coping mechanisms.

Emergents can arise in several ways. Simplest are people’s conscious and deliberate decisions baed on the obvious needs of society. Since people are so compulsively social, they will grudgingly or willingly be generous, self-sacrificing, and cooperative. Generosity would obviously make no sense to lone individuals. Mountain lions are not generous.

Indeed, all of interpersonal morality is a social emergent. Just as morals would not exist without an evolutionary platform (see above), morals would be literally unthinkable outside of a self-consciously maintained social group. A mere aggregation would not do the job.

Other, more complex social emergents appear over time from repeated interaction. This applies especially to the highly structured emergents: leadership hierarchies, kinship systems, social role systems, and the like.

Some emergents actually evolve. We have seen that language did so, and it is clearly an emergent: the communication device proper to a highly intelligent animal living in large social groups. Others appear from the emotional life of groups. Durkheim (1995) focused on the intense emotions aroused by ceremonies and rituals. In Malaysia in 1971 my wife and I attended the Hindu Sun God festival. Over a hundred thousand people were there, and almost all were in some state of trance. Though we were not Hindus or even particularly religious, we were caught up in what Durkheim called “the effervescence,” and went into trance states ourselves, dramatically altering our perception of events. Durkheim traced religion to such effervescence, seeing this as necessary to motivate people to engage in moral and social-structural emergents.

James Surowiecki (2005, and see below) writes of another kind of benevolent mass emergent: the way that networked interaction can bring individual contributions together to produce a superior result through spontaneous cooperation, as in Wikipedia. Wikipedia, in fact, is quite an amazing emergent. However, people must remain ignorant of what the rest are thinking for this to work well; otherwise they try to conform to what they think the group thinks (Mojzisch and Schulz-Hardt 2010). On a much smaller scale, when Timothy Gowers wanted a math proof—a more elegant proof for a theorem proved previously by sheer computer force—he and his group set up “blogs and a wiki” (Gowers and Nielsen 2009:879) and appealed to the math world. The first three to check in were a math professor at the University of British Columbia, a high school teacher in Arizona, and a mathematician at UCLA. They had their proof in six weeks.

Truly, the human animal is absolutely amazing and can do anything—*but only when individuals can be mobilized in some endeavor*. Forcing them, using top-down administration, or even allowing conformity to take over, shuts down such efforts. The Sun God festival was a wonderful experience, and wikis are useful, but there is an uglier side of mass response: mob rule and fascist “triumph of the will.”

The most revealing type of social emergents are unintended consequences. Traffic jams result from everyone trying to get somewhere as fast as possible. The faster they try to go, the slower they actually go. Warmongering regimes often result from people seeking security. As the proverb says, “people who give up freedom for security deserve neither and will get neither.” The meltdown of the American economy in 2008 resulted from too many people trying to get rich quick. The more they tried to get rich, the poorer they got, because of the emergent structure of the market. All these represent slightly different routes to the same thing: a result opposite to what was intended.

A system exists to the extent that individual units, interacting in a bounded environment, affect each other by their actions, and are all affected similarly by perturbations. The electric system of my house is a good simple example: It is really a lot of electrons rushing around, and only the similarity of one electron to another keeps it going. If I throw the main breaker, the system comes to a halt. A language is similar. It exists only through the actions and interactions of a lot of individual speakers. It has a strange life of its own. A lot of tiny individual decisions to forget about the subjunctive mood have noticeably changed English within my lifetime. A lot of tiny individual decisions have elevated “like” from a preposition to a conjunction and an all-purpose filler. Both these changes took place in spite of desperate rearguard efforts by educators.

All this analysis of how emergents actually occur renders unnecessary the mysticism of “self-organization.” This has been invoked by New Agers and by some anthropologists (e.g. Escobar 2008). Actually, of course, systems cannot self-organize. They do not have a “self.” They are not conscious individuals. In fact, they usually do not exist at all (outside of scientists’ labs); most of the systems we speak of in social science are analytical abstractions or models, invented by scientists to make managing data easier. Even a real system, like a language, does not organize itself. Its organization is an emergent effect of thousands of speakers making tiny decisions.

The “chaos,” undefined and unspecified “nonlinear” effects, and other nonsense beloved of popular writers are even more mystical. No, a butterfly flapping its wings over the Amazon can *not* cause a tornado in Kansas, by any normal meaning of “cause,” and applying such idiocy to human systems—consciously planned as they are—is even more ridiculous than applying it to the weather. Chaos theory does have its place, but that place is not in explaining deliberately planned or even unplanned behavior. Nonlinear effects within systems are standard and common, but they follow from causes that can be specified. In human systems, they are caused by particular people doing things they want to do.

To take an example from my previous life in fisheries development, fish stocks often collapse suddenly and “without warning,” giving the appearance of a chaotic response. In fact, what happens is that the fish are overfished till their schools reach a threshold, beyond which there are simply not enough fish left to allow them to resist predation, find mates, and get whatever social stimulus they need. This is nonlinear, but it has a normal real-world explanation that does not require special math or New Age mysticism.

 Social systems cannot always be predicted from individual choices, because of the unintended and intended emergents noted above. However, no human system can be understood without understanding the initial choices, actions, and interactions of its members.

 Culture arises naturally and inevitably from the aggregation of humans, but neither a given culture nor the universals of culture could be predicted by a Martian looking at a bunch of isolated individual humans—especially the humans of 200,000 or 500,000 years ago, when culture was just beginning to develop. Culture is, in turn, made up of many emergent systems that interact and influence each other. Organizing and structuring principles spill over from one system to another (Lévi-Strauss 1962).

 Consider the most universal and well-studied cultural institution: kinship. All higher animals have families, recognize closeness of kinship, avoid incest, care for and even sacrifice for their own, and so on. Noother animal has kinship systems: formal structured systems with named categories for siblings, elders, descendents, and collateral kin (what we in English call uncles, aunts and cousins). *All* human societies have these. Leslie White (1949, 1959) used to maintain that the expression “I’ll be a monkey’s uncle” is ridiculous because monkeys don’t recognize their parents’ brothers. This goes too far; they do recognize their mothers’ brothers (though apparently not their fathers’ brothers). But he was right in saying that monkeys don’t have words for “uncles.”

Human societies not only have words, they differ in the terms used. Hawaiian and Nuu-chah-nulth persons call uncles by the same word they use for fathers. Chinese has different terms for father’s elder brother, father’s younger brother, mother’s elder brother, and mother’s younger brother. Other cultures lump one’s father’s brother with one’s own brother. There are reasons for these differences. Such differences in usage are inconceivable to a monkey.

 Kinship, in turn, influences the rest of society. We extend kinship terms to spiritual and academic fathers (Kronenfeld 1996), fictive siblings, and so on. English split off the old plural “brethren” to cover churchmates, while coining a new plural for actual brothers. More recently, a totally new form, “sistren,” has been added to the language for female churchmates. Given the tendency of humans to systematize, some day “children” may be restricted to church usage, with “childs” appearing in other contexts.

 Religion is another universal formal system. Every culture has its own list of supernaturals, its own prayers, its own elaborately structured ceremonies and rituals, and its own set of beliefs about spirits, the afterlife, and creation. No nonhuman animal has anything like this. All the above make sense only in a large group—one where face-to-face contacts are far from the only important contacts.

On the other hand, the total society of ants and bees is not for us. One can isolate two kinds of emergents: the human type (Wimsatt 2007, esp. 241-312), and the ant kind in which the individual is totally subsumed into a *gestalt*.

Cultural emergents—equivalent to interaction ritual and other social emergents—include kinship systems, religions, moral codes, plant and animal taxonomies, and work habits. All these and many more are present in every culture and every human group, but they would not and could not exist without culture. Cultural plans cross-cut, cross-connect, and cross-reinforce. Sometimes they cross-contradict. There is something wonderfully human about the schemes that folktale tricksters like Old Man Coyote and Hoja Nasruddin are always concocting. Too clever by half, the tricksters fail because they trap themselves in their absurdly complicated plots.

Society and Culture

This begs the question of how to define “society” and “culture.” As Bruno Latour wryly remarks, there are only two problems with social science: “the word ‘social’ and the word ‘science’” (Latour 2005:2; see also Sewell 2005). Latour has directed his mercilessly skeptical gaze to culture too: “A culture is simultaneously that which makes people act, a complete abstraction created by the ethnographer’s gaze, and what is generated on the spot by the constant inventiveness of members’ interactions” (Latour 2005:168). Indeed, these are three common anthropological usages of the word “culture,” each with major problems. Similarly, just as Peter Worsley (1997) pluralized “knowledges” in talking about different cultures, Latour (2004) has pluralized “sciences.”

The problem is that “society,” “culture,” “science,” and other such words, including things like “experience” (see above), “ecosystem,” and even “reality,” are analytical abstractions that have problematic relationships with the real things they denote. I can show you a hunk of dirt, but I can’t show you a hunk of reality. I can show you cultural products amd cultural knowledge, but I can’t show you a hunk of “culture.”

I thus follow Latour (among others) in defining “society” as a summation of personal ties, associations, and interactions, plus the emergent structures that arise therefrom. Commenting on Latour (and others), Arturo Escobar has written: “If what some theorists are arguing is correct, the network concept would be a reflection of a more substantial reinterpretation of how social reality comes into being; the notions of actor network, assemblages, flat ontology, and flat sociality push one to think about the real in relational and contingent, not structural and law-driven, terms” (Escobar 2008:11). “Flat” here means something like “grassroots”; these things are flat in lacking a hierarchical pyramid. Similarly, we may define culture as a convenient shorthand term for the more or less widely-shared knowledge and behavior that people learn from others in their society.

Structure and “law,” or at least rules of thumb, must necessarily appear as genuine emergents from any interaction of such a Kantian animal as *Homo sapiens*. Networked interactions produce relationships and structures, as surely as songbird interactions produce songs and nests. One need only point to the universality of grammatical rules, kinship systems, religious ceremonies, and rules of artistic composition. The difference is not that culture view gives us no structure, but that it gives us dynamic, fluid structures-in-process rather than frozen crystalline arrays.

On the other hand, cultural products may be very real and very thoroughly frozen in long-lasting forms. Even birds turn fluid interactions into physical, long-lasting, carefully crafted physical structures: nests. Humans create whole cities and landscapes. The city of Rome may be a mere reflection of interactions, and may be evanescent in the *very* long term, but it is a cultural artifact that has lasted, grown, and become more massive over 3,000 years. Its accumulated structures, including ones that have survived 2,000 years like the Colosseum, enormously affect activity and cognition—and not just in Rome. For millennia, they have both constrained action and powerfully stimulated reflective thought all over the world. Culture has also inscribed on the earth the Great Wall, the rice terraces of Luzon, the Maya pyramids, and the US interstate highway system, among other things. Ideas like the Chinese plans for rice terracing and the European world’s fondness for monocrop plantation agriculture lead to whole landscapes that are totally culturally constructed and totally unique to one cultural belief system. Even the patterned burning of roving hunter-gatherer bands is visible from space. Such things give culture a certain “stickiness.” However accidental are the beginnings of a cultural schema, the ends may profoundly affect millions of acres of land over thousands of years.

…And Is There a Social System?

The phrase "social system" may imply much more than it really should. A social system is like a rickety old wagon, not like a Lexus. Still, it has its functioning parts and its creaky motion.

The mechanisms by which social facts and individual lives are connected include psychological and economic ones. In the words of Jon Elster (1993:57), one approach is “to understand economics through social psychology and social psychology through history."

Social and sociocultural systems are made up of individuals. Only individuals think and act. Thanks to their mirror cells and their compulsive social needs, they interact a very great deal, imitate others, deduce others’ rules and principles for acting, and thus come to resemble each other. But this is a complicated process, not the simple learning-by-imitation of old-time anthropology books.

Even within a family, if it is at all sizable, there are dyads, triads, tetrads…. I have a very different relationship with each of my children, and they have complicated relationships with each other—increasingly complicated as the number of spouses and grandkids increases. Families relate as groups; family members relate one-on-one to individual nonmembers. Societies, from the family on up, are built of such building blocks: individuals in dyadic and small-group relationships (Goffman 1959; Satir 1983).

Neighborhoods may be tightly defined, multistranded communities, as in the old peasant villages and other small-scale societies, or they may be as faceless as an American suburb where no one knows anyone else.

In the modern world, one’s networks and communities tend to be dispersed. I am not only more apt to know anthropologists in Singapore and Mexico than to know my neighbors two blocks away, but I can relate to them more easily. We share a common culture of interest. There are worldwide networks of birdwatchers, train lovers, stockbrokers, mercenary warriors, potato farmers…. A potato farmer in Scotland will probably know at least some potato farmers in Peru better than he knows any Scottish anthropologists. And someone who is an anthropologist and a birdwatcher (like me) will be able to find friends anywhere, but in networks that are almost nonoverlapping, and have quite different cultuers.

This is *not* a new thing, or a result of globalization. History teaches that highly mobile groups like sailors, soldiers, traders (think Marco Polo), artists, musicians, diplomats, and cooks have been traveling the world for millennia, running into comrades everywhere. A Phoenician sailor no doubt communicated just fine with an Indian one, once they found a common language, but no doubt had trouble communicating with a date farmer, even though “Phoenicia” means “date land.”

A human society may be a tightly integrated thing lasting since time immemorial, or little more than a lot of very different individuals who desperately need social contact. These loners construct their own mental representations of the society they long for.

At the borders of every society, there are people—often many of them—who are “sort of members.” They are half in, half out, or otherwise on the fringe. Some are deviants, but most are just people on the borders. For example, the Yucatec Maya world I study is defined by the Yucatec Maya language. But most Yucatec Maya speak Spanish, and a large number are far more fluent in Spanish than in Yucatec. They are thus “sort of” Maya and “sort of” Spanish-speakers, with mixed knowledge pools and intermediate cutural status. The Maya often call them “Mayeros”: roughly, people who do Maya things and speak varying amounts of Maya but are not 100% sharers in the old culture. This label is notoriously negotiable.

There are endless wars over the label “American.” Fox News hosts and commentators limit the term to those who are white, Anglo-Saxon, more or less fundamentalist religiously, and conservative according to whatever is the current definition of that extremely polysemantic word. Others have other definitions.

E Pluribus Unum

 The time has now come to pick up the track laid down earlier, about the profound and numerous individual differences that divide us. A world of people with different personalities, different aesthetics, different interests, different levels of drive and motivation, different life experiences, and different problems is not going to be one of perfect cultural sharing. This explains the diversity we have noted above.

 So a society must be built from highly disparate individuals, and a culture formed from highly disparate knowledge and interest pools. Highly disparate emotions motivate and drive the process.

 Only mirror cells and the desperate need to conform hold us together. This leads, in societies like modern America, to the “lowest common denominator” phenomenon. People cling desperately to the most idiotic manifestations of culture—sports, “celebs,” pop music, TV series—because only these can be learned easily enough to become common ground. The bigger and more diverse the culture, other things being equal, the more idiotic the popular culture. This is not always true, but it has enough rationale to make it a general law. Exceptions are marked cases and must be explained.

Cultural Mixing is the Norm, Not a Marked Case

This sort of thing has recently produced the truly ridiculous concept of “cultural hybridity.” This idiotic bit of racism implies that cultures (and presumably their bearers too) are separate species, that can “hybridize” like horses and donkeys. In fact, cultures, worldwide, are all part of one great interlocked network. In a very real and literal sense, there is only one culture in the world: human culture. It has been one ever since humans emerged hundreds of thousands of years ago, and certainly since modern humans radiated from northeast Africa—an area small enough to be a single cultural realm—a mere 100,000 years ago (give or take a bit). Hence the interlocking, overlapping, and cross-cutting systems of thought that in fact characterize culture worldwide.

Even a blend of really disparate cultures, like the syncretism of pre-Columbian and Spanish Catholic religions so common in Mexico, is no hybrid. It is a re-mixing of the waters in a vast braided river. The river is the same, the water is the same, however much the channels may diverge and reconnect. Or, to use the image A. L. Kroeber used on the endpapers of his famous textbook of anthropology (1948), the tree of culture differs from the family trees of biology in that the branches always keep regrafting back onto each other.

Key inventions, like fire, pottery, the bow and arrow, agriculture, and more recently automobiles and computers, spread all over the world. They are cultural, but now they are pan-human. Even the most isolated hunter-gatherer bands are now familiar with trucks and are apt to be online with other hunters half the world away. The idea of monolithic, isolated “cultures” thus has nothing to do with reality.

Ralph Linton’s famous and oft-reprinted essay “The One Hundred Per Cent American” (Linton 1937) is easily found now on the Internet (often mis-cited!), and needs repeated attention. Linton humorously pointed out how the militantly patriotic American draws on the entire world for articles of daily living—almost nothing actually stemming from America itself.

Cultural Universals

Think of what an anthropologist could confidently predict about a new society found on a newly discovered island.

We would know the people had an elaborate, complex language, with many sounds, with nouns and verbs, and indeed with enough humanwide traits to fill a dense book, *Universals of Language* edited by Joseph Greenberg (1978). No animal has anything remotely close. We would know the culture had dozens of humanity-wide culture traits as well, and here the book is *Human Universals* by Donald Brown (1991).

We would know there were rich resources of language, art, music, oral literature, dance, ritual, and food preparation. We would know these were often put in the service of a complex and abstract religion characterized by belief in supramundane (“supernatural”) beings, in human ability to get power from the supramundane realm, and in human ability to use that power to heal illness and bring better luck in weather, fertility, or similar matters.

We would know the group had a complex, formal family and kinship system, involving rules of descent, inheritance, and marriage. It would have a political system of some kind with at least some hierarchy (if only a tendency to defer to elders), a system of gender roles, and a system of unwritten laws and rules with some enforcement mechanism (Abrutyn 2009). We would know the group had some sort of economic system, if only one governing exchanges; trade would take place in a highly structured and culturally embedded way, not as a casual procedure.

We would know the group had a moral system. It would idealize generosity, self-sacrifice, solidarity with the group, and following the group’s rules. It would usually praise even-tempered, accommodating behavior, but would have an escape hatch allowing its members to stick up for their rights even if that meant some fiery dialogues. (It would not, however, have a predictable list of what those rights were.) It would negatively judge disruptiveness, random violence, robbery (but not always theft), stinginess, treachery, and other social disruptions.

If the society were large (say 100,000 people in a polity) and complex, we would strongly suspect it had a written language and had written down its major laws and economic transactions. Such a large society would certainly have monumental architecture, a ruling class, a priesthood of some kind, and some sort of redistribution mechanism such as taxes or tribute. It would have to have storage facilities and record-keeping to manage that. The amazing parallels between all early civilizations, including the Native New World ones that were completely isolated from Old World influence, shows that these are built-in and necessary features of any large cultural group.

Culture as Distributed Cognition

Cultural knowledge is most sharply and clearly defined at two ends: what all members of a culture learn, and what only experts know. Some anthropologists (especially of an earlier generation) regard culture as the common knowledge of a group: the knowledge that every normal adult shares. Others (more typically of my generation and younger) take the sum of the knowledge held within a group, including even the esoteric material known only to a few.

Most cultural knowledge actually occupies the vast space between these extremes. It is the knowledge that some or most people have, but that is ambiguous, loosely structured, loosely enforced. All children know basic English grammar: “s” for plurals, “-ed” for past tense…. Professional writers know publishers’ stylesheets by heart. In between is a vast realm of loosely consistent rules that most people “sort of know.” Is the subjunctive dead? When do you use a semicolon? Similarly, most American males of my generation know something about fixing cars, but many don’t, and everyone who does know seems to have a different knowledge pool; some know Toyotas, some Fords; some do brakes, some are best with radiators. Clearly, this is not the precise, systematized knowledge that a professional mechanic has. The idea of culture as 100% shared knowledge cannot stand up.

In short, culture is *distributed* knowledge (Kronenfeld 2008b). Even the simplest society has its experts on hunting, on medicine, on plant foods, on religious lore, and so on. A modern society has millions of members, among whom every adult has a unique knowledge pool. Measures of cultural consensus (Romney et al. 1986) are valuable precisely because consensus is unusual. One expects variation.

David Kronenfeld (2008b) has even made this the basis of a theory of culture. Humans being each different, and knowing different things, they require some basic sharing. Distributed knowledge requires coordination. Different members of society have to know who is doing what, when, how. “[C]ulture provides us with the information that we need to be able to play our role in the larger social enterprise…. Differing levels of shared knowledge enable differing levels of subgoals and subtasks.... [This] allows us to communicate and coordinate with others….” (Kronenfeld 2008:94).

Even in a single tightly-knit linguistic community—say, a small, traditional English village—there are enormous differences in knowledge of vocabulary, talkativeness, and usage. The blacksmith, the sheep farmer and the vegetable farmer each has a specialized technical vocabulary. Language is what is culturally known; speech is individually produced. Culture can tell us to say certain things ("Hello, how are you?") but can never determine the exact content of a long dialogue. Every conversation is shaped by personality, family role, life experience, immediate concerns, and immediate events, as well as by cultural expectations.

 People try hard to conform to cultural rules, but no two people interpret the rules in exactly the same way, and no two people face the same situations. Everybody has, in his or her head, a different (and constantly changing) version of the "common" culture. Brilliant approximators that we are, we can always find common ground, and describe our culture in generally accurate ways. This is one of the many reasons why “memes” do not and cannot exist. Uniformity of cultural units is limited to visible, tangible things like arrow design, in which people can copy each other faithfully.

People learn categories, shortcuts, and other ways to simplify the world. We could not possibly manage the full complexity of the world without those. But, without considerable care, categories become barriers to thought. This can lead to serious barriers: social conformity for its own sake, and defensive rigidity. Humans need to find ways to de-barrier their thinking, especially as they get older. Mystical meditation helps. It enables one to leave the cultural categories, but not into a world of chaotic, unfiltered stimuli. Cultural categories disappear. Chinese and Tibetan meditative training teaches this rigorously.

Overlearning cultural “truths” is a constant danger, and any thinker needs to worry about it often. I find valuable, even necessary, an instruction ascribed (by folklore) to George Bernard Shaw: Every morning, for mental exercise, he tried to argue himself out of one deeply cherished belief. I have no idea if he really did, but if he didn’t, he should have. So should we all.

The fact that such discipline is necessary proves how difficult it is to break out of culturally learned ways, even when these are totally inappropriate for the situation. The long and unedifying history of explorers who refused to learn from local people, and thus died from eating poisonous foods or wearing hopelessly inadequate clothing, is most revealing in this regard. It was traps like this that led early anthropologists to see culture as a straitjacket. The key point, however, is that people do not need to trap themselves so thoroughly. Many explorers *did* listen and learn. The non-learners were more animated by prejudice than trapped by culture.

Any social theory must take into account not only practical knowledge and high-flown metaphor, but also such mental phenomena as explanations, rules of thumb, everyday predictions, folk theories, and working guidelines of all sorts. Folk medical theories, for instance, determine treatments, and can matter.

Often, though, it does *not* matter a great deal which “explanatory model” (Kleinman 1980) the healer holds. People around the world have learned that willow tea dramatically reduces fever and inflammation. It makes no consequential difference in the treatment whether this action is explained by God’s blessing to suffering humanity, by the action of the Spirit of the Willow Tree, by a Galenic cooling principle in the tea, or by the chemical action of methyl salicylate on prostaglandin metabolism. Straightforward reality is quite enough. Everybody knows that willow tea is effective. (We now use its Bayer-created derivative, aspirin. Aspirin was actually isolated not from willow but from another salicylate-rich plant, formerly called *Spiraea*, of which “aspirin” is an anagram.)

Chunhuhub has its expert beekeeper, its expert hunters, its all-round expert folk biologists (like Don Felix), and its expert farmers. The leading expert healer is Don José Cauich Canul (see Anderson 2003) in the nearby town of Polyuc, but many in Chunhuhub know hundreds of medicinal herbs. Conversely, there are many people who are quite ignorant of local plants and animals, knowing only the domesticated ones and a few healing herbs and major trees. (Even so, these make up a list of easily 100 species in even a nonspecialist town-dweller’s repertoire.)

In Hong Kong I found similar contrasts. Some of the fishermen I knew could identify hundreds of marine life forms. These individuals were well known and highly regarded. Others knew only a few dozen. Nearby farmers knew even fewer, though even they could reel off three or four dozen fish names. The farmers knew hundreds of agricultural terms, mostly unknown to the fishermen. Interest, native ability, and family and peer reinforcement explain such differences. Some people who were not especially knowledgeable about fish were experts on kinship, or religion, or healing.

To be learned, knowledge must also be available. Esoteric knowledge is often unavailable to any but the initiated. A huge percentage of important ecological knowledge in aboriginal Australia falls into this category; it is sacred, and taught only to initiated adults. Some is strictly men’s knowledge, some strictly women’s. Healing knowledge among the Yucatec Maya includes many “secrets,” passed down only to those accepted as students by the *hmeen* (healers and ceremonialists); most of these are the hmeen’s children or other close younger relatives. Almost all societies except the very simplest have institutionalized esotericism of this kind. Of course, such knowledge is generally prestigious. Outsiders are motivated to learn it simply because it is secret.

Also, many societies have equivalents to our copyright. Northwest Coast songs, stories, art motifs, and so forth are owned by individuals or (more often) families, just as ours are in the modern international media. Classical China did not recognize copyright per se, but did condemn plagiarism. The Maya have no such rules, but some knowledge is known to be basically family-held, and this is respected.

Cultural Models

 “Cultural models” have been variously defined (e.g. d’Andrade 1995; Kronenfeld 1996, 2008a, 2008b; Holland and Quinn 1987; Shore 1996; Strauss and Quinn 1997; Strauss 2006 has also contrasted the cultural model with the trendy idea of “the imaginary,” to the disadvantage of the latter). Psychologists, similarly, speak of cultural or sociocultural models (Markus and Hamedani 2007; see esp. their very comprehensive list of references, p. 16). Depending on the writer, cultural models can include such cultural constructions of knowledge as belief systems, institutions, institutional culture, priority lists, guidelines, rules (usually rules of thumb), canonical action plans, static plans (like standard floor plans for houses), and goal sets. They are the cultural equivalent of the “schemas” of psychology, a term also defined variously by various scholars. Depending on who is using the term, a cultural model is a set of beliefs that sort together and are clearly related in people’s minds, or, more specifically, strongly structured systems of knowledge that become traditional and canonical in a culture.

Learned and generally shared representations that people have called “cultural models” include:

Specific concepts for objects and acts: “dog,” “walk”

Broad general concepts and concept-classes: ranches, airplanes, stereotypes of ethnic groups, concept of potato salad, ideas of a stylish coat vs. a hopelessly out-of-fashion one

Landscapes, ecologies, scenes, frames, other broad visuospatial representations: Yosemite National Park, a typical farm, an ideal country house, a slum

Classification systems: kinship, vegetables, kitchenware, cars

Texts, poems, songs, tunes, other linear communication forms

Stories, story lines, canonical plots (see Vladimir Propp’s classic study of cultural rules for creating folktales, 1968)

General ideas, vague ideas, overall views, other high-level and unspecific representations: human nature, animals, the real world, religion, Christmas

Associations and networks: my connections with my friends and enemies, the relations between the nations of Europe, the tension between sects of Christianity, the relationship of stars and energy flows in the galaxy

Canonical plans and action sequences: Schank and Abelson’s famous restaurant script (Schank 1977), directions for assembling furniture

General rules and rules of thumb: rules for driving cars, training horses, brushing one’s teeth, fixing up the house

Recipes. Cooking recipes are an excellent model for cultural knowledge transmission. Michael O’Brien points out that recipes tell “how, when, where, and why to produce something…[and] contain multiple parts of two general kinds—ingredients and rules—that can be reconfigured to form a different recipe” (O’Brien 2008:43).

Broad classes of behaviors with increasingly vague or abstract canonical rules as one goes up the recursion ladder: dating, marriage, and romance (Strauss and Quinn 1997; Victor de Munck, pers. comm.), religious rituals (Shore 1996), games (Wittgenstein)

 Meta-representations: our shared ideas about others’ ideas and how others think, our ideas about thought and mind in general, our cultural concepts of culture. Every culture has its “theory of mind.”

This is impossibly broad, and strips the term “cultural model” of any real meaning. A *model* should be a simpler representation of a big complex thing, as in model planes, which can vary from a boy’s little lath toy to an aeronautic engineer’s complex mechanism, or even a computerized mathematical representation of that (a model of a model). The common thread is that a model is *self-contained*—you can set a clear boundary around it—and it is *a simpler representation* of something. By definition, all mental representations are simpler representations of things in the real world. (But poems, songs, stories, and the like are things in themselves—not just representations—and thus are not cultural models. A set of rules for writing a folktale, or a proper Arabic or Kaluli song, *is*  a cultural model.)

 The real problem comes in the “bounded and self-contained” part of the definition. Unbounded/open-ended systems and networks should not qualify. Yet, in the real world, no category is really bounded. Rules for driving grade into rules for bicycling, songs grade into chants and then into prose, and houses grade into stores. Thus, a model, cultural or otherwise, must be more bounded than the real world; setting hard boundaries on a vaguely-bounded conceptual space is the most important simplification that modeling performs.

One noteworthy way of tightly defining “cultural model” has been advanced by David Kronenfeld. He sees cultural models as “scenarios or action plans for how to behave in some given situation or how to interpret the behavior of others in one or another situation” (Kronenfeld 2008a:69). They contrast with organized knowledge such as classification systems, “’cultural modes of thought’ which provide metaplans for how to break down and organize an unfamiliar problem” (ibid.), and other knowledge systems. Cultural models would then seem to be a lot like grammar rules, and indeed linguistic research on grammar has had its influence here. Grammar rules tell you how to talk—how to construct a sentence that others will be able to decode by using the same rules. Cultural models would be largely *procedural* knowledge, drawing on discursive knowledge only as the action plan required. Structured systems of *discursive* knowledge, like folk taxonomies and lists of gods, do not qualify.

 Such cultural models can often be broken down into flowcharts and decision trees. These are psychologically compelling. An adequate decision tree of a cultural process (such as planting a garden) specifies the normal steps taken, in clear and specified order. It lists the choices possible at each step, and the effects of alternative choices—branches in the decision tree. It directs the user to call up particular bodies of discursive knowledge at the right points. Such charts make excellent anthropologists’ models of the people’s own cultural models (Gladwin 1989; Hedrick 2007; Randall 1977; Young and Garro 1994).

 The best models-of-models might combine the features of both recipes and decision trees. They would be set up like a recipe, but would treat the rules as progressive decision nodes rather than progressive cut-and-dried steps. Experienced cooks rarely make a recipe exactly the way the book tells them. They improvise, treating the steps as suggestions or decision nodes rather than as absolute rules. The recipe is the cultural model; each actual cooked version of it is a real-world instantiation that goes beyond the model and adds individual “spice.” The same is true of decisions in fishing (Randall 1977), ranching (Hedrick 2007), and other areas; people bring enormous amounts of knowledge to bear on particular decisions, and have a fine-grained spread of decisions, each one involving options. Language is the same: we have grammatical rules and canonical sentence forms in our heads, but we do not always follow them, and we construct new sentences all the time.

 True models overdefine, oversharpen, make conscious much that is really preattentive, and in general make a clean, sharable process out of a messy, personal one (Young and Garro 1994). We are describing for analysis, not producing Jose Luis Borges’ worthless l:l map of the world (Latour 2005). A recipe for bread is a cultural model; it tells you what you need to know. A recipe that described every single baker’s personal touch would be millions of pages long. Scottish folksongs are composed according to a few simple rules—a cultural model—but listing all the songs would be impossible. New ones are being written faster than one could list. What we want of a cultural model is what its users want: something they can *learn* that will *then let them personally improvise.*

 Since we have raised bread (the pun is inescapable), let us consider it. I learned to make bread partly from recipes and partly from people around me. I can easily reduce my bread recipes to simple half-page instructions. Naturally, I do not put everything I know into such instructions. I leave out the variations I often make. More importantly, I can’t put in the feel: the fingertip knowledge of how wet the flour is, how long to knead the dough, and so forth. It is too difficult to verbalize, and is largely an unconscious process anyway. One must first learn simple straightforward rules, then do much actual practice to get the feel, and then go on to learn more and more cultural and personal tricks. Breadmaking involves a cultural model which is then progressively personalized.

 Kimberly Hedrick (pers. comm. email of Nov. 28, 2008; see Hedrick 2007) says of cultural models: “I see them as plans for action and for interpreting/explaining others' actions, and for predicting others' actions. In fact, I mostly think they're around to make us *feel* like our lives are more predictable than they actually are. It's stressful to actually acknowledge the divesity of what *could* be—both our own possibilities and then all those of others, plus how the world might actually work. It feels more secure (and streamlines our thought processes) to have mental outlines of what we expect from others, from ourselves, from the world. Of course, all of the above do stuff that are not aligned with the model, but then we can always extend the models in interesting ways so that we still feel secure. I think models exist as a way to integrate us with the complexity of social life (and life in the wilds of nature) in a way that maximizes cognitive efficiency (though naturally limiting cognitive accuracy) and lowers our stress about the unknown.”

American college students traditionally had a cultural model of a “date” (Holland and Quinn 1987; Kronenfeld 2008a, 2008b; “dating” now sounds old-fashioned, however). This model involves two people who have, or think they might have, a romantic interest in each other. They go out for “dinner and a movie” or possibly something “more creative.” During this, they probe with varying degrees of subtlety to see how much physical contact they will have and how much they like each other. There is a canonical date, and there are recognized variants of it (zoo, walk in the park…). There are thoroughly *non*-canonical variants still recognizably “dates” (parachuting together, stealing cars together…). There are things that are only marginally “dates,” testing and probing the boundaries of the model (group outings, set-up matchmaking dinners…). There are well-known subroutines with their own cultural rules (picking the girl up, paying for her dinner or not, kissing goodnight).

Again, cultural models give a plan; people vary it at need. Different people have slightly different ideas about dates. The models change over time, too. Young people today expect far more physicality, far earlier in the game, than people of my generation did. On the other hand, the young now are far less hopeful of permanent commitment resulting from steady dating. This represents a major cultural change, but it is not total; some of the young have “old-fashioned” attitudes, and more than a few of my generation were, shall we say, ahead of their time.

What matters is that (1) everybody knows the general cultural expectations, and (2) everybody accommodates to them at least a little bit, and usually more than a little.

 Claudia Strauss (2007) has used the concept of cultural models to discuss the ways Americans assign blame for the shootings at Columbine High School, Colorado, in 1999, in which two disturbed students shot down 12 classmates, a teacher, and then themselves. Americans in general have a default tendency to look to the individual. They tend to idealize individualism, self-reliance, and independence. Thus, they explain much by independent individual agency. However, Strauss found that Americans more often explained the Columbine shootings by social factors. Many of these were suggested by her interviewees, and she found them and others in the popular media as well. Usually, each source had a particular factor to blame, but some blamed two or three social trends. Among those suggested were bullying and abuse of the two students; easy availability of guns; lack of easy availability of guns (for the students and teachers to defend themselves); glorification of violence in the mass media; breakdown of morality (Biblical, national, or otherwise); various forms of school failure, from lack of values to lack of supervision; parental failure; and poor health care (including lack of psychotherapy). Evidently, there is no shortage of cultural models blaming the system. Strauss found that the few who blamed solely the will and agency of the two students were usually quite defensive about it. They were aware that they were in a minority.

 Obviously, the various explanatory models were not constructed in a vacuum. The few who blamed the students (alone) were self-conscious libertarians. Traditionally devout people blamed the breakdown of Biblical morality. Political liberals blamed lax gun laws; staunch conservatives blamed too-tight ones. Sympathetic people caring about the students’ psychological problems blamed psychological factors. Teenagers seemed very commonly to blame bullying and bad treatment of the pair. Critics of American education blamed the school.

 In this case we are dealing with a definition of “cultural model” that is more or less Arthur Kleinman’s “explanatory model,” which he invoked in describing the ways that Chinese talk about illness and depression (Kleinman 1980). The explanatory model has become widely enough known in medical circles to be reduced to “EM” in the literature. It has proved an extremely valuable concept. Since Kleinman’s original work, which defined EM’s in narrow and cognitive terms, Kleinman and others have increasingly grounded EM’s in emotion and in wider cultural knowledge (see e.g. Garro 1988; Kleinman 1988). We now see them as specific representations derived from a much wider base—little peaks in an adaptive mental landscape. Also relevant is Alison Wylie’s philosophy of the standpoint (Wylie 2004). Where one stands, or sits, in this world explains much about how one explains. It also explains why we often miss things that would be obvious to an observer from another culture. As an English variant of a Chinese Taoist saying has it, “a way of looking is also a way of not looking.”

 Other cultural knowledge is less obviously “modeled.” “Normal” Americans have a great deal of knowledge of “celebs,” largely media personalities. Every “real” American knows exactly who is meant by the first names and nicknames on the covers of *People, In Style,* and similar inhabitants of supermarket checkout zones. I usually have no idea who is meant, and spend checkout time wondering what I am supposed to do with the information that Jack is breaking up with Jill and seeing Jane.

This knowledge is clearly systematic, structured, and culturally shared (by everyone but me). For some people, it is a “model,” because they pattern their lives after the “celebs,” or, perhaps more often, use the “celebs” as cautionary models showing what to avoid. Yet, for others, it is not a “model,” because it does not inspire them to do anything. They treat it as passive, list-like knowledge—declarative rather than procedural.

Normally, a full “cultural model” or “schema” would include all the cognitive tasks noted above. Driving a car, for instance, includes the actual how-to rules, the laws of the road, the bodily motions, the mental representations of the car and its steering system, the mental map of where one is going, moral standards for judging other drivers, and a sense of rhythm (try to shift gears and manage the brake without that!). Above all, it requires constant monitoring of one’s performance and the car’s, and constant adjustment. The beginning driver is acutely conscious of every slight correction of the steering wheel, accelerator or brake pressure, and so on. The veteran does it unconsciously, unless confronted (often at a cut-rate rental joint) with a new car possessed of strange ways.

Cultural models have a strange shadowy existence. Grammar rules are put down in books, and sometimes dating rules are too, but the books never give exhaustive directions. We understand “I ain’t got none,” though it follows a grammar found in few books. We also know that “the little red corner house” is fine, but “\*the corner red little house” is improper. (The asterisk is a linguists’ convention to show that a form does not really exist.) Nobody ever taught us the rules for adjective order in colloquial English. We inferred them without even realizing it.

This shows that *cultural models do not exist as objectively real things* that hang in space somewhere. They have a weird life, being *inferred by everybody but typically codified by nobody* (Kronenfeld 2008a, 2008b). Grammar rules are learned by young children through trial and error and inference. Dating rules are learned by adolescents the same way. They get instruction from peers or websites, they imitate their slightly older friends, and they make countless acutely embarrassing but highly instructive errors. Even recipes are learned more often by imitative practice than by reading, in spite of all those cookbooks. Languages and cultures exist solely in this strange interactive space—unreal and nonexistent, yet totally real and totally powerful.

 Kinship systems are extremely structured and are known to most competent adults. At the other end are things like our cultural theories of mind or religion. They are vague and general. Broad principles like individualism vs. collectivism also exist at a vaguer and more passive level.

 However, cultural models determine actual practice of religion and so on. An American church congregation knows to stand up, sit down, and kneel at the right times, though their theological concepts, religious beliefs, and interpretations of church ethical rules may differ widely from person to person. There will usually be a Wittgensteinian “family resemblance” in religious views, but not always. A newly immigrant, highly conservative African Episcopalian family may share very little indeed with the affluent liberal Anglo-American family in the next pew.

 This shows why cultural models are important. Knowing the general principles of Christianity, even memorizing the whole New Testament, will not help you one bit in church if you have no idea of the ceremony. Having a desperate desire to do what’s right, to fit in, and to maximize your social benefits will not help either. You have to know the cultural model of a proper Episcopalian service. If you do, and you use it, nobody will care deeply what your theology or motivation are. Sects differ in this; Calvary Chapel pays more attention to the belief, less to the ceremony. But there are always cultural models mediating between the very general (belief) and the very specific (your own feelings this minute in the back pew).

 In farming, driving, teaching school, peeling potatoes, anything, the same is true. Very general principles do not guide action. Very specific individual motives, goals and wishes do not coordinate action. Culture exists to tell people what to *do* when they want to accomplish personal goals in the light of general principles. It occupies the middle position—providing the scripts, canonical plans, and strategies that allow one to get from broad goals to actual performance.

 The fuzziness of the concept of “cultural model” affects how we think about sharing and agency in relation to these models. The idea originally came from grammar and other tightly rule-bound and highly overlearned systems. Thus, there is something of an idea in modeling circles that cultural models are subconscious, fairly rigid, and highly determinative of behavior. This is certainly not true of, say, song-writing. Music is structured linear communicative behavior, like language, and musical pieces are just as rule-bound and rule-governed as linguistic utterances. But song-writers and musicians are intensely conscious of the rules, and apply them diligently, as any composition textbook or course demonstrates. Jazz and folk musicians learn the rules of “improvisation” to the point of subconscious deployment, but generally they can bring the rules to consciousness if they have to explain them to a beginner or break them in a wild riff.

 Grammar rules are fairly inflexible, while music rules change fairly often. Rules for clothing fashions change even more often and even more consciously. Roland Barthes (1983) did a memorable, and refreshingly light-hearted, study of the tight structure and communicative function of those rules. Cultural models of things like driving and housebuilding have to change, consciously, every year, as lawmakers and architects invent new codes. And there are areas in which cultural models are extremely vague indeed. Kronenfeld has often contrasted formal baseball or soccer—tightly scripted, with formal and informal rules—with the sandlot versions, which in their young-boy forms may have almost no rules at all. At this point, it is questionable whether one has a “cultural model” or simply a name for a somewhat arbitrary cut of everyday activity. The degree of systematization in models and knowledge structures is extremely variable. It follows that only rather systematized ones are useful in predicting behavior. The more tight the rules, and the more they constitute an actual system with all rules linked and mutually supporting, the more prediction is possible.

 *Cultural knowledge is to use.*  At any given time, we naturally are thinking only of what we need for the task we are focused on, but this does not mean that the rest of our knowledge is permanently subconscious! We can foreground only one body of lore at a time. Quoting Hedrick again: “Even how we move is not very difficult to bring to conscious awareness if one takes dance, horseback riding, or martial arts. For that matter, how we *breathe* can be easily brought to conscious awareness. Arguably, that is the entire point of religions like Buddhism—that you bring into your conscious awareness the models that construct *who you think you are*, and thereby gain freedom from them by systematically severing your attachments to them. Only humans can do this. It makes us uniquely us- our capacity to bring to awareness the most biological, natural components of ourselves on through to cultural conditioning... and then choose otherwise” (Hedrick, email of Nov. 28, 2008).

 Consider how the idea of cultural models can play into understanding our modern ecological crisis in agriculture. Most analyses of agricultural problems today blame either individual short-term income maximization or big, vague things like “capitalism” or “Judeo-Christian ideology” or self-interested assertion of power by state bureaucrats (on the last, see Scott 1998). Indeed all such things matter. However, the real problems of “developed” agriculture today are monocropping, replacement of small farms by giant estates (usually owned by absentee or state landlords and worked by landless labor), erosion of genetic diversity, and total destruction of natural landscapes to make way for those three things. Detailed knowledge is not highly valued, since the owner is more concerned with urban politics or whatever he may be doing, while the workers have no time or capability to use their knowledge.

This is a pattern set by ancient Babylonian times, and perfected by the Romans. It is not new. It made some economic and ecological sense in very ancient times, in the river valleys of Egypt and Mesopotamia. Today it is highly countereconomic and antienvironmental, but it has become established among developers and international agencies as the right way to do agriculture. It thus propagates worldwide, at enormous cost to everyone.

Very different principles guide the Maya agriculture I study in Yucatan. It involves holistic management of the entire landscape, preserving as many species as possible and finding uses for all of them. It involves multicropping, with fine-tuned mixes of species. It involves small farms that give a modest living to everyone. It is skill-intensive rather than capital-intensive, so farmers have to care about learning and knowing as much as possible.

Such broad management strategies and plans are true cultural models. They guide action without specifying exactly how to act in a particular situation. They are the means of moving from very broad considerations—political power, economic gain—to very narrow tactics (growing wheat in this particular field, irrigating from this particular well). They are the specific strategies that get us from very broad cultural principles—ideology, religion, social solidarity—to very specific individual considerations. They are the models that guide the key decisions. Without them we could not possibly coordinate action, set policy, or develop anything.

Ultimately, they were developed because they made some sort of economic and political sense, so power and economic gain are at some very distant remove the real causal factors. But there has been so much history since, so much contingency and accident, so much blind following of models and then improvising a cure after failure, that very little can be predicted about modern agriculture from looking at what is “best” in some abstract sense. The system has created a “lock-in”; we are dependent on it and have tailored our infrastructure—from shipping to food processing—to accommodate it. If we were starting over, we would surely do things differently, but models that developed in ancient Mesopotamia still lie behind our strategies today.

The contingency of long-lasting cultural models is best shown, once again, by bread. A purely accidental hybrid of wheat with the Azerbaijan subspecies of the grass *Aegilops squarrosus* produced, around 6000 BC, bread that would actually rise and become wonderfully fluffy and soft. Previously, bread had been fairly heavy, tough stuff. Inspired women (it must have been the women) took advantage of this, and the end result is a world of cakes, cookies, breads, shortcakes, pastries, and so on. Bread wheat is the most important and widespread crop in the world. All this depends on that crazy hybridization event, but now we are locked in; we cannot imagine life without it, could not find a substitute if we had to, and would have to change our whole dietary world profoundly if bread wheat ceased to exist. That event is not a totally unlikely possibility. A strain of wheat rust arose in Africa a couple of years ago that threatened quite seriously to end bread wheat. We live in a world of chance, and cultural models sometimes fit us for that, sometimes lock us into a dangerous dependency.

Cultural Heuristics

Cultural heuristics, notions, and metaphors form a subset of cultural models. Some are mere fads that die in a year, while others go on for centuries. No one really understands this; it remains a question for research. Many of the more elaborate and important of such notions are metaphors (Lakoff and Johnson 1980). George Lakoff, who explored the whole issue of metaphors, has applied his thinking to politics and political campaigns, in such matters as the emotions aroused by various definitions and images of “freedom” (Lakoff 2006). Other heuristics are frames (Bateson 1972): we frame a situation in a particular way and interpret it accordingly.

An example of how these heuristics play on the ground is provided by Kenneth Dodge in an analysis of youth violence (2008). The popular media have portrayed violence in American youth as due to a few incorrigible “superpredators,” or to decline of old-time religion, or to amoral rational calculus, or to basic human evil, or to other metaphors that emphasize innate cussedness. All these lead to incarceration, or boot camps and special schools that inhibit rather than teach. Dodge advocates trying public health metaphors instead: Youth crime is like smoking, like chronic disease management, or, best of all, like heart disease. The risk factors for heart disease are overwhelmingly controllable: smoking, obesity, saturated fat consumption, and so on. Youths in the inner city get plenty of exposure to the worst possible conditions, models, metaphors, and so on, but little opportunity either to learn other lessons or to get anywhere by acting on them. If the only way to survive, let alone prosper, is to sell drugs, kids will do it. The best cure, Dodge finds on the basis of evidence, is early and ongoing moral teaching. Obviously, however, social and economic justice will in the long run be necessary to any cure.

Cultural Models and Agency

 Cultural models are abstractions. Individuals must form them and act on the basis of them.

 This is most clearly shown by the tendency of people to get them wrong, especially at first. Learners of a language make hash of the grammar. Young teenagers make “fashion statements” that bring tears to the eyes of the more sophisticated. Fledgling politicians learn the hard way what they can and can’t criticize.

 All this shapes the models. Normally, cultural ways are stable, and the young and green are ridiculed or ostracized until they conform. However, all models change over time, and this is precisely because they exist only as inferences within individuals’ heads. If enough people make a grammatical error, it becomes entrenched and becomes the new norm; the subjunctive mood has essentially disappeared from English within my own lifetime. Fashions obviously change must faster than grammar, and very often it is teenagers’ outrageous fads that do the changing. Politics changes even faster, because people consciously debate and negotiate the models, as pointed out by George Lakoff in his brilliant cognitive-linguistic riff, *Whose Freedom? The Battle over America’s Most Important Idea* (2006).

 Appropriate to this level of study is the class of models of behavior and knowledge that has recently given us actor-network theory and agent-based modeling. Basically, social science has recognized the fact that society and culture are emergent phenomena produced by the actions of individuals, rather than being some kind of essence or “thing” or frozen crystalline crust on humanity. Current models of human knowledge and action thus tend to begin with actors who occupy spaces in networks (Latour 2005, but the point has been well made ever since Dilthey’s work in the 19th century; Dilthey 1985). These individuals interact with each other, producing all manner of strange and complicated transactions and event sequences. Eventually, more and more frequent interaction with some people produces a group in which social rules and institutions come into being, and one has a society. That society’s members find they need to share a great deal of knowledge, and culture is born.

 This view of culture allows us to understand how it changes—individuals learn and share their learning—and why it tends to be distributed cognition, with different experts having different knowledge pools within the same community.

 Agent-based modeling involves computer simulation of individuals. These virtual individuals are programmed to act as much as possible like the real thing. They are then allowed to interact over time. A city’s traffic for a year can be modeled on a computer in an afternoon. The virtual individuals know traffic rules, slow down for accidents, talk illegally on cellphones, and so forth, and the resulting mess can give clues to real-world traffic managers. One has to build in realistic assumptions, though; I heard anecdotally of one simulation that failed because the planners did not take into account the tendency of people on the freeway to slow down to stare at an accident in the *opposite* lane of traffic. Not long after hearing this story, I actually saw an accident caused by this. Two looky-loos got so carried away slowing to stare at an accident in the opposite lane that one rear-ended the other.

Ideology?

 The concept of cultural models gives us a better fix on the idea of ideology. In general, that word refers to the public beliefs espoused by politicians and ordinary people. For Marxists, it is propagated by the elite; for others, it is generally shared. In any case, it may consist of hollow words with no meaningful content, as when Iran boasts of being a democracy. Or it may express a sincere commitment that may greatly overstate reality, as in America’s commitment to freedom, individualism, civil rights, and other matters that are often compromised in practice. But, in general, it expresses strategies for managing people and situations—cultural models for dealing with political problems.

 As such, it can be a collection of genuine rules for society and social interaction. Social codes, from the civil law to the basic tenets of most moral systems, are of this sort. Alternatively, it can be more like Aristotle’s idea of ethics: virtues that an individual should cultivate (Aristotle 1955). Here belong individualism, self-reliance, loyalty, and the like, which have social effects but are by nature individual traits. Many rules can be taken both ways: “Thou shalt not steal” is a social rule (property is secure; out-of-code taking of property is forbidden) but also implies that honesty is an individual virtue.

 Ideology, then, becomes the public projection or representation of cultural models, belief systems, and social institutions.

Case Study: Culture and Knowing What Is “Fun”

“Slavs…hold that the way to make life better is to add good things to it, whereas in the west we hold that the way to make life better is to take bad things away from it.” (West 1941:80.)

I always loved this passage from Rebecca West’s great book about Yugoslavia, *Black Lamb and Gray Falcon.*  But I assumed it was exaggerated until I participated in an international panel on alcohol and alcoholism in Zagreb in 1988. Half of us were Anglo-Americans. The other half was Yugoslavs (that was back before Yugoslavia broke up). All of us Americans gave papers on the grave problem of alcoholism and how we might control it. All the Yugoslavs gave papers on wine, women and song! They played some lovely field recordings of delightful folksongs about these pastimes.

Not only whether we enjoy, but also what we enjoy, tend to be defined by culture. For most people, there is continual and extreme tension between their personal wants and the demands of society. This is not "nature" vs. "nurture"; it's one part of nature-and-nurture vs. another part.

 Foodways are notoriously cultural; the Aztecs loved worms and insects, the British still often want their game "hung" until it decays, and the Germans love cheeses that are far gone even by French or English standards. I have mentioned David Buss’ cross-cultural study of feminine beauty. He found that only a preference for youth and symmetry (a mark of health) stood up cross-culturally and could be presumed innate (Buss 2003). But ideals of fatness, skin color, hair, makeup, personality and behavior, and everything else differed wildly from place to place, and even from generation to generation in the same place.

There are some cross-cultural similarities in music tastes, but anyone comparing Chinese, Maya, Mongol, and modern rock and rap musics may be pardoned for failing to notice these similarities. Sex is perhaps the most uniformly satisfying of pleasures, but a glance through any history of sexuality (Foucault 1990 is, of course, particularly noteworthy here) will reveal how much the enjoyment of even this pleasure has been culturally manipulated.

In short, fun is usually what our group *defines* as fun, not something innately satisfying to the human animal. People spend hours dressing for social events they dislike, and then pretend to enjoy the whole agenda. They work to share their families’ less interesting activities. By definition, mere conformity isn't fun; if it were fun, one would be doing it for its own sake, not because it's “in.” Yet, we tell ourselves we “really enjoy” the latest fad. Americans’ obsessive house-proud remodeling, redecorating, lawn care, and rebuilding is an extreme case. It is incredibly expensive, and most of the work involved is incredibly unpleasant. It produces results that are conformist at best and appalling at worst. It is usually done not for comfort or utility but as a sort of Calvinism: people feel good because they are “working” and hating it. It is also “costly signaling” that we are Good American Suburbanites. The money and effort that should be expended on the poor, or on world betterment, are expended on a monotonous green lawn and a hideous, offensive redo of the house. This “home” truth will earn me outraged screams from many readers! But consider in your hearts, dear readers, and also ask around your neighborhoods. Those who conform to such norms feel good only because they are enduring for society something they dislike so much.

The same goes for dismal movies and TV shows. I note that when I do not see a film (I am not much of a moviegoer) I quite frequently am the subject of genuine moral indignation: I am not keeping up, thus am out of the loop, and thus am antisocial—a foldbreaker. This is especially true if the film is less than great. People might watch a good film simply because it was good, but nobody would watch a typical Hollywood pot-boiler except to prove they are “with it.” Thus, watching a film that “everybody” sees but that nobody likes becomes a moral charge /1/.

Alas, as we have seen, human sociability guarantees that most of what we know is trivial nonsense about our fellows. Throughout recorded history, people have been fascinated also with “celebrities”: mass-media performers, sports stars, religious leaders, charismatic politicians. It often comes as a surprise to moderns to learn that the ancient Romans and Chinese were just as obsessed with actors and athletes as we are. But such was the case, at least for urbanites. And they were just as prone as we are to laugh at themselves for it.

This strange fascination with a wider or “virtual” community is one of the more interesting aspects of knowledge. One might think it was a fascination in one’s leaders or hierarchic superiors. However, the actual leaders of society—the politicians, the rich, the militarily powerful—rarely make it into *People* or *In Style* unless they are highly charismatic. The covers of those learned journals are dominated instead by individuals who are often total nonentities by reasonable standards—TV series stars, game show hosts, minor singers. (As I write, the lead headline on Yahoo! Online News [May 27, 2009]—displacing war, genocide, famine, and epidemic disease round the world—is “Victoria’s Secret Model Is Pregnant!”) Some are lionized *explicitly because* they are so ordinary and non-outstanding. Their admirers want to be able to identify with them. They are part of everyone’s daily social life, via the ever-present TV set.

Thus it comes to pass that the average world citizen today knows a very great deal more about the doings of pop singers than about disease, nutrition, and safety—let alone knowledge of nature and the cosmos.

In traditional societies, the same seems true, but there is a key difference: the famous are local leaders or active, enterprising individuals. This makes sense. It is presumably the original form of our love of “celebs.”

Another huge chunk of social knowledge consists of the “right things to do”: Greeting rituals, polite phrases, social gestures, everyday and every-holy-day religious observances, and the like. Yet another chunk consists of manipulations of the body: hair styling, clothes, and the rest. Traditional New Guinea highlanders are as obsessed as Americans with such matters, but there is the significant difference that in highland New Guinea it is the men that do the most self-decoration. Styles in body paint, plumes, and pig tusks matter (or used to matter) to men there as much as styles in hair and clothing do to women in New York. Most cultures are similar: either men or women, or both, spend up to several hours each day getting ready to appear in public.

Every culture has its fads and fashions, whose main purpose is to show that the individuals who know it are socially connected enough to know the latest. As soon as “everyone” knows it, the fad loses its value, and is dropped. And “everyone” may be a small group indeed, within some social circles. Among 12-year-olds, “everyone” is usually a friend network of as few as 4 or 5 people. Fads among teenagers, literature professors, and upwardly-mobile rich tend to be especially prone to appear and disappear with lightning speed. The value of this in social life is well known. On the other hand, it is yet another set of lore that displaces environmental and other knowledge.

All this social knowledge has a high priority level. Being socially ostracized is deadly to people in small-scale societies, and sometimes to the rest of us. We cannot ignore potential problems, or daily politeness, or recent events that impact our social place and security. In a small local community, this is all vitally important knowledge. In our world, it may not be, but we are still wired to be obsessed with it.

 We have probably reached an extreme in the modern United States, where we can leave the life-and-death stuff to the experts, but cannot commit social suicide by failing to keep up with the trivia. Conversely, my Maya friends seem singularly unconcerned about the media or about clothing and show. They are, however, as concerned with the local social scene as anyone else. Their villages, famously *tranquilo,* have as little politics as any towns on earth, but people manage to talk endlessly about what there is. In any case, traditional small-scale societies, with no need to learn everything about cars, computers, and movies, could devote their attention to plants and animals.

Normally, people conform with their social equals or imitate the elites. Rich people sometimes “rebel” by conforming to the norms of the poor for a while, but in a way that rubs in superiority. Marie Antoinette playing shepherdess did not shovel sheep manure. Counterculturals of the 1960s did not spend long in the hobo jungles they purported to idealize.

Endnote

/1/ On this topic I cannot resist inserting a story that is so prototypically Cantonese that my wonderful years in Hong Kong come back to me: A reporter in Canton was asking ordinary people on the stree to comment on “the latest celebrity scandal.” One man “famously commented… ‘I don’t give a shit, I’m just out buying soy sauce.’” This phrase was immediately picked up all over China, to the point that one now finds “among the possible answers to online polls, ‘I’m just buying soy sauce’” (Chao 2009:163). This matter-of-fact attitude about celebrities and everything else one is “supposed” to care about is quintessentially Cantonese. In America, by contrast, it would seem that buying food predisposes one to care about such nonsense, since the natural environment of gossip magazines is market check-out counters.

VII: What Culture Isn’t: A Middle Ground

Cultural Essentialism

Contrary to the old view of Leslie White (1949, 1959), there is no “culture” that somehow mystically instills itself into our minds and determines our thought. There is no cultural essence. White followed the earlier anthropologist A. L. Kroeber in thinking of culture as a “superorganic” phenomenon, which is debatable but not unreasonable. But White went further to see culture as a transcendent reality that somehow imposed itself on individuals.

The long-standing myth of Culture as a beautiful, frozen, crystalline crust goes back to the dawn of time, but its modern scholarly form comes from the writings of Herder and Hegel in the late 18th and early 19th century. It is part of a wider tradition of seeing humans and their societies as dominated by Big Ideas that go on almost forever with little change. This “German idealism” had a powerful influence on anthropology. Liberal neo-Kantians like Adolf Bastian, Franz Boas and Wilhelm Dilthey subscribed to a mild form of it, but the strong form—the idea of true dominance of minds by received Big Ideas—owes more to Nietzsche and his followers. Talcott Parsons and many other social scientists also embraced German idealism, making it orthodoxy in some sociological quarters. It is most visible in its most foolish aspects, such as Samuel Huntington’s overwrought claims about “clashes of civilizations” (1996). For Huntington, vast formless aggregations of ideas are somehow single things, and they—not people—“clash” with other arbitrary agglomerations!

 It isn’t even approximately true. Culture grows and changes constantly and rapidly, and most often at the grassroots level.

The superorganic view, and other cultural-essentialist views, depends on a belief in something close to telepathy. Sharers of a culture somehow mystically participate in total sharing of its essence—they have a secret, total knowledge denied to the rest of us. This position lies behind, for example, Edward Said’s strongly implied claim (Said 1978) that all Arabs share in a common Arab culture and that all outsiders are totally closed to it. For them to attempt comments on it was, to Said, inevitably racist and colonialist. (I may be overinterpreting him, but if Said did not mean quite that, plenty of his followers have said it explicitly, and for many cultures beside the Arab one.) Yet, the degree of sharing between an auto mechanic in Flint (a largely Arab-American city in Michigan), a Bedouin in Oman, and an international businessman in Beirut cannot really be that perfect. Does a Western-educated Levantine urbanite like Said share more with an illiterate Arab farmer in Iran than that farmer does to his next-door neighbor who speaks Farsi? I doubt it.

After field work in south China I shared about as much “Chinese culture” with many south Chinese fishermen as they did with Beijing high officials. This is *not* to say that I can share the personal experience of the Chinese fishermen—but neither could the Beijing officials. By the same token, the experiences of the Bedouin are not shared by Said or any other westernized urban Arab. Experience is personal, unteachable, and hard to understand from outside. And it is not culture. Culture is shared knowledge, not phenomenological experience.

Marvin Harris (1968), like Said, was wrong is claiming we cannot infer others’ thoughts, within or across cultures. Most people are almost supernaturally good at it—which explains culture, and also the widespread belief in telepathy. Yes, we can read others’ minds, but not by using a special sense. Mirror cells and brilliant inference do it.

A nice proof-by-contraries is afforded by Asperger’s Syndrome. People with this syndrome (often merged in an “autistic spectrum,” but that is probably too simple) have major problems inferring how others think and feel. Temple Grandin (2005) and Liane Holliday Willey (1999) have provided excellent personal narratives. As Grandin’s and Willey’s lives show, Asperger’s people are otherwise not only normal but often highly sensitive, intelligent, and aware. They can do fine alone, but have trouble in complex social and cultural contexts. They are Marvin Harris humans: smart but unable to psych out others. What should surprise us is not these individuals, but the almost supernatural ability of most humans to read fantastically subtle, remote, and obscure cues that enable them to see anger, sexiness, dissatisfaction, confusion, and a whole host of other emotional and cognitive states—*even in perfect strangers from other cultures*.

Moreover, most people can confidently assess the cause of the feeling. A husband can generally see immediately whether his wife is angry at him or at her boss, and can accurately calculate how much carry-over there will be if the boss is the target but some displacement of temper onto the husband (a “safe” target) is inevitable. A wife can generally read her husband’s mood without need of “talking about feelings.” Similarly, one can generally perceive that a total stranger from another culture is angry, or disturbed, or pleased. The inference is not nearly as accurate as one’s inference about one’s spouse, but it is accurate enough.

Conversely, things that are harder to infer and harder to test, like religious belief, hunting knowledge, and mechanical skills, are amazingly poorly shared even within the same family, let alone by Said and the Bedouin.

Even more misleading is the concept of “memes.” The meme was invented by Richard Dawkins (1976) and has been used by him (2006) and by others (Boyer 2001; Tremlin 2006) to explain religion. This explanation has been demolished by Scott Atran (2002). The meme is a hypothesized unit of learned information, comparable to and analogous to the gene. It is supposed to be a discrete, identifiable, and specifiable unit, passed on indefinitely in a social group, without change except by the equivalent of mutation. Memes can be organized into “memeplexes,” apparently considered more or less analgous to chromosomes, or perhaps to functional complexes of genes. Like White’s “culture,” memes propagate in spite of people. They somehow take on a life of their own, and pass from brain to brain. People do not decide to learn memes; memes happen to them. Dawkins had made some concession to reality by admitting that persuasiveness or believability may be a factor in the propagation of memes, but he believes this is an intrinsic property of the memes, rather than a matter of choice by human believers (see Dawkins 2006).

Memes do not exist. Nothing even remotely like them exists, by any normal standard of existence or proof. The field of “memetics” has been unable to isolate or define even one, or to characterize the meme in any way that could be observed and tested. Dawkins, arch-foe of supernaturals (Dawkins 2006), has created a purely supernatural entity.

This inability to find memes is to be expected. We know a great deal about learning, memory, and culture, and all of it runs directly contrary to the meme concept. At the neurological level, information is processed in the brain as broad fields or networks, not as points or chunks. Neuronal axons run all over the brain, carrying messages from center to center. Even so trivial a message as a brush of a rat’s whisker is represented all over the rat’s brain (Nicolelis and Ribeiro 2006). At a higher level, humans process any thought, conscious or unconscious, in many parts of the brain, and at every level it is connected to emotional and cognitive processing centers, guaranteeing a wide range of inputs (Damasio 1994; LeDoux 1996, 2002).

 Culture, as one would expect from a mental product, works the same way. Nothing very extensive and important—nothing beyond the level of “hello, how are you”—is learned or transmitted in discrete chunks that can be separated, isolated, and listed. The old “culture trait” concept in early anthropology died without issue, because research found traits could not be identified and isolated except by arbitrary anthropological fiat. They were useful for many types of analysis, but hopeless for understanding the actual mechanics of human culture. In reality, culturally learned data are incorporated into complex, interlocking systems. Every datum can be seen as the node of a network ramified in complex ways. Literally thousands of interpretive studies of symbol, metaphor, and “meaning” have shown how this is done (see Kronenfeld 1996, 2008a).

 People choose what to believe. Their choices involve both conscious choice and unconscious or preattentive information-processing biases (Ferreira et al 2006). There are no memes to propagate magically without deliberate choice.

If memes or the superorganic existed, the churches and sects of the world would not have to spend so much of their time and energy trying unsuccessfully to maintain orthodoxy and orthopraxy. In fact, even though people want desperately to conform to their culture’s standards, they always drift away from the orthodox path. Even those who try to maintain it inevitably and invariably change it by the very act of trying to shore it up. Suffice it to point out that Dawkins talks about church music as part of the memeplex; is he unaware of the range from Gregorian chant to Bach masses to gospel rock? If memes are mindless and near-invariant, why does church music change every decade, reflecting changes in the music and mood of the wider society? Why does every congregation develop its own mix of music?

 The analogy with genes broke down for many reasons. One is that there is vastly more information in culture than in the human genome’s mere 25,000-30,000 genes. Another is the fact that information in the brain is processed in networks, while genes are strung out in a linear fashion on the genome. The main difference, though, is that people are in control of the cultural learning process. They may learn many things when they are too young to know better, but even these things get reinterpreted with age. Serious religious doctrine is not one of those early-learned things. It requires some maturity of understanding.

 Continuities and orthodoxies do exist, but one must specify how they are maintained. Always, this involves explaining the wider cultural, social, economic, and political context that maintains them. They do not maintain themselves. Still less do they survive in isolation from the rest of culture. Memes are not even good metaphors, not even for the simplest learning.

Thus, members of a culture are members of various overlapping groups (Kronenfeld 2008b) and have varying degrees of participation in varying knowledge pools.

Adam Kuper (1999) has used the preceding insights to point out that the whole tradition of interpretation based on essentialization of culture is simply wrong. Strong esssentializers from Harris to Clifford Geertz are barking up the wrong tree. Kuper uses this to critique much of “multiculturalism” and Saidian cultural mysticism. If cultures really were closed, incommensurable cells rather than nodes in a vast open system, cross-cultural aid, communication, and tolerance would be impossible. Concepts like human rights, civil rights, and common humanity would be meaningless.

Joana Breitenbach and Pal Nyiri (2009) have also devoted a book to demolishing cultural essentialism and the idea of monolithic, closed culture worlds.

Scott Atran, as he very often does, says it best: “…ideas do not reproduce or replicate in minds in the same way that genes replicate in DNA. They do not generally spread from mind to mind by imitation. It is biologically prepared, culturally enhanced, richly structured minds that generate and transform recurrent convergent ideas from often fragmentary and highly variable input” (Atran 2007:446).

Culture and “Cultures”: The Question of Scale

 Anthropologists speak of “cultures,” meaning bodies of knowledge that are shared within societies. This leads to a rather loose, if useful, tendency to talk of “French culture,” “American culture,” “Chinese culture,” and so on, as if they were closed systems. They are not. They are not closed, and are not really systems—they are really just big bags of knowledge. Within them are genuine systems. A given culture always includes a kinship system, and invariably the terminology, roles, and usages of kinship are really a system within a society. It is hard to imagine it being anything else; how could your knowledge of what a “brother” is not be related inseparably to your knowledge of what a “sister,” a “father,” and a “mother” are? Similarly, cultures normally include taxonomic systems for plants and animals, highly systematized cultural models, and so on. But, for instance, the kinship system may have nothing whatever to do with the systematized knowledge of how to construct a proper house. It is notorious in anthropology that people may share a common language but not a common culture (most Americans and many Singaporeans are native English speakers). Commoner is sharing a single culture for all practical purposes, but not a common language; the Hupa, Karok, and Yurok, Native Americans of northwestern California, speak totally unrelated languages (with different kinship systems) but in every other way shared the same culture. Various groups in Turkey, anciently and today, have shared a great deal of material culture without sharing language.

 Cultural bodies of knowledge contrast at various scales. Does “French culture” include the Savoyards, Provencal, Bretons, and French Basques? For some purposes, yes; for others perhaps not. What about “Italian culture,” given the enormous differences between Venice, Sicily and Sardinia? My Chinese fisher friends in Hong Kong had their own highly distinctive culture, limited to the Cantonese fishery world, but it was a variant (admittedly a very marked one) of Cantonese culture, which in turn could be considered, for some purposes, a variant of Chinese culture.

 At an even higher level, there are those infamous contrasts of “western civilization” with “Confucian civilization” or whatever. In general, discourse on such abstractions is too vague to mean much, but there is some fire under the smoke. My fisher friends do quote Confucius and Mencius, and are linked thereby with Japanese and Vietnamese who share little ordinary everyday “culture” with them.

 Consider food, the easiest to see and study of cultural things. Wheat is the staple food not only throughout most of “western civilization” but also throughout central Asia, north China, and north India. Yeast-risen bread links all these realms except China (where it is very rare); the cultural model for making leavened wheat bread is very widespread, cutting across dozens of cultures. French influence spread with the “meter stick” loaf. One could get increasingly narrow, winding up with a particular family’s special pie or roll recipe.

On a similar issue of scale, Italian friends of mine have had a good laugh over the American concept of “Italian food,” let alone “Mediterranean food”—there is not much in common between Piedmontese and Neapolitan cooking, to say nothing of Italy vs. Morocco or Lebanon. To outsiders, “Mediterranean food” connotes more fish and vegetables, less sugar and animal fat—but it certainly is hard to define in any meaningful way.

 The best fit between foodways and “cultures” is Paul and Elisabeth Rozin’s idea of “flavor principle” (Rozin 1983). Ethnic groups usually define themselves by signature spices or flavorings: Chinese food by garlic, ginger, Chinese “wine,” soy sauce, and Chinese brown pepper; Italian food by oregano, tomatoes, olive oil, garlic…. I can already hear my friends saying “In Piemonte we hardly use any of that stuff.” But, in fact, this probably is the nearest to a handle on food culture.

 If that is the way with food, is there any hope of nailing down ideas, child-rearing practices, and the like to particular cultures? Yes, but only approximately, and only with full recognition of the inevitable sloppiness of the job.

 People obviously do not think much about scales and such when they are, as children, learning their culture. They learn what their group does; they do not learn at what level it contrasts with another group’s practice.

 Withal, nothing is more real than the importance of socially learned information, and it is bounded enough that one can speak of “Cantonese” or “French” or “Navaho” culture without doing violence to human experience. One must simply remember that one is dealing with a constantly changing body of knowledge, not with a frozen lump (Beals 1967).

Culture vs. Common Humanity

Reading *The Iliad* or *The Tale of Genji*, or China's great novel *The Story of the Stone*, we at first react with surprise at the cultural differences revealed. However, we soon get used to them, and then may be more surprised by the familiarity of the emotions and motives. Ancient Greeks and medieval Japanese loved, feared, hated, and schemed pretty much as we do today. Culture provided them with different *means* for communicating their emotions and satisfying their goals; the emotions and goals are startlingly familiar.

I have heard claims that the Greeks of Homer’s time were involved in an honor-and-shame system alien to the modern world. Rural Nebraska and Texas in my youth there, however, had essentially the same pattern of honor-through-fighting, and when I read the *Iliad* I found the system perfectly familiar. Similarly, Genji’s loves seem emotionally similar to the loves of a well-to-do young man of today.

By contrast, the material worlds of Ilion and of imperial Japan and China are almost inconceivably different from ours. Half of all babies died of disease. Life expectancy was around 30. Food was always scarce, and consisted mainly of grain staples with some meat or fish. Automobiles, TV and computers were unimaginable.

Evidently, science and medicine have changed our lives far more than philosophy and religion have. In fact, reading literature from *The Epic of Gilgamesh* to Foucault or from Genji to Martha Nussbaum, one wonders if philosophy, religion and ethics have really changed us at all.

All of us who have done much field work know that common humanity is real, and more basic than culture. Experience in family roles, in particular, make people what they are. A young mother with young children finds herself close personally to other young mothers, and able to relate to them as she does not to the old men. Conversely, now that I am a grandfather, I find myself closely bonded to other middle-aged male heads of families. I feel very much closer personally to my friends who are grandfathers in Maya villages in the Quintana Roo rainforest than to younger students from my own cultural background in my home university.

Cross-culturally popular literature is often the literature that is most closely tied to, and most deeply expressive of, the culture that creates it. More generic types of literature appeal far less across cultural lines. Greek tragedies, inseparably tied to Greek religion and urban culture, are now read worldwide, and regarded more highly than Greek religious poetry per se or Greek fictional prose or most other Greek literary forms. Chinese regulated verse, Shakespearean drama, and Russian novels are other examples.

The extreme case is the Japanese haiku. Nothing could be more utterly part of a culture’s unique emotional expression than haiku. They are tied to Japanese imagery of the seasons, to Japanese religion, and to hard-to-translate Japanese concepts such as *wabi, sabi,* and *shibui*. Yet they are wildly popular worldwide, and imitated by poets everywhere. They are even made into writing assignments for American schoolchildren, who produce them with style and (sometimes) delight.

What is *really* surprising is that none of the theoretically more “accessible” forms of Japanese literature comes close to this one in worldwide appeal. Japanese ballads, novels, and even films have not traveled as far or as widely as the most purely Japanese of literary forms!

All this rather dramatically disproves the claims of radical cultural difference in emotional experience. We can ignore claims of totally different emotions alleged to exist in remote lands (e.g. Harré 1986; Lutz 1988; see below). We can ignore the claims of lack of mother love or fatherly love among “savages” and other exotics (e.g. Hrdy 1998). These do not stand up under examination (Anderson 2007; Einarsdottir 2005). These travelers’ tales are oft-repeated, sometimes in anthropology texts, but they are not supported by evidence. Desperate circumstances can make mothers neglect or even kill their children. Sarah Hrdy (1998) provides rather highly colored accounts of some of the harsh behavior in question. But she (like some others) alleges—contra all her Darwinian common sense—that parental love is rare or culture-bound in humans. This is simply not the case, nor could it be the case in any world where Darwin has the truth. The point is not that parents are everywhere good, but that they care. Parents everywhere have tears to hide (Anderson 2007; Einarsdottir 2005).

Instead, we can and should use emotion to understand others, since knowledges and “truths” may often be extremely different in different cultures, but emotion provides real insight—even when its contexts and expression differ across cultures (Rosaldo 1989).

Sometimes it is quite consciously manipulated. “Emotional labor” occurs when service personnel—waitpersons, flight attendants, dental hygeinists and the like—must, as part of their job, put on a bright, cheery, friendly front, whatever anger or suffering they may really feel. In *The Managed Heart (*2003, original edition 1983), Arlie Hochschild reported on the training of flight attendants—they were “stewardesses” back in 1983. They had to be smiling, calm, somewhat motherly. They had to radiate caring. This was, of course, often difficult and stressful; anyone who has flown is all too familiar with the problems of screaming infants, drunken bullies, irate commuters missing connections, and so forth. Hochschild defined “emotional labor,” the requirements for service providers to appear to have—and, up to a point, actually to have—certain emotionalities. Of course, the phenomenon is not new; it is as old as service occupations. Study of it, however, is a recent and fascinating field (Lively 2006; Peterson 2006).

Some astonishing bits of continuity thus occur. Going back to *The Epic of Gilgamesh*, we find it based on the exploits of a highly cultured hero teamed with a hard-drinking, hard-loving wild-man sidekick. This pairing, and the stereotypes it brings to bear (such as the “wild man”; Bartra 1994), are strikingly similar to those in countless modern comic books and movies. Without necessarily buying into Jungian “archetypes,” we can still accept the fact that some images are compelling across cultural lines and across millennia.

Culture and Language

Basic to culture and to all models of it is language. Indeed, “a culture” is often equated with “speakers of a given language.” (Except when the language is spoken very widely by a number of disparate societies, as are English and Spanish.)

However, this has led to wild exaggerations of the importance of language. Some have even called for a “discourse-centered” study of culture (including many historians, such as Michel Foucault, and also linguistic anthropologists such as Joel Sherzer,1987). Long-continued research with Native Americans, from southeast Mexico to northern British Columbia, leads me to believe otherwise. Native Americans known to me do a great deal of their communicating nonverbally, and have a definite value on sparing words and saying only what is really important. So did many of the Southern and Midwestern Anglo-Americans by whom and among whom I was raised, and many of the Chinese fishermen I knew in Hong Kong. Stance, gesture, expression, significant postures, subtle smiles, and other nonverbal cues communicate a great deal. Moreover, Native Americans know that people learn much or most of what they learn by imitating practice.

Many a New Yorker or Californian Anglo will explain in enormous detail how to ride a bike, track a deer, or spot birds in trees. Native Americans rarely bother, being aware that words help marginally in the former case and are definitely contraindicated in the latter two if you are actually doing the thing in question. When you live by hunting, you learn to keep your mouth shut at critical times. This carries over into ordinary life. Hunters around the world thus find it expedient to talk less and demonstrate more.

The other way that equating “culture” and “language” is problematic is that it leads to merciless reifying of “French culture,” “Navaho culture,” “Japanese culture,” and so on. Anthropologists always fall into this trap. I too have been guilty of talking about “Chinese culture,” and so on, as if language were the only thing that mattered, and—much worse—as if every language defined a totally separate community with its own learning, knowledge, and tradition, totally closed from every other community. It is a useful shorthand, but only so long as the speaker and listener understand that language is not destiny.

*Cultural knowledge is not the same as the knowledge you get from your language community!* One most obvious example is tool use. I know how to use a hammer and a screwdriver, and so do probably most adults in the world today. This knowledge is far more widespread than any one “culture.” More interesting is the case of F=ma and similar equations and formulas. Every scientifically educated person in the world knows (or at least learned) that force equals mass times acceleration, but essentially no one else does. So here we have a bit of cultural knowledge that cuts right across languages. It is shared by scientifically educated Anglo-Americans, Japanese, Navaho, and so on, but they generally do not share it with most of their neighbors or family members. Truck drivers, airline pilots, bricklayers, fishermen, and every other occupational category of interest have their specialized cultures too, extending worldwide (or nearly so) and cutting right across language lines.

If those seem too minor or arcane, consider a devout American Catholic woman. She shares a vast range of extremely profound beliefs, experiences, and emotions with Catholic women in the Philippines, Nigeria, and Italy that she does not share with her non-Catholic coworkers and neighbors. Or consider young people: I have often been in situations where young people, including my children, were talking with other young people of very different countries and cultures about pop music and films. This allows instant friendship across the widest linguistic gaps. Such “cross-cultural” sharing of stories and of youth culture is not new and not a product of modern electronics; it goes back to very ancient sharing of myths and folktales.

Of course, one’s culture-of-language causes one to reinterpret such matters in a particular way. American Catholics are somewhat different from Philippine Catholics. But, by the same token, Catholic Anglo-Americans are somewhat different from Protestant Anglo-Americans.

Immigrants to America pick up such American institutions as Christmas (commercialism and all) in a few years. Even non-Christian ones soon learn what it’s all about, and often adopt it, with appropriate changes of religious iconography.

Some social scientists have recently claimed that America is not a melting pot, but a “salad bowl.” This is simply not the case. Some subcultures remain distinct for several reasons, but most immigrant cultures disappear into the Euro-American mainstream with lightning speed. When I was young, Italian-Americans were “not American” and were not even “white” (they were “swarthy” or “dusky”). Italian-Americans are now prototypically mainstream. More recent immigrant groups are assimilating even faster. Of the hundreds of second-generation Asian-American students I have taught, hardly a one was fluent in his or her “heritage” language, except for a few who studied it in college. The Mexican immigrants who so terrify certain sectors of “white America” by being “different” are similarly desperate to assimilate as fast as possible.

Moreover, multicultural individuals can teach us that personhood is more basic than culture. My young friend Alexandria has an Armenian father and a Latina mother, but, at one and a half years, is unaware of and uncaring about such things; she knows that she is 100% Alexandria, and her parents are her mommy and daddy, and that is what matters. Years later, she may care about “multiculturalism,” but her personality and personhood will be long fixed and established by then. We are our human selves, not exemplars of some mindless tradition.

Thus, we have “multicultural identities” (Hong et al. 2007). Hundreds of millions of people live perfectly happy with two, or even more, cultures (of language) in their backgrounds. One of my best students is an Armenian immigrant from Iran, who moves with perfect ease in Armenian, Persian and Anglo-American circles. Another is a Native American with Inuit, Anishinabe, and Navaho roots as well as Anglo-American ones. They are completely centered, whole, superbly integrated persons, all the stronger for having multicultural backgrounds.

Conversely, I have encountered many people who were caught between two cultures, never quite making it with either one, and deeply troubled and confused by it; many of these took to alcohol or drugs. However, in all cases known to me (and I have studied this situation professionally in several areas), these unfortunates had been subjected to prejudice, abuse, and traumatic circumstances when growing up. My experience is that bicultural and multicultural individuals who do not suffer such torments do better in this confusing world of ours than those raised in uniformity, just as speakers of several languages are clearly better educated and more successful on average than monolinguals. Many Americans labor under the incredible delusion that one can speak only one language well. They should talk to the Swiss, or the Dutch.

We are not defined by our culture-of-language; we are defined by *all* the cultural knowledge we have, including the worldwide and the local, and also by our individual interpretations and reinterpretations of all that.

Psychologists and philosophers can argue, and do argue, that individuals are closed worlds to each other, much more than cultures are—yet individuals most certainly do learn and share with each other. Cultural knowledge is different. It is, by definition, that which *is* shared. However diverse are people’s experiences of it, it manages to get around. We may all say different things, and in different accents, but when we are speaking English we use the same basic grammar, phonology, and core vocabulary. This means we almost all wind up being cross-cultural beings, with synthesized identities made up of elements from various backgrounds.

This is one of the main reasons why I reject the naïve views of cultural difference that underlie far too much of cultural psychology. The vast review volume *Handbook of Cultural Psychology* (Kitayama and Cohen 2007) virtually ignores this point, and does not deal at all with the general problem of cross-cutting cultural spheres. Yet this cross-cutting is essential to culture and knowledge in the world.

Common Cultural Humanity: Basic Thought Processes Drive Cultural Similarities

On a simpler level, we find that people everywhere classify things in the same way. Color terms translate very well across cultures. Brent Berlin and Paul Kay (1969) showed many years ago that all cultures have terms for light and dark; almost all also have a term for red. Then, with increasing cultural complexity (more or less), almost all cultures add terms for blue/green, then yellow. Some, but rather few, have basic terms for other colors. Commonest are cultures that have the basic five: white/light, black/dark, red, blue-and-green, and yellow. They name other colors by using adjectives to modify the basic five. Brown is “dark yellow” in Chinese and many other languages; pink is “light red”; and so on. Some also add minor, specialized color terms, very often flower or plant names: English “violet” as well as “pink”; French *mauve* “mallow”; Chinese *lan* “blue” from *lan* “indigo plant”; Spanish *rosado,* from *rosa,* which in turn is from Greek *rhodos* “red” or “rose.”

The reasons for the similarities lie in human optical physiology; those are the colors we see, thanks to eye chemistry and brain wiring (see Berlin and Kay 1969 for the story, though much has been added since). Blue and green are perceived through the same basic mechanism, hence the non-separation of these colors in most languages worldwide. The reasons for the differences between cultures are harder to find, but certainly have much to do with level of technology, especially dyeing (Berlin and Kay 1969). There is more to it, as pointed out by Lloyd (2007), but the story is one of local need and use, not of cultural incommensurability.

Chinese, Yucatec Maya, and many other languages I know from the field are five-term languages. Chinese, however, added several new words when the Chinese developed a dyeing technology; the terms for pure green, pure blue, and purple are all dye words. Maya has also felt a need for a “blue” word, and has borrowed Spanish *azul*, now thoroughly Mayanized as *aasul*. English—unusually rich in color words—seems always to have had separate words for brown, blue and green, but words like purple, violet, pink, and orange are recent enough in the language to have very clear origins: purple from the Latin name of the purple-dye mollusk, orange from the fruit (with influence from Latin *aurantium* “golden”). These words all entered English when the English people became extremely clothing-conscious in the Middle Ages and Renaissance.

This world similarity would make us think that all humans are siblings beneath the epidermis. Indeed they are, but the real situation is somewhat more complex (see Lloyd 2007, but he overstates the case). Many languages have color terms that imply succulence or freshness as well as, or even instead of, color (as “green” does in English; “green cheese” is white and a “green stick” can be brown). Terms can differ in dialects or idiolects (personal usages), and so on.

The same is true of simple spatial orientation. Everyone has right-left, cardinal directions, up/down, and so forth, but how these are culturally constructed can differ (Lloyd 2007) and can indeed be very complex. One of the great classics of anthropology, *Referential Practice* by William Hanks (1990), is a 600-page study of how to say “here” and “there” in Maya! Hanks takes the reader on a phenomenological tour of Maya houses, fields, starry skies, mountains, and indeed the whole world. I can testify that Maya deixis (literally “pointing out”: talking about space, location and direction) is indeed that complicated. The Maya are extremely conscious of space and meticulous about describing it, and because of this they have attached many cultural meanings to directions, distances, and so on. Locating self in space in a Maya village really does call on 600 fine-print pages’ worth of knowledge.

 Similar universals appear in terms like “bird,” “fish,” “snake,” “tree,” “vine,” and a few others (Berlin 1992). Doubters such as Geoffrey Lloyd (2007) and Roy Ellen (1993), have found exceptions, but so few that they show how solid the generalizations really are. We can admit they are right: culture does shape classification—it is not a mere reflex of biology. Birds almost everywhere include bats, and sometimes exclude nonflying birds like cassowaries. (The Germanic languages are *very* unusual in properly classing bats with furred animals: German *fledermaus*, Middle English *reremouse*, both meaning “flying mouse.”) Folk categories for fish always include things like whales (Burnett 2007) and cuttle-“fish,” and often “shellfish” in general; fish is a form-class, not an evolutionary grouping.

Conversely, it is interesting to see what terms are universally *lacking.* No culture (so far as I know) has a word for mammals, unless you count modern science as a culture. Cultures usually give separate names to ants, bees and wasps, though they are one very tight group genetically. And of course classes like “tree” and “vine” have no biological meaning; they are created purely because of use considerations—they supply wood and binding material respectively. (Actually, in English, “vine” is just a form of “wine,” the name serving for the grapevine, the drink, and eventually all similar plants.)

Culture and Psychological Generalizations

 However, it is also true that cultural differences are so profound that they imperil all generalizations about humans and human nature (see Kitayama and Cohen 2007, passim). Social scientists dread the “anthropological veto” (Cohen 2007): an anthropologist pointing out that a generalization does not apply because “my people don’t do that.”

Joseph Henrich and his collaborators (2009) discuss a truth emphasized by countless anthropologists before them: too much of our psychology and behavior science is based solely on studies of American (and sometimes European) undergraduates. Psychology was often defined in my student days as “the study of the white rat and the white undergraduate.” Things are not quite so extreme now, but Henrich et al. make a similar joke—they refer to the subjects of the field as WEIRD people, in which WEIRD stands for Western, Educated, Industrialized, Rich and Democratic. Most people in the world are not in that fortunate category. Henrich et al. speak of differences in generosity, sociability, dependence, and many other things. People also differ culturally in how they categorize things, judge good and evil, and perceive causes and causation.

Culture and Personality

“Culture and personality” has traditionally referred to the effect of culture on the general personality structure of the people carrying that culture. The term has been replaced by “cultural psychology” (Kitayama and Cohen 2007) but the content is rather similar. Much of this is stereotyping: “American” (that is, northern United States Anglo-American) culture is supposed to make people extraverted and individualistic, Chinese culture makes them social and conformist (Hsu 1953; Marks and Ames 1995), and so on.

The stereotype of socialized, interdependent, “collectivist” East Asians and individualist, independent westerners has recently received serious attention from psychologists like Michael Bond and colleagues (1986, for China) and Richard Nisbett (2003, for Japan), and it holds up very well indeed. Even Chinese extraverts are more controlled, rule-bound, and able to stay quiet than American ones. The *Handbook of Cultural Psychology* (Kitayama and Cohen 2007) is so devoted to it that there really is no other specific cultural issue addressed seriously and at length in this 900-page book. Even after factoring out self-stereotyping in the responses (Nisbett, for one, might have controlled it better), the classic view stands up well. Euro-Americans always stand out as even more individualistic than their parent populations in Europe. This is classically explained as the result of the frontier, and indeed that may explain some of it. There is now some interesting material on how childhood training creates the difference between the “individual” west and “interindividual” other societies (Greenfield et al. 2003).

Chinese culture is wedded to a broadly “Confucian” view. This view was old long before Confucius; he states clearly that he was merely trying to conserve it. In this view, people are units in hierarchic, nested systems: nuclear families within extended families, these within clans and lineages, these within states. People are supposed to defer to superiors, but superiors owe protection, help and respect to those below them in the system. Individualism is praised, not discouraged, but it is in the service of the group. (It may not be American-style individualism, but it is individualism nonetheless; see Brindley 2010.) Thus far most Chinese would agree, but, as we have seen, the variations are infinite.

The differences between individualist Americans and collectivist East Asians shows up, unsurprisingly, in brain scans; people react differently, Americans seeing items out of context and people out of social groups, East Asians seeing the context and the group (Azar 2010b).

One may wonder, however, if such broad characterizations are deeply useful. The “individualistic” world is all of west Europe and North America; the “collectivist” world is pretty much all the rest, especially Asia from India to Japan. Is it really very useful to talk about so broad a category? Possibly, if only to hold individualist westerners up to a mirror. But, for instance, even the most broad-brush generalizers admit that “Hispanics and Asians, both engaging in interdependent models, could not have been more different with respect to their emotions” (Mesquita and Leu 2007:752). The Hispanics, for instance, were happier and more positive than Anglo-Americans, while Asians were less happy and positive than the Anglos.

One is caught between the Scylla of westernizing everyone—seeing everyone as “economic man,” rational and isolated—and the rampant Orientalism (Said 1978) of seeing “the East” as mindlessly conformist and tradition-bound while “the West” is rational and enlightened. Both east and west have many-stranded, complex traditional systems that reveal both individualistic and collectivistic strains, and, moreover, rampant modernization has swept away much of tradition in both areas. On balance, the conventional view is correct, but it cannot be taken as an open-and-shut matter.

In a reversal of the usual stereotypes about who studies whom, a Japanese and Turkish team studied Anglo-Americans, English, and North Germans, finding the Americans notably more independent on most measures than the other two. In fact, the Germans were on some measures more collectivist than Japanese (Kitayama et al. 2009). In a further search of the literature, Kitayama’s group found many qualifications and exceptions—tests and measures that showed that East Asians could be independent and westerners hypersocial (Kitayama et al. 2007; Kitayama et al. 2009). The Japanese of Hokkaido, for instance, are quite individualistic (Kitayama et al. 2007:159). Like America, Hokkaido was a hard-scrabble frontier within recent times. Sailors like the Chinese fisherfolk of Hong Kong also tend to be individualistic (Anderson 2007).

The difference between Americans and Chinese is strongest if one contrasts working-class Americans with old-time middle-class Chinese. It is least pronounced if one compares suburban midwestern Americans (relatively collectivist as Americans go) with relatively individualist Chinese, such as modern young people or my fisherfolk friends.

In another study of West by East, a Korean anthropologist, Junehui Ahn (2010), provided an excellent and thorough ethnographic study of an American nursery school. It exemplified the collectivist and conformist American middle class very well. Ahn describes in meticulous detail the constant pressure to be “nice,” friendly, cooperative, sociable, and mannerly. Disruptive children were socialized in a fairly direct if gentle way, just as Asian children are. The key difference is that the American children were treated as independent agents who had their own emotions and made their own decisions, whereas in East Asia children are considered to be much less independent and wilful creatures by nature. Training them in sociability is more a natural process of treating them as parts of society in the first place, rather than treating them as independent agents who must be persuaded to be nice (as in the American school). Ahn uses this to argue that Americans are sociable, like Koreans, but fails to realize how new this sort of treatment of children is. When I was in kindergarten, we were raised and treated as competitive individuals, and were an anarchic lot.

The classic contrast between East and West stands up better when people are unhappy. Claire Ashton-Jones et al. (2009) found that negative affect leads to more social conformity—specifically in this exact area—while positive affect makes people more nonconformist; westerners are prone to get more sociable, East Asians more individualistic, and so on. Of course alcohol notoriously has a similar effect. This provides a whole new slant on culture and personality.

It also stands up better when people are thinking about it. Self-stereotyping is real. Daphna Oyserman and her coworkers have carried out several studies showing that keying people to think “collective” or “individual” is what matters, and suspect that culture is based on situated cognition; basically, it acts to key people to particular dispositions (Markus and Hamedani 2007, esp. p. 26; Oyserman et al. 2009 and references therein; see also Ariely 2009). This is too limited a view of culture, but it is accurate as far as it goes. Alter and Kwan (2009) even found that Euro-Americans keyed to Asian culture, by being shown yin-yang symbols and the like, acted more groupy—more like what they thought Asians were like.

Another interesting and related feature was brought out in a companion article (Lie et al. 2009): East Asians are much more aware of history and long time frames than Americans. Chinese (in China) and Euro-Canadians (in Canada) were asked to comment on various recent events. The Chinese all put them in long-term historical context, the Canadians saw them in terms of the here-and-now. The difference was quite striking, and seems to be part of the “social vs individualist” pattern. One awaits a study keying the Euro-Canadians with yin-yang symbols to see if it makes them more history-conscious.

All these matters have major implications for psychotherapy, as many of the cited authors point out. An excellent recent review by Paul Pederson (2010) suggests using Chinese ideas (among others) to inform therapy; we could certainly use a much better sense of collective welfare, social benefit, and human connectedness in our American psychotherapies. Pederson rather cautiously proposes more in the line of culturally appropriate therapies—each cultural group gets an appropriate therapy—but it is clear that he thinks many lessons from the east could very well go west (as well as vice versa). He quotes some excellent advice on how not to over-westernize therapeutic practice. However, he also quotes some Orientalist statements so extreme as to be positively embarrassing. From one source, for instance, comes the claim: “In eastern traditions of scholarship, what is valued most is not truth. In broad outline, the pursuit of objective knowledge is subordinate to the quest for spiritual interconnectedness” (Pederson 2010:843, quoting a Chinese source). With all due respects, this is a ridiculous quote. Edward Said is no doubt turning in his grave at the thought of it.

I have spoken above of the striking familiarity of the emotions in world literature. China’s great novel, *The Story of the Stone* (Cao and Gao 1973-1986), is probably the most thorough dissection of human emotions in all literature. Every emotion in it is instantly and totally recognizable to any sensitive reader. (Especially if the reader has a considerable spiritual side. The novel does not neglect religious and spiritual emotions in its comprehensive coverage.)

The extreme collectivism of the Chinese world comes through, but that collectivism is at a more social and cognitive level. It does not diminish the individualism, individual sensitivities, and constant conflicts of the characters. The difference between its world and the world of modern American life is in the daily reality: a Chinese household had (and usually still has) many people living together, such that being alone is rare, privacy in the American sense does not exist, and people have to accommodate their behavior and language to the certainty that they will be observed and monitored by all sorts of others with all sorts of agendas. This means that collectivist strategies must be devised and invoked, whatever the emotions are People learn to cope with this, and to preserve normal and human emotional lives. Many of the social rules for doing so have been described (see Anderson 1972, 2007). Basically, Chinese are as individual and individualist as anyone else, but *they have had to learn to defer to the common good, almost all the time*. They learn from birth that their needs and will are real and important, but have to be subject to needs and wills of everyone else in the house and neighborhood. From simple politeness to giving up personal desires to real self-sacrifice, they always have to take others into account.

The individualism of Anglo-Americans is certainly real enough. It is also of great antiquity. It was clearly evident in early Celtic and Anglo-Saxon society, which stressed individuals in battle and other heroic situations. Caesar commented on it, and correctly spotted it as the fatal flaw in Celtic fighting. He could match his disciplined legions against more numerous and hardier, but incorrigibly individualist, fighters. The legions would always win. Somewhat later, it is clear in epics such as *The Tain* or *Beowulf,* as in much literature since. Just as Chinese collectivism comes (wholly or at least in large part) from coresidence in large families, western individualism comes from a world of isolated farms and frequently isolated individuals.

Western individualism received support from reading the Prophets in the Bible. They stood out as upholders of divine truth, often against strong opposition from the power structure of the time. This has served as a model for European dissidents, from the Middle Ages until today.

However, the extreme conformity and the power of tradition in Britain and America cannot be denied (see above, in connection with Fromm and Riesman on social conformity). Foodways in England and the midwestern United States, for instance, are incredibly conservative and resistant to change—in dramatic contrast to those of China.

Even individualism can be conformist. Readers who remember the Sixties (in spite of the old joke “if you remember the sixties, you weren’t there”) will recall countless sardonic and all too accurate comments on the faddism and imitativeness of the “sixties rebels.” Less aged readers will be used to the endlessly repeated, threadbare, never-varying slogans and arguments of the “libertarians” and “rugged individualists.” No one is more conformist than a person who talks up individualism. (Those Celtic fighters didn’t talk about it—they just did it.)

So, just as Chinese are much more individualist than they talk, Americans are much less individualist than they talk. The Chinese behave more collectively because they need to. Americans genuinely do behave more individualistically, but largely beause they need to or at least can get away with it. The differences are real, but not far—on either side—from a human average: the individual who is highly socialized and reacts in response to society, but is thoroughly conscious of being an individual nonetheless. (Paul Sillitoe [2010] gives an exhaustive account of controversies around this point in *From Land to Mouth*.)

 American individualism and self-reliance (Bellah et al. 1996; Warner 1953) takes many forms. The liberal position tolerates government help but militantly defends freedom of speech. Conservatives prefer a form that eliminates government help—individuals are “free” to stand or fall—but they typically idealize loyalty and tolerate varying degrees of censorship, and even torture and extrajudicial detention. American conservatives—at least traditional ones—value loyalty, authority, and religious purity or puritanism as well as fairness and utilitarian caring (Graham et al. 2009). Religious right-wingers often argue for extreme freedom in many aspects of behavior, such as business or gun ownership, but expect the government to enforce rigid dogma and conformity in matters of religion and sexuality. Liberals hold the opposite views.

Particularly important are the exceptions deemed necessary within canonical subcultural models of how to govern. Liberals value fairness and avoidance of harm, but often give short shrift to authority, purity, and even loyalty (as every college administrator knows far too well). Each group recognizes that there is an exception here, but sees it as necessary and basic for the wider ideal of liberty. Debates on the matter can be heard from the halls of academe to rural bars. Probably every American understands “freedom” and “self-reliance” somewhat differently from every other American (Lakoff 2006).

The results have worldwide impact, given the importance of the United States on the world scene. The survival of peasants in Darfur and slum-dwellers in Mumbai may depend on the shifting currents of liberal, moderate, or conservative interpretations of America’s distinctive value.

 However, this is only the beginning of what has become a very confusing situation. Libertarians have a very marked subculture with its own institutes and magazines. They vote conservative but have a liberal values system (Graham et al. 2009). Social conservatives (especially the so-called “fundamentalists” of various religions) may value only authority and purity. The striking difference in sexual attitudes between religious extremists and religious moderates is a worldwide phenomenon that has never been explained and is consequently grounds for incredible myth-making in the popular media.

In my lifetime, the defining beliefs of “liberals” and “conservatives” have changed fairly sharply. Conservatives used to oppose big government; today they still claim to, but the size and expense of government and the federal deficit all enormously increased under Reagan and both Bushes, while Carter and Clinton balanced the budget. Conservatives used to conserve—the Democrats were the party of big development, the Republicans were more environmentalist. This has reversed. Conservatives used to be more broadly favorable toward population control and even abortion than most liberals. A consistent thinker would have had to shift parties several times in my lifetime. It seems that media stereotypes define “conservative” and “liberal” positions, and have little consistency over the decades.

Rampant individualism, conformist collectivism, communal mutual aid, selective individualism, and many mixtures all go back to prehuman times. Individualism and collectivism developed through religious communalism, frontier experiences, organization for war or peace, and the needs of growing societies. They eventually fed into the countless forms of democracy, socialism, and welfare-statism. Another possibility, fascism, stems from normal human hierarchy; developed through what the Greeks labeled as tyranny, and then through the autocracies of the 17th century (see Perry Anderson’s great work, 1974). It remains with us.

In short, culture does affect personality, but it affects more the ways we *talk* about personality.

Personality and Culture

Let us consider, then, the opposite question, raised by Kimberly Hedrick (email of April 27, 2007): how do differences in personality affect individual understandings of cultural models and rules? Religious dogma means one thing to an extremely open person, something quite different to a closed-minded one. Religious rules such as avoiding pork or always kneeling in church are taken very differently by a conscientious person than by one low on that scale. A religious leader who happens to be open and conscientious may have a very different effect on society from one who is rigid and irresponsible.

American regional cultures vary in personality. British psychologist Jason Rentfrow found in a large-scale study (using the Big Five factors described above) that people of the northeastern United States are somewhat higher in neuroticism and openness than the American average, but lower in agreeableness; Midwesterners and Southerners were more extraverted, conscientious and agreeable; the Great Plains was also an extraverted land (Holden 2008). These differences are exaggerated in regional stereotypes. Southern hospitality, Midwestern soberness, and Northeastern tension are not just imaginary. However, the agreeable South is the home of the Ku Klux Klan and religious bigotry of all kinds, and of the exaggerated “honor” code that makes it necessary to defend one’s honor by violence in all challenge situations (Baumeister 2005). The (slightly) “neurotic” and “disagreeable” Northeast is the home of most of the socially conscious endeavors in American history, from universal public education to rehabilitation for the mentally ill. I suppose a southerner would say “well, they *need* it.” But in fact it may be truer that the South needs the niceness. As Dov Cohen (2007) points out (citing Elizabeth Colson for the !Kung of Africa, among other sources) people with a high rate of violence have to be as nice as possible to each other to prevent things turning ugly.

The violent South introduces another point: not only Southerners and many Mediterranean groups, but many low-status groups, especially poor and marginal groups, resort to violence to preserve their “honor.” The rich may (or may not) have too much to lose to be confrontational, but the poor are resentful of their low situation, envious of the powerful, and often contentious among themselves (Henry 2009). Worldwide, violence tracks marginal status, especially in societies that are rather stagnant economically and socially. This is true of the South, and indeed violence reduces as the South develops. It is more true of the Middle East, where extreme violence characterizes the marginal, displaced, and downtrodden groups.

The relationship of culture, personality, and situation in the case of “honor” has been studied by two prominent cultural psychologists, Angela Leung and Dov Cohen (2011). They compared Anglo-American northerners (that would be “Yankees” to some of us), Anglo-American southerners, Asian-Americans, and Latinos—all citizens of the United States and more or less Americanized culturally. The Yankees were thought to represent a “dignity” culture, where individuals have human dignity as a birthright and cannot lose it.

They take “dignity” cultures to be typically rather egalitarian and peaceable, with good order. Southerners and Latinos have somewhat different forms of an “honor” culture, in which honor is normal to humans but can be lost through failure to defend oneself, one’s loved ones, and one’s social standing. They note the anthropological point that honor cultures nest in areas with long traditions of local independence and high violence, outside the control of the state. The Asian-Americans were thought to represent a “face” culture-type, in which social standing depends heavily on appearances and on conformity to proper behavior. “Face” cultures are thought to be hierarchical and based on personal regulation of behavior before superiors. (I partly disagree; I find that face nests more naturally in cultures where crowding is extreme and privacy nonexistent. It seems more an adaptation to that than to hierarchy. Most hierarchic cultures seem more “honor”-driven, even when peaceable.) They recognize that these cultural labels are Weberian “ideal types” (2011:511), not to be taken as anything more than that—but they do find effects.

Leung and Cohen created a number of situations in which basic cultural theories of human dignity, honor, and face would lead to different behaviors, and found that, indeed, the predicted different behaviors occurred. Individuals within the groups varied in how much this was true. For one example, some of the Yankees rejected the idea of basic human dignity, and cheated in experimental situations in which the dignity-concerned Yankees never dreamed of doing such a thing. This led the investigators to a “culture-personality-situation” model, in which culture gives fundamental rules of the game, individual stable personality orientation determines how much one will play by those rules, and situations determine which rules actually apply. As they put it: “The effect of culture is huge; it is just that people are not passive recipients of their culture, and so the effects are not uniform” (Leung and Cohen 2011:523).

So culture may not affect basic personality much, but it does affect the behaviors that express that personality. Conversely, personality does affect the internal representations of culture. Japanese culture as seen by the mystical Buddhist poet Ryōkan (1996) is far different from Japanese culture as seen by Osaka businessmen, who strongly reminded Robert Bellah of Max Weber’s descriptions of Protestants (Bellah 1957). Highly emotion-charged behavior can break either way: it is so individual, and so dependent on personality, that cultures everywhere seek to regulate it particularly strongly. Hence, grief rituals at funerals, ritualized joy at weddings, and strict rules for fighting are imposed everywhere—with varying results.

In any cultural group, one finds a continuum, with psychopaths at one tail, saints at the other, and the good-but-imperfect in the middle. Cultures vary too, and cover the same range of possibilities. The Waorani of South America, and the Hatfields and McCoys of the Appalachians, almost exterminated themselves by feuding and general violence. The Semai of Malaysia have no aggression and live without violence or apparent anger. (On these extremes, see Robarchek 1989; Robarchek and Robarchek 1997.) Thus, culture and economy can push the bell curve toward the psychopath end or toward the saintly one. The resulting curves can be so different that even the most violent Semai is much more irenic than even the most peaceable traditional Waorani.

As Jilek (1981) and others have shown, the worst impact of culture clash is felt by people from small-scale, egalitarian cultures. They never had to learn to deal with prejudice and oppression by vast, faceless societies, and when they are exposed to the full force of those evils, alcoholism and despair often set in. At the other extreme are religious minorities in complex civilizations. They cope better, in direct proportion to how much their religion gives them a sense of strength, importance, and meaning. They have had to learn to deal with vicious hatred while somehow preserving self-respect and independence. In such groups, community life is active, and people are involved in many complex personal relationships. The Jews and Parsis are examples. Among other things, they often learn to be good arguers; they have to defend their minority views against a rejecting majority.

 “Agency” is a deceptively simple term for a concept that is actually enormously complex. (Kockelman 2007 provides a fine Peircean analysis of the term.) Individual agency may lead one to follow faithfully one’s cultural rules, to follow them in a certain way, to follow them at some times and not others, or to reject them out of hand. Agency can make one think one thing and do another, or to be extraverted in one situation (say, an office party) and introverted in another (such as the dentist’s waiting room). Agency and its translation into practice is bound to confound any simplistic claims for the overriding importance of culture, or even of basic personality. All of us are somewhat free agents, and can rationally or irrationally decide to do it all differently.

Theorizing Emotions

The most extreme positions on cultural difference are taken by those who argue for the cultural construction of emotions, such as Catherine Lutz (1988), Rom Harré (1986), and Anna Wierzbicka (1999). They argue, or appear to argue, that people in different cultures have emotions so different that they are incomprehensible. Wierzbicka, who is Polish, has lived in Anglophone countries long enough to realize that the emotional worlds of Poles and Anglophones are not totally closed, but she insists that Poles really are different—to say nothing of New Guineans and Australian aborigines.

 Some of this literature was a reaction to earlier cavalier explanations of “other” cultures in “our” terms—summed up in the intoductory-text title *Man Makes Sense* (Hammel and Simmons 1970; note the gendering!). A generation of cultural anthropologists worked to make other cultures seem “reasonable.” Even cannibals and magicians were really just rational calorie-counters, economic maximizers, calculators of return on investment, and hard-headed junior scientists (see e.g. Harris 1968). Marshall Sahlins began in this mode, broke sharply with it, and refuted it in his work *Culture and Practical Reason* (1976). Sahlins proved that a great deal of the content of a given culture, especially the content that makes it unique or distinctive, cannot be explained by such easy, superficial rationalizing.

The cultural constructionist position goes to the opposite extreme. Catherine Lutz (1995), for instance, has claimed that the cultural construction of "love" in America and *fago* in Ifaluk are completely separate emotions, culture-bound and culturally constructed, incomprehensible to people from a different culture. Her idea of “American love” is erotic love. *Fago* is an extension of the mutual love of parent and child: nurturant, caring, concerned, rather than passionate and sex-charged. Lutz maintains emotions are not translatable across cultures, but manages to provide a brilliantly clear, evocative, and compelling description of *fago*. Reading her accounts, I can summon up the feeling without the slightest difficulty. I admit I am helped by my field work in Tahiti, where the concept of *arofa* appears to be about the same as *fago*.

In so far as *fago* is not quite comprehensible to me, Lutz' concept of (“American”) "love" is not quite comprehensible either. Her American “love” is heavily romantic and erotic. My personal sense of "love," even the erotic sort, is closer to *fago* than to Lutz’ take on American eroticism. One may dare to suggest that Lutz is considerably overdrawing the emotions so as to make her point. Some other papers in the same edited volume (Marks and Ames 1995) seem similarly prone to overdifferentiate, and I am similarly skeptical of them. I am also skeptical of such works as Geoffrey Lloyd’s *Cognitive Variations* (2007), which talks about all manner of radical differences in English, ancient Greek, and Chinese knowledge, emotion, and personal style. It is more moderate than Lutz’s work, but still goes far beyond real ethnographic experience.

However, anyone who dismisses culture as wholly irrelevant to emotion (and vice versa) is equally easily refuted. Lutz, Wierzbicka, Harré, and Lloyd are talking about something real, though it is much less than they claim. Cultures do have rules for talking about and displaying behavior, and even for regulating actual feelings themselves (Rosaldo 1984; and recall those flight attendants, above). Culture, also, can tell us to experience an emotion at a particular time. Semai are taught to fear butterflies (Alan Fix, Clayton Robarchek, personal communication). Californians usually learn to fear rattlesnakes more than cars, in spite of the fact that cars kill about 50,000 Americans a year, while rattlesnakes kill one or two at most.

Facial expressions are basically the same everywhere, as noted above, and people are amazingly good at reading each other’s personalities across cultures by simply looking at faces. However, culture can make these interpretations wrong. Anglo-American students and students in Japan correctly saw which politicians from the other’s country were warm and which were cold and power-oriented, but they totally mispredicted who would succeed politically, because Anglos (at least these Anglos) prefer powerful politicians and Japanese apparently prefer ones that show warmth. The Anglo-American students thus mispredicted that the Japanese politicians that looked cold and strong would win, and the Japanese mispredicted in the opposite direction (Rule et al. 2010).

We know, also, how fast culture can change. When I was young, even the barest mention of sex would shame “proper” Anglo-Americans into blushing scarlet. This is literally inconceivable to my children; they cannot imagine such a world. Thanks to this and countless other differences, my children had at least as hard a time communicating with their grandparents as with Chinese and Maya friends in the field.

Yet, the radical difference of culture from culture is belied by the ease with which bicultural individuals operate in the real world. Most of my students at the University of California, Riverside, are first or second generation immigrants, and they have no more trouble than the tenth-generation Anglo-Americans in getting themselves together.

Of course they are all desperate to “find themselves” and “resolve their identity,” like all students. If there is one cultural universal, it is the desperate need for people to “find themselves” when they reach 17 or 18. By 20 or so, most people realize they already are inside themselves and stuck there, and they go back to work. What we do *not* see is the two (or more) cultures separating out like oil and water. These bicultural students shift languages, body postures, and so on without thinking about it.

 Most of the work referenced above routinely confuses *talking about* emotions, *deploying* emotions, *managing* emotions (on which see Hochschild 2003), and actually *having* the basic emotions themselves. It is fairly clear that Lutz and Lloyd, in particular, are typical academics, believing that rhetoric is reality. The way people talk about something is what matters to academics. Yet we all know that labeling an emotion is not the same as having one. Every day, we feel emotions and moods that are hard, or even impossible, to describe, from mystical visions to ordinary mixed-up reactions to daily cares.

Arguing that the way people talk is actually the way they feel is naïve. Many of us males of my generation were taught never to talk about our feelings at all. Lloyd discusses the stoics of ancient Greece, who started this rather dysfunctional idea and whose heirs we males are today. Yet he goes on as if the stoics really did quiet their emotions. They tried, but they often admitted a certain lack of success. We modern males know all too much about that. Similarly, Christ taught us to love our enemies and turn the other cheek. A glance at modern Christian politics…enough said.

Conversely, however, we may talk ourselves into having emotions we *can* talk about. To talk about a relationship is often to whip it up in oneself, and “managing the heart” (Hochschild 2003) often works. People from honor cultures, in particular, develop impressive skills at whipping themselves up into serious anger or fury when they feel their honor is at stake. People from “face” cultures can commit suicide, or even decline and die from sheer inanition, if they feel they have lost face. Culture kills.

We share all our basic emotions with dogs, cats and mice. There is no purely cultural emotion recorded. On the other hand, as noted above, we do *not* share with dogs the subtle refinements that Proust felt when consuming that madeleine. Human brains are exceedingly complex both cognitively and emotionally, and much of this complexity is deployed in the service of socializing and managing emotion through interaction. We learn when and how to cry, laugh, love, hate, and so on. We learn how to fake it, how to dissemble, how to combine apparently opposite emotions. *Odi et amo*, “I hate and I love,” said Catullus. Almost everyone knows from experience what he meant. We peform astonishing feats of self-control and of talking oneself into feeling. Hochschild’s classic discussion (2003) can be supplemented with every issue of any major psychology journal today. But this goes only so far. We can damp down emotions temporarily, translate them into related emotions (fear into anger, most often), argue ourselves out of them over time (or just sleep on it), but we cannot spontaneously invent an emotion. Nor can we feel happiness and affection for someone who socks our kids.

The Meat: Complexity of “Culture-Personality-Situation” in the real world

 In my early retirement years, I managed to stay sane by advising (formally or informally) a number of brilliant graduate students doing doctoral research on environmental conflicts.

 These conflicts were all of a pattern. Individuals sharing the same culture, and residing together or near each other in local communities, came into sharp and sometimes violent conflict over how to deal with resources. These were not simple develop-versus-preserve cases, either; they were multi-sided.

Monica Argandoña (research in progress) studied the conflicts over land use in the eastern deserts of southern California. Mining interests want to mine. Developers want to develop. Off-road vehicle users want to drive vehicles over the landscape, but are sharply divided between those who use off-road vehicles as a way to get out and see the natural beauty versus those who want to make as much noise, tear up as much terrain, and go as fast as possible. Environmentalists are even more split: Preservationists want to keep these deserts untouched, but green energy developers want to cover the desert with solar cells, thus eliminating the need for oil from the American picture.

Eunice Blavascunas (2008) studied the last old-growth forest and marsh environment in Poland, a political football for preservationists, ecological restoration advocates, tourist developers, local small farmers, and large-scale development interests. Each group had a particular vision of what should be done, and the five visions were mutually exclusive.

Sara Jo Breslow (2011) studied the Skagit River delta in Washington state, in which a conflict had arisen over land use. Farmers, commercial fishermen, sport fishermen, electric power generators (who had dams on the river), environmentalists, suburban developers, and Native American tribes all had interests here, and each group wished to maximize its advantage. All these people except the Native Americans shared a common Northwest Anglo-American culture, but that made the conflict worse, not better—the most visible culture trait they shared was good old American individualism and stubbornness! Moreover, they were all consummate experts at deploying both facts and values in ways that made their own groups look particularly good. Farmers emphasized their ties to the land and their concern for it. Native Americans emphasized their spiritual groundedness and relationship with the fish. Environmentalists pleaded the wider good—the state, the world, anything. And so it went. Each had a full narrative, with core values made to sound as general and American as possible, and with facts selected to support the argument. This latter process involved outrageous special pleading. Only the facts that favored one’s own side were selected, and now and then some *very* shaky claims were deployed.

Julie Brugger (2009) studied the clash over the Escalante-Grand Staircase national Monument in southern Utah. This monument was unilaterally declared by Bill Clinton in 2000, presumably to help Al Gore’s campaign for president. No consultation took place with local people or even with Utah’s congressional representatives. Alas, it was a rare bit of political ineptness for Clinton; this arbitrary and dictatorial-seeming action outraged even environmentalists, and unified virtually all Utahans against Clinton and Gore. However, local preservationists and tourist developers did like the idea, and the result was a sharply split community. Government workers sent to administer the monument found themselves in the middle, distrusted and often hated by all sides; burnout and resignation rates were high.

Kimberly Hedrick (2007) and Monica Argandoña (again, unpublished) studied ranchers in eastern California. Here the conflicts were mercifully less severe, but the different views and models of ranchers, government biologists, and nonranching locals were very different indeed; this case has been noted above.

In all cases, the rational self-interest of each faction is obvious, but emotion ran well beyond rationality. This was particularly true in the Utah case, where the locals who had been shut out of all the decision processes were deeply hurt and, for the most part, deeply angry.

Nobody was about to give an inch. Interpreting these cases purely through culture-as-sharing was of course impossible. But interpreting them purely in economic terms was also impossible. Especially for the Anglo-Americans, but also for the Poles, cultural values on independence, self-reliance, and local self-determination made ecomically rational compromise impossible. Democracy and fairness were also core values for them, and were deployed strategically in making their cases. Democracy was, not surprisingly, particularly salient to the local communities in Utah.

In all these cases, too, the conflict had a history. The desert had seen a long conflict between off-roaders and environmentalists, and a longer one between developers and all the recreation interests. The Skagit Delta tribes were painfully aware of two centuries of dispossession. The Utah local communities had been fighting government regulations of one sort or another since their Mormon ancestors fled the central United States in 1846 to avoid persecution.

People’s wants are culturally structured and often culturally determined. Everyone wants a living, almost everyone loves their land and is attached to it, and everyone wants a warm social life. But the Native Americans’ high value on fish, the non-desert environmentalists’ value on solar power, and the Poles’ valuation of their last bit of old-growth forest were local and contingent. Most interesting of all was the high value on farms, which cut right across culture to link the Skagit Delta farmers, the Utah ranchers, and the Polish peasants in one great passionate commitment.

Party politics often turned on such matters, and led to much wider gaps between the groups, as those who sought solace from the Democrats vied with those who preferred Republicans. One can easily see how much worse things could have gotten if major ethnic and religious divides had been involved. (The Native Americans of the Skagit are a relatively small and calm set.)

This brings us back to Leung and Cohen’s culture-personality-situation model, but here we are more concerned with subcultures (farmers, environmentalists, fishers…), and with communities of rational self-interest—not to speak of good old-fashioned selfish greed. What mattered more than “culture” in the vast abstract sense was the working knowledge of particular reference groups, and the wider and wider circles of sociocultural identification in which they found themselves.

Political structure mattered a great deal (as Brugger points out). America is a participatory democracy, with many checks and balances, making paralysis of the system fairly easy in a multisided conflict but making resolution potentially easy if all can actually talk. Poland is now also a participatory democracy, but it has a very different heritage: kingship and empire, Catholic Church domination, and later communist statism. Political structure and institutions set the frameworks for action, but individuals play these for their own reasons, rather than simply moving within their walls (Bourdieu 1977).

One can envision different situations causing people to shift their loyalties. This is particularly clear in Monica Argandoña’s research, where previous allies found themselves on opposite sides: off-road vehicle riders split into two factions, and environmentalists who had previously worked closely together became downright enemies. On the other hand, in this case, a compromise was eventually effected, partly because of this very fact; sides were not as clear-cut as in the other cases. The other stories remain unresolved, and there is real danger in the Skagit case that the whole delta and everyone’s interests will be lost.

It would seem, then, that what matters in this world is not “culture” the great overarching blob, nor “personality” made up of very general traits like “agreeableness,” nor “situations” bare of context. What matters is how a particular interest group’s subculture interacts with strong personal emotional dispositions, in a situation that has a very specific and salient history and context.

In these cases, rational self-interest created certain concerns. When these were shared, it led to uniting people who shared their concerns, making them act as groups. But then emotion took over, as group identification led to increasing failure to compromise, and an increasing tendency to get more emotional and less rational in the face of increasing need for exactly the opposite. Such is politics. Often, the common good is trashed because factions get so deeply involved in hurting each other that they sacrifice the common good simply to score points. America’s Founding Fathers warned of this repeatedly, but could not prevent it happening, as recent history shows too well.

In the case of “personality,” for instance, what often mattered was ability and motivation to lead—a combination of courage, drive, and sensitivity about when to stand firm and when to compromise. These are things not well measured by the Big Five tests. The superb ethnography of these studies revealed several examples of individuals shaping conflicts simply by force of character. Many of us were taught that individual differences are too trivial to shape history. History, our elders believed, is made by vast inchoate forces. Yet the world of the 20th century was definitively shaped by the individual personalities of Hitler, Mao Zidong, Gandhi, Martin Luther King.

Much of our now-untenable belief in vast blind forces is due to ignoring individuals who made major differences. Few know the name of James Grant. Yet, while he was head of UNICEF in the 1980s, he raised the percentage of children worldwide who got their “shots” from 25% to 75%, thus saving tens of millions of young lives. (And this without even sending population growth through the roof. When a family knew a child would survive, they stopped having two more “just in case.”)

 So, anthropologists and sociologists desperately need to include individuals and their differences, and see how culture plays in different minds. Economists desperately need to realize that culture is real, and distorts economistic rationality. Psychologists desperately need to realize that culture is real, but is a set of strategies, not some sort of pervasive Thing In Itself that drops into personality like a water balloon.

We need a new theory here. That theory will have to start by taking into account the relative roles of common humanity (whether “genetic” or “Darwinian” or not), culture, and personality. Common humanity was overwhelmingly important. Intuition, confirmed in my case by extensive experience in many countries, is enough to tell us that people everywhere are going to have conflicts over resources; that these will be more emotional when they concern land and nature; and that they will rapidly spin out of control into stubbornness, meanness, and eventually real hatred to the extent that actual *groups* form around the issues. Group identification is to humans what water is to fish. Water is not only the fishes’ whole environment; it also makes up 90% of their bodies. Group rivalry and group hate are inevitable and universal consequences.

 Culture, however, is far from a trivial issue. It leads to the Native Americans’ concern for fish and indifference to farms, and the Anglo settlers’ opposite position. It leads to the whole idea of “environmentalism,” a concept unknown in most of the world till recently. It leads to the existence of off-road vehicles, their fan clubs, and the differences from club to club. It leads to enormous differences in outlook and in interpretation of nature and events between ranchers and government land managers, though both groups are middle-class western Anglo-Americans in the same environment!

 In all these cases, cultural differences are easily explained by experience over historical time. Since we are talking about resources necessary for life, the historical contingencies are obvious. Other cultural matters that we have considered—individualism versus collectivism, erotic love versus *fago*, and the rest—have their histories, and are comprehensible in proportion to how much we know of those.

 At a first pass, then, explaining human action requires starting with common humanity, proceeding to understand the cultural and subcultural traditions and what shaped them, and finally looking at the microsociology of interaction, with attention to the ways different personalities shaped the event.

Finally: Culture and Individuals

 In short, culture is knowledge that is more or less shared between individuals within one society. It is never entirely shared. Measures of cultural consensus are all to the good, but the essence of culture is that it unites disparate individuals with disparate pools of knowledge and expertise. They share enough to live and work together, but they differ enough that each person brings his or her special gifts to the group. The ideal culture encourages everyone to *do their best at what they do best,* for the common good. We are back to St. Paul and his gifts differing.

 This interrogates (if it does not destroy) Kant’s categorical imperative: the idea that we should all act as if our actions would be universal law. We usually are, and we need to be, different enough that a society is a combination of many talents, and a culture includes a far greater and more diverse knowledge pool than one person could know. We should, no doubt, all act as nonviolent as possible, help the sick, and so on, for good Kantian reasons. But I cannot reasonably wish that my anthropological research procedures, my observations of local biology, or my teaching medical social science to be universal law. Still less can I wish universality for my tendency to hike with dogs, eat Brussels sprouts, or play guitar extremely badly. We are all individuals, and thank God for it.

VIII: How Culture Happens

“The human mind is of a very imitative nature; nor is it possible for any set of men to converse often together, without acquiring a similitude of manners, and communicating to each other their vices as well as virtues. The propensity to company and society is strong in all rational creatures; and the same disposition, which gives us this propensity, makes us enter deeply into each other’s sentiments, and causes like passions and inclinations to run, as it were, by contagion, through the whole club or knot of companions.” (David Hume, early 18th century, quoted Glacken 1967:586.)

Culture Change

 The crux of the present book lies in the explanation of culture change—of how things get into cultures.

 As Hume implied, culture is the product of an extremely social animal, one that lives only to be part of the group and thus feels a desperate need to conform at all costs—“vices as well as virtues.”

 Basically, humans work from common experience of making a living and interacting with their communities. This gives them ordinary working knowledge. It is generally quite accurate. The costs of making mistakes are serious and are immediate. Mistaking a rattlesnake for a vine, or an enemy for a friend, are apt to be instantly fatal.

 However, the more people aggregate in groups, and the more they engage in complicated social endeavors, the more such feedback gets decoupled from immediate experience. Eventually we reach the other extreme: an economic system so complicated that the greatest minds cannot decide whether less government spending or more government spending is the way to improve it; a world so complicated that we cannot decide when to wage war and when to sit out a crisis.

 *The farther feedback is from immediate experience, the more the distorters of accuracy and rationality can build up*. In the first half of this book, I surveyed the limits of reason. Heuristics, biases, and emotions—especially passionate fear and hate—intervene at every step. Also, people naturally search for the simplest and most usable explanation. People overuse Occam’s Razor—which Occam himself used to prove the existence of God; he thought it simpler to assume a conscious humanoid Creator than to assume a universe of impersonal laws. (He thus used two heuristics that set him adrift: the idea that agency is somehow “simpler” than natural law, and the Kantian “principle of assimilation,” which led him to assume God would be a rational man writ large.)

 The result is seen in such things as the Greek devotion to a world made up of, at most, four elements (earth, air, fire and water), and the extreme difficulty that European science had at shaking this view in early-modern times.

 When people’s plausible and wrong explanations are heavily conditioned or distorted by fear and hate, then they become truly fixed, to a level of irrationality that frequently crosses into the paranoid. Currently, about half of Americans, on both left and right of the political spectrum, believe that global warming is a vast deception created by scientists, and many explain this by assuming that scientists are power-mad and want to take over the world. Similar paranoid fantasies about the economy, education, and most other topics are the stuff of politics; it is impossible to turn on the radio without hearing some wild theory that could not sell in a world not dominated by fear and hate.

 On many occasions, more likeable emotions—hope, courage, responsibility, love—can affect and distort knowledge too. They cut less ice politically, but they have much more effect than hate on daily life at the human scale.

 Thus, other things being equal, culture gets more and more decoupled from reality as society gets bigger and more complicated. Ordinary cognitive processing errors, and violent emotions, are the distorters.

 However, other things are usually not equal. Larger and more complex societies *also* may have more ways of checking, and thus of preventing more. They may even invent institutionalized “science,” and thus have a huge generator of accurate information and theory to balance out any natural human tendencies to distort.

 The result: every anthropologist knows that *local* knowledge within a hunter-gatherer or small-farm community is far more intense and grounded than anything science can offer. My Maya friends in rural southeast Mexico know incomparably more about their farms, forests, and families than I or any other outside scientist will ever know. But they cannot place all this knowledge in wider scientific contexts. They cannot explain their successful selection of the best seed by Darwinian theory, or their knowledge of the hills and valleys of their environment by dynamic geomorphology. They infer, or used to infer, that their world is the product of interactions of gods and demons—the most simple-seeming and the most emotionally compelling explanation they could create. I, on the other hand, can more or less explain natural and artificial selection and an ancient karst environment, but, even after years of fieldwork, I am a helpless babe in the actual on-the-ground woods.

 Similarly, my community, Chunhuhub, is a very well-run town, because everyone knows everyone else, and is not prepared to take much grief from them. My country, and alas Mexico too, are very ill-run indeed, partly because they are too big for such close feedback. In the absence of knowledge, people naturally substitute emotion, especially group hate.

As usual, language is a good model. Language is not a frozen array of big words. It is a fast-changing way of interacting—of communicating about food, dogs and cats, children, neighbors, gardens, and, very rarely, philosophy. New words and grammatical turns constantly appear and disappear—or, sometimes, they stay around. “Dog” appeared out of nowhere, being first recorded in 1053 A.D. “Boy” and “girl” similarly appeared out of nowhere about the same time. They are not related to corresponding words in other languages.

Emotion changes language much less than it changes belief about economics or medicine, however. No one except a few English teachers really got excited when English effectively lost the subjunctive mood (well within my lifetime). But even language undergoes emotion-driven changes. The word “love” has different connotations now from those it once had. “Dog” was a vicious insult in my youth (especially in the form “son of a bitch,” bringing one’s sacred mother into it) but is hardly heard in such capacity now; we love dogs more and fear strays less.

This is not to say that language is totally new every year. English today is an obvious direct descendent of the English of 1053, though no one without special training can now read 1053 English. We have invented or borrowed countless words since then, changed pronunciation drastically, and even changed grammar substantially. Change thus happens slowly, imperceptibly, gradually. We cannot pinpoint the time when Chaucer’s English turned to Shakespeare’s, or when Shakespeare’s turned to ours. Still less can we say who did it. Chaucer and Shakespeare had wholly disproportionate effects on language—Shakespeare in particular launched countless turns of phrase—but in the end the changes were due to billions of individual speech transactions. Few were memorable, fewer were obviously transformative, but the language changed.

Other realms of culture, like economic organization and medicine, change faster. The medicine of modern England is *really* different from that of 1053. Even there, some continuity exists. Assumptions about body, person, drugs, and wholeness carry on for millennia, slowly changing.

The small-scale societies that anthropologists study were supposedly more conservative and frozen in time. Archaeology and repeat-visit ethnography have revealed that this is not the case. In more than 20 years of studying the highly traditional Maya of western Quintana Roo, Mexico, I have seen their culture change considerably. The Maya language has incorporated and invented new words for new things, including weeds and cultivated plants that have come since I started working there. This is not just a matter of the “modern world” impinging; archaeology shows dramatic and dynamic changes throughout the thousands of years that Maya have lived in Quintana Roo.

 Pierre Bourdieu spent his career arguing brilliantly and forcefully for this view of culture as negotiated practice (see esp. Bourdieu 1977, 1990). Alas, with his death, German idealism returned in full force. It even dominates my own field, environmental anthropology, in spite of what should be obvious: people’s views of the environment have a great deal to do with their everyday working interactions with it. Yet, thanks to academics who appear never to have been near the field, a view has arisen that views of environment are pure cultural construction, developed in a vacuum and universally shared by those in the culture in question.

Historians and geographers are the most prone to write that way, since most anthropologists have actual field experience, but many anthropologists fall too far toward the idealist position. For instance, Paul Nadasdy, in an otherwise excellent book, *Hunters and Bureaucrats* (2004), writes as if the hunters (the Kluane First Nation) and the bureaucrats were two separate populations, each one homogeneous and dominated by big ecological ideas that are apparently fixed and unchangeable. He is, of course, aware that the Native people have changed in the last generation, but writes as if they were “without history” (to use the famous ironic phrase of Eric Wolf, 1982) before that. Similarly, he seems to take biology as having changed its outlook little over the years. In fact, biologists 40 years ago thought quite differently from the ones he describes, and those 100 years ago were very different indeed.

 One observes similar disconnections in studies of medicine. Clinicians look at presenting symptoms—empirical, pragmatic reality—and try to put labels on them. Inevitably, the labels do not always fit. Many a vague condition with confusing symptoms gets forced into a very ill-fitting slot (on such changes and the motives behind them, see Bowker and Star 1999; Foucault 1973). This is less true today than it once was, at least for physical conditions, but mental problems are still underspecified and underdetermined by the rather arbitrary categories in the manuals. Every new edition of the American Psychological Association’s *Diagnostic and Statistical Manual* involves a huge and not always friendly dust-up among psychologists trying to classify disorders. Clinicians have recognized the ambiguity of nosological entities at least since the Greek doctor Soranus commented on it in his *Gynecology* around 100 A.D. (Soranus 1956), but scholars are slow to catch up (Bowker and Star 1999).

Historians of medicine often look at the labels, and try to study medical history as if the labels were the reality. This leads to incredible confusion. “Melancholy,” for instance, originally meant a condition involving “black bile” (Greek *melancholia*), the dead blood cells and similar wastes that clog the bile duct in cases of malaria and hepatitis. People with that condition were miserable, so it was thought that black bile caused sorrow and other mental conditions. The Greeks thought that black bile itself was caused by too much coldness and dryness in the body, which led to some wildly irrelevant treatments. Then, later, the term then came to refer to any disturbed and unpleasant mental condition, including schizophrenia and the like. Still later, it became fixed on ordinary sadness. Historians unaware of these changes in usage have made some very strange statements about ancient melancholy.

Culture and Warnings

“If you make people think they think, they’ll love you; but if you make them really think, they’ll hate you.” --Old Man Coyote

Culture being about practical matters first of all, the most obvious reason for culture change is learning new useful information. English settlers in America had to add to their cultural knowledge a vast store of warnings about mountain lions, poisonous berries, rattlesnake habitats, and so on. There is much evidence that children learn these warnings more easily than other knowledge. I know many adults (not to speak of children) who cannot identify any wild plant except poison oak or poison ivy. Culture includes endless rules of thumb about staying safe: walk against traffic, don’t feed the bears, dress warmly.

Sometimes these rules go far beyond need, into realms of what can only be described as excessive caution. Many cultures have a rule against insulting bears or other savage animals, or even mentioning their names, in the forest; they might hear and come after you. Such things have caused linguistic change. The English word “bear” is derived from an old Germanic euphemism meaning something like “brown one.” The Indo-European root for “bear” (an echoic rendering of a growl—seen in, e.g., Latin *ursus*) became completely lost in the Germanic languages. People were scared to say it.

Most cultures encode various “vestiges”: apparently arbitrary and ridiculous ideas that once had functions, though these may now be forgotten. A standard anthropologists’ example is sleeve buttons on coats. They were there to attach gloves. This has been forgotten so long that an old joke claiming they are there to keep kids from wiping their noses on their sleeves is now often taken seriously. (No one stops to think that the buttons are on the wrong side for that.) Sheer cultural inertia keeps the buttons there, as a “vestige” in the classic sense of the term. Our retention of a few Germanic weak plurals (oxen, children…) is another vestige. Anthropologists point out that such “vestiges” always have *some* function, however trivial; today, sleeve buttons mark the style of the coat. But the functions now observed are too trivial to have led to creating such usages.

In fact, a huge number of ordinary customs are not really worth maintaining, in strict economic or ecological terms; we do them out of habit and because they still have some value. Wearing clothes in California’s summer climate is one example constantly intruded on me. How much more reasonable to follow the Native Americans, and the ancient Greeks in a very similar climate, and wear nothing at all, or at most a loose robe to avoid sunburn? But (except at the beach) I am forced to wear clothing developed to keep off the constant soppy cold of northwest Europe, even when the temperature passes 120 F. Californians dress down to the minimum, but—except on a few beaches—can go only so far before “modesty” interferes. Thus does culture constrain rationality in the name of social belonging.

Cultural Creativity

 Culture is also aesthetic, to a degree not usually recognized by anthropologists, though this was the great theme of Franz Boas’ classic writings. Culture is communicated through art, music, poetry, dance, feast foods, architecture, body motion, and other expressive forms, not just through speech and ordinary action. The entire realm of aesthetic feelings—so neglected by psychologists and social scientists—is absolutely critical in culture.

No one now living was present at the creation of the world, so all creation myths must be deductive and declarative knowledge—not experiential, even at *n*th hand. They are based on experience, but they are logical deductions from it. Many moral rules are similarly deduced from religious principles and stated in oracular form; the Ten Commandments, for example. But moral rules must ultimately stem from, rest in, and reproduce in daily social practice. If they do not, they are dead letters.

Thus, big cultural ideas, even the interpretations of canonical origin myths, are always subject to change, according to experience.

The broader shifts in Judaism, Christianity, Islam, and other religions over the last couple of millennia need no special elaboration. They are profound beyond all reason. The Ten Commandments may have been graven in the rock, but they are subject to annual reinterpretation.

In short, culture changes—no matter how “cast in stone” the principles.

Explaining Culture Change

Culture change comes when needs and wants progressively distort earlier customs. Rarely is there a clean break with the past. Sometimes, the changes seem rather like the mistakes that accumulate in children’s memory games when stories are passed on; the changes in the word “melancholy” are of this sort. At other time, norms, roles, and social codes relax over time because they are no longer useful and thus seem burdensome.

This is true of the sexual codes elaborated in a time when poverty and lack of birth control technologies made unwanted pregnancy a real fear. The Pill changed life, and it was not the only factor. At other times, norms and codes get stronger. I have lived through a major sea change in levels of civility toward members of different ethnic groups. Many people of my generation still curse the “political correctness” that stops them from using the “n word” or telling obscene “Jew jokes.” But my children and their children have grown up in a world where such verbal faults are almost unthinkable. The fact is that during my lifetime pregnancy has become more controllable and manageable, while ethnic and religious hatreds have become more scary and dangerous. Culture has changed accordingly.

 One of the worst mistakes made by the cultural essentialists is taking any and all cultural rules to be absolute, hard-wired, inflexible codes. In fact there is a huge difference between, say, the rule that we say “hello, how are you?” and the rule that we Americans are “individualist.” The former is a concrete, universally known, widely observed politeness ritual. The latter is a vague generalization—true for some people in some ways, true for others in other ways, and not at all true for yet others among us.

Yet, from reading the cross-cultural psychologists, one would think that they were the same kind of mindlessly followed, clear, straightforward, universal rule.

 Even greeting rituals change with time, and certainly individualism does. It once meant going out alone to conquer the wilderness; it now more often means comparing notes on different preferences in video games. It once meant choosing one’s own spouse, within a narrow social group and a tight framework of sexual codes. It now means choosing whether to have a spouse at all, within a framework that allows far more individual variation in sexual behaviors.

 Cultures can rapidly decline due to moral cascades. When corruption is tolerated, imitating it pays, while being conspicuously honest leads not only to economic failure but to genuine danger, since corrupt politicians tend to have goon squads. The speed with which this can take down a culture is often very sobering; Russia after 1989 and Mexico in the early 2000s were devastated by runaway organized crime and government corruption in only a few years. Reversing such things remains difficult; revolutions sometimes work briefly, but often simply make things worse.

 These enormous, often unpredictable, and often rapid changes arise from small interactions. (In this and what follows, I agree with, and draw heavily on, Pierre Bourdieu, esp. 1977, 1990, and E. P. Thompson 1963.) Occasionally some huge global force drives profound and unavoidable alterations. The Mongol hordes changed the world in the 12th and 13th centuries. The Little Ice Age changed it more in the succeeding half-millennium.

 However, such things are rare. Many a huge phenomenon is merely the result of many small chances. The Black Death of 1346-48 was nothing but a succession of fleabites. It began (we believe) when a few fleas happened to jump off a few Central Asian rodents onto a few unfortunate wanderers. It spread by individual interactions between rats, fleas, and people. The cumulative global effects were catastrophic, but they arose from myriads of tiny events.

 Similarly, the two World Wars of the 20th century began with individual governmental and diplomatic decisions. The world did not wake up one morning and collectively shout “We want war!” Nor, *pace* the Marxists, is there much evidence that irresistable transhuman economic forces made those wars inevitable. Something like World War I would have happened, surely, but without the assassination of Archduke Ferdinand at Sarajevo it might have come later and been milder.

 Contingency thus often rules history. As Pascal said, “Cleopatra’s nose: Had it been shorter, the whole face of the earth would have been changed” (Pascal, tr. Roger Ariew; 2005:6). She would, presumably, have been less attractive to Caesar and Mark Antony, and without their successive fatal attraction to her, the Roman republic might have been restored and maintained Rome as the center of the world. The Kennedy assassinations, the agonizingly close (and shamelessly manipulated) 2000 American election, and many other turning points in history could easily have gone differently. There are indeed broad currents and trends in history, and the Marxists still have a case about the overdetermined nature of much economic change, but the fact is still there: culture usually changes by tiny increments, and a trivial accident can decide the fate of an empire.

 The same could be said for economics. Nobody really set out to invent capitalism, and even Marx at his most revolutionary admitted that the “bourgeois revolutions” of the late 18th and early 19th centuries were mere episodes in a long, long process.

 Even when people set out to transform the system, and when they were subject to broad economic forces making it appear necessary to do so, the actual changes were gradual and subtle. A very few inventions have had truly world-altering effects: phones, cars, computers. None was a sudden product of an individual, and all were more or less independently invented by several people at once. In operationalizing the first telephone, Bell beat Edison by a month. Thanks to near-simultaneous inventions, arguments still go on over who made the first automobile and the first airplane. Even Darwin’s theory of evolution, less constrained by technology, was independently developed by Alfred Russell Wallace, and would no doubt have been invented by someone even if neither Darwin nor Wallace had done it. The search for inventions that were truly radical, truly transformative, and truly unique to one brilliant inventor is a fairly fruitless one.

 The “great man” theory is not totally wrong—life would be different today if we had never had Napoleon, or Einstein, or Pasteur. Indeed, Marx is perhaps the best case of a single individual with a wide influence, in spite of his insistence that history was the product of vast transhuman forces!

 *My point is thus not to deny individual agency, but to spread it around.* We are all “great” men and women. We all change culture. Leslie White, A. L. Kroeber, and others could be believed, when they maintained that culture was normally changeless, only because change is so common and unobtrusive that we do not notice that we ourselves are changing it every day, by countless tiny interactions.

Luxury, not necessity, is the mother of invention. Those who literally *need* an invention can’t afford to make it; inventing takes capital, or at least time and work. Inventions usually begin as toys or useful profit-maximizing devices. Only later do they become mass-produced, easily available, and within reach of the ordinary user. This was true even before money and factories. Developing a new crop strain or spear-making process was monumentally difficult under prehistoric conditions. New linguistic usages come free, but have to be popularized by thousands or millions of repetitions. A linguistic turn that simplifies speech will propagate, but it may make things more difficult in some unexpected way.

Individual agency is constrained by technical, economic, and environmental realities, but not truly determined. This is proved by the rapid divergence of dialects, technologies, and lifeways that occurs when a group of people splits up. The Dutch in the Netherlands and in South Africa, the Polynesians on their various island groups, and other cases occur to mind.

As we have seen, structure emerges from these interactions, and is thus a dynamic thing. Anthony Giddens in *The Constitution of Society* (1984) refers to the process as “structuration,” a useful neologism.

People want above all to be social, so changes that facilitate sociability always get prior attention. This means, first and foremost, any new and improved moral standards that facilitate interaction within the group—and, usually, that increase hostility and hostile solidarity toward the nearest or most salient other group.

Diffusion

 When explorers (including Lewis and Clark) crossed North America,they collected local Native American folktales. Some of these produced a dawning sense of familiarity: they realized that the tales they were collecting were French. Some were stories from the endless cycle of tales about Little John (*petit Jean*) who succeeded through cleverness in marrying the king’s daughter. Among Native Americans, the king often became a chief, his gold became fine fur, and his castle was a longhouse, but the stories were the same. These tales had come originally from French-Canadian trappers, but had caught on, and had been passed from group to group a thousand miles ahead of the French (see Thompson 1919).

Claude Lévi-Strauss gives a superb discussion of this in *The Story of Lynx* (1995:179-190). Among other things, he shows that some of the Native American myths were rather similar to French stories even before this influence—either because there was actual continuity across Siberia (established in a few cases) or because human minds simply run in the same channels. The humble hero who makes good, in particular, strikes a chord everywhere. The stories of Little John are also current among the Maya of Mexico (Andrade and Maas Colli 1990; Gossen 2002), having come from the Spanish and been passed from Maya to Maya for centuries.

 A wonderful case is the version of the Swan Maiden story told by British Columbian Native elder Annie York (Hanna and Henry 1995:94-99). It harmoniously blends European elements of the tale into the traditional Northwest Coast Native version (for a classic discussion of the latter see Snyder 1979). Instead of teaching conservation of swans, as one might expect from related stories, Annie York ties this to predictions of the coming of the white settlers; the swan maiden tells her human husband of this future event.

 Purely Native American storylines get around too. A classic story of a man who took too many animals, and was taken into the underworld or sacred mountain and instructed never to do that again, exists in extremely similar forms from Central America to the Arctic, and related stories exist in Eurasia. I have seen a spectacularly beautiful Kwakwaka’wakw dance-drama of this story (the ‘Atli’ginna or “Forest Spirit” performance; it is owned by a group of families, who performed it for the Society of Ethnobiology in May 2010). I have also heard more ordinary narrative versions from my Maya friends in Quintana Roo. The man is sometimes spared, sometimes killed, but he always lasts long enough to warn his people, who moderate their hunting thereafter. This clearly reflects real experiences with overhunting, as well as diffusion of useful teaching tales across whole continents.

Children’s songs can sometimes be traced back for hundreds of years, and often spread around the world with little or no help from adults (see e.g. Opie and Opie 1961).

Among technical items, one that is well documented, because of the characteristic stone or metal points that show up in the archaeological record, is the spread of the bow and arrow. It seems to have been invented in or close to the Near East around 30,000-50,000 years ago. It spread rapidly, reaching Mexico by about 500-1000 AD. It never quite reached the most remote parts of the world (notably Australia, before Europeans contact), but it almost did. Anthropologists think the bow was invented as a music-making toy, and only later put to the purpose of shooting arrows. The evidence is indirect: a primitive bow would not shoot well enough to bother with, but would make a nice sound when plucked.

Traditional knowledge is often very widely shared.

The most obvious cases are domestic plants and animals. Plants like wheat, barley, and rice, and animals like pigs, sheep and chickens, had spread to almost every climatically suitable area of the Old World by 2000 years ago. At the same time, maize, beans, squash, sunflowers, and other crops were spreading almost as widely in the New World. Other forms of knowledge spread as well. The Galenic humoral medical system was known throughout Eurasia by 1000 A.D., and spread throughout the New World with the first waves of missionaries, dominating medicine in Latin America by 1600. Use of artemisia to control worms was absolutely worldwide by the time anyone started recording medicinal plant use.

Well documented, because of the characteristic points, is the spread of the bow and arrow. It seems to have been invented in or close to the Near East around 30,000-50,000 years ago. It spread rapidly, reaching Mexico by about 500-1000 AD. It never quite reached the most remote parts of the world (notably Australia, before Europeans contact), but it almost did.

Humoral medicine has also gone worldwide (Anderson 1996), such that beliefs about “hot” and “cold” foods in China bear a striking resemblance to related beliefs among Oaxacan rural people.

In fact, few really important bits of ecological or technological knowledge have ever been confined to one cultural group. There are exceptions, some quite dramatic; the Arctic adaptations (igloos, etc.) of the Inuit, for instance, are truly unique. However, such cases are rare.

This, to say the least, problematizes the claims that knowledge is culture-bound, that particular “tribes” have a monopoly on “their” TEK, and that all borrowing is intellectual piracy.

A much more serious problem, often resulting from such bureaucratization, has been the tendency to ignore the “religious” and other beliefs that are an integral part of these knowledge systems. This is not only bad for our understanding; it is annoying, and sometimes highly offensive, to the people who have the knowledge. Christian readers might imagine an analysis of Holy Communion that confined itself to the nutritional value of the wine and cracker, and implied that was all that mattered. Projecting our own categories on others has its uses, and for analytic and comparative purposes is often necessary, but it has to be balanced by seeing them in their own terms. This problem has naturally been worse for comparative science that deliberately overlooks local views (see again Smith and Wobst 2005; also Nadasdy 2004), but has carried over into ethnoscience.

On the other hand, for analytic reasons, we shall often want to compare specific knowledge of—say—the medical effects of plants. Thus we shall sometimes have to disembed empirical scientific knowledge from spiritual belief. If we analyze, for instance, the cross-cultural uses of *Artemisia* spp. as a vermifuge, it is necessary to know that this universally recognized medicinal value is a fact and that it is due to the presence of the strong poison thujone in most species of the genus. Traditional cultures may explain the action as God-given, or due to a resident spirit, or due to magical incantations said over the plant, or may simply not have any explanation at all.

We must, then, consider four different things: the knowledge itself; the fraction of it that is empirical and cross-culturally verifiable; and the explanations for it in the traditional cultures in question; and the modern laboratory explanations for it. All these are valuable, all are science, and all are important—but for different reasons. Obviously, if we are going to make use of the knowledge in modern medicine, we will be less interested in the traditional explanations; conversely, if we are explicating traditional cultural thought systems, it is the modern laboratory explanations that will be less interesting.

The important sociological fact to note is the relative independence or disembedding of “science,” in the sense of proven factual knowledge, from religion. Seth Abrutyn (2008) has analyzed the ways that particular realms of human behavior become independent, with their own organization, personnel, buildings, rules, subcultures, and so on. Religion took on such an independent institutional life with the rise of priesthoods and temples in the early states. Politics too developed with the early states, as did the military. Science became a truly independent realm only much later. Only since the mid-19th century has it become organizationally and intellectually independent of religion, philosophy, politics, and so on. It is not wholly independent yet (as science studies continually remind us). However, it is independent enough that we can speak of the gap between science and religion (Gould 1999). This gap was nonexistent in traditional cultures—including the western world before 1700 or even 1800. Many cultures, including early modern European and Chinese, had developed a sense of opposing natural to supernatural or spiritual explanations, but there were no real separate institutional spheres based on the distinction.

However, we can back-project this distinction on other cultures for analytic reasons—*if* we remember we are doing violence to their cultural knowledge systems in the process. There are reasons why one sometimes wants to dissect.

Robert Lowie characterized culture by quoting from Gilbert and Sullivan’s wandering minstrel: culture is “a thing of shreds and patches” (from “The Mikado”). Later, Lowie (1959) rather shamefacedly explained and modified his remark. He shouldn’t have apologized. Diffusion of cultural knowledge was a major topic of research in early anthropology (Boas 1995; Thompson 1955-1958). It fell from grace because early models did not concentrate enough on why particular bits of knowledge spread. Functionalist (including dysfunctionalist) theories of knowledge were more intellectually satisfying.

By the late 20th century, diffusion studies in cultural anthropology were so rare that many scholars did not realize that “cultural” borders are extremely fluid, and that knowledge travels without respect for them. “Globalization” could appear as a totally new thing. Scholars apparently believed the Mongol conquests and Portuguese discoveries had had no effect on local cultures.

Abandoning diffusion studies was a mistake. It helped produce the ridiculous excesses of cultural essentialism. The diffusion scholars like Boas and Thompson knew that intensely evocative folktales like the Orpheus myth and the Swan Maiden tale had gone worldwide thousands of years ago, proving the psychic unity of mankind. Diffusion never stopped, as the history of philosophy, medicine, and the arts proves so clearly. It is hard to reconcile the idea of cultures as closed, “incommensurable” worlds when they are borrowing everything from each other with the freest abandon. Not only do whole cultural communities borrow each other’s lore; individuals from one culture may become experts on forms of another. Many Japanese, for instance, are experts on blues, jazz, and other western folk forms—just as many Americans are experts on Japanese traditional literature. Of course, this endless borrowing also makes problematic the current fad for declaring “intellectual property rights” for traditional cultural knowledge. Who gets the Swan Maiden?

Solid, sensible work (especially on folktales and folksongs) was eclipsed in the public mind by the “hyperdiffusionism” of certain scholars with more popular than professional appeal. Grafton Elliot Smith traced all civilization (even the New World Native ones) to Egypt (the “heliocentric theory”); W. Perry to Mesopotamia (Lowie 1937; Smith 1928). Robert Heine-Geldern and his students saw all Old World culture beyond the very simplest as one interlinked cultural tradition, not beginning in any one certain place, but widely shared; any megalithic monument, any round cattle-camp, any emphasis on cattle in ritual, any similarity of art style, “proved” a single harmonious cultural web existed, with every innovation spreading in wavelike form throughout the Old World (Loeb 1989).

Again, some of these and other hyperdiffusionists even explained New World culture by Old World transfer, in spite of the unlikelihood of regular sea contact much before 1000 A.D., when the Norse in the Atlantic and (at roughly the same date) the Polynesians in the Pacific did indeed finally institute a minimal contact. A related literature has recently argued for African role in New World cultures (Bernal 1987). I personally find it impossible to believe that Africans did not reach the New World before 1492, and am aware of some evidence (currently being written up—so I refrain from “scooping” the author here), but much of Bernal’s material is simply wrong.

 More recent hyperdiffusionism has arisen in the wake of genetic studies showing the extremely close relationships of all humans, especially those outside Africa. The migration of modern humans from Africa has been very recent, and interbreeding among the migrants has never stopped, resulting in virtual genetic homongeneity—in spite of the obvious variations in skin color, hair form, and so on, each carried by very few alleles of very few genes. Thus, scholars have tried again to trace cultural waves of diffusion, in a manner familiar to Heine-Geldern readers. In particular, agriculture has been linked tightly to languages by Peter Bellwood, Sir Colin Renfrew and others (Bellwood and Renfrew 2002). According to them, the Indo-European peoples spread farming from its origin in the Near East to Europe and elsewhere; the Austronesians spread agriculture through the Pacific world; Thai, or Miao, or Yao, or Mon-Khmer are blamed for agriculture in southeast Asia; Uto-Aztekans spread agriculture north from Mexico; and so on.

 The case is best for the Austronesian spread and its involvement in agriculture in the Pacific, for which Bellwood has provided overwhelming evidence. Even here, however, agriculture was independently invented in the New Guinea highlands at an early date (Golson 1974). New Guinea’s agricultural tradition clearly met the Austronesian diaspora and produced a kaleidoscope of mixed farming traditions, mixed ethnicities, and mixed languages.

The evidence for the Indo-European spread of agriculture in Europe is far less convincing. Most obvious is the low time depth of Indo-European languages, which seem to have broken up only 5500-7000 years ago. Moreover, the Indo-European languages radiated from eastern Europe and the Ukraine, and probably originated there or nearby (Mallory 1989). Finally, there is a case for disbelieving the existence of a single proto-Indo-European language; quite possibly the IE languages stem from a group of languages, neighboring but unrelated or distantly related, that exchanged so many words and grammatical constructions that a reconstructed, single “PIE” language is credible to people who expected one.

Agriculture, by contrast, began 12,000 years or more ago in the Near East, spread to Greece by 8000 years ago, and was all over Europe by 6000 years ago. It spread from the southeast, not from east Europe or Ukraine. It was already being practiced by non-IE speakers when IE languages reached the west. The Basques survive from this earlier population. Farm-related but non-IE words like “sheep,” “wheat” and “land” in Germanic languages prove an earlier farming group there. (“Land” is not *necessarily* farmland, but it is awfully hard to imagine farmers borrowing a word like that from hunter-gatherers.) The Germanic languages were more or less creolized by the countless non-IE words they inherited from these earlier peoples. Archaeology, moreover, reveals a good deal of mixing with and local survival of distinctive cultures.

The LBK (Linearbandkeramik) archaeological tradition swept across Europe from the east at about the right time to introduce agriculture to central and northwest Europe. Its link with IE languages and its relations to local traditions, are unclear, but it does look like a good candidate for the IE spread (Cunliffe 2008). However, there remains that Germanic anomaly, and very possibly the LBK people were the speakers of that mysterious language that gave us “sheep” and the rest.

Elsewhere, evidence is far less compelling, except for the late and well-documented spread of agriculture by Bantu speakers in central and southern Africa. Uto-Aztekan speakers certainly had agriculture with them when they spread out from central Mexico (Hill 2001), but were they the actual introducers of agriculture north of there? If so, why is agriculture practiced all over Mexico and the southwestern United States by speakers of unrelated languages with long local histories?

The same could be said for Thai in east and southeast Asia; its very ancient agriculture-related vocabulary proves it spread with agriculture, but did it actually introduce agriculture widely? We do not know. Further speculations about Mon-Khmer, Miao, Yao and other language families are pure guesswork. And a neat countercase is the very ancient and widespread existence of agriculture in lowland South America, which is a crazy-quilt of language families and phyla that spread in all directions at all times, in braided channels that constantly crossed, recrossed, and mingled.

Myths of “inflexible tradition,” “immemorial custom,” “peasant conservatism,” and the like are long dead. Among supposedly conservative peasants a generation or two ago, Everett Rogers’ classic research (Rogers 1971) showed that simply making good ideas known, through radio and other quick media, is all it takes to get them adapted—so long as people have the resources necessary to do it. Frank Cancian (1979) showed that having more resources makes adoption easier, for obvious reasons, but also that having more resources may take away incentives to change, because necessity does not bite so hard. Thus the upper middle class may be a conservative bunch. They too change, however, if the innovation works. In fact, all classes in developing areas are more often too quick to throw away their good ideas, and adopt anything new, than to be overly conservative.

Thus, throughout history, diffusion has been the rule. Few really important bits of ecological or technological knowledge have ever been confined to one cultural group. There are exceptions, some quite dramatic; the Arctic adaptations (igloos, etc.) of the Inuit, for instance, are truly unique. However, such cases are rare.

This, to say the least, problematizes the claims that knowledge is culture-bound, that particular “tribes” have a monopoly on “their” TEK, and that all borrowing is intellectual piracy.

 In short, any good idea or story will spread rapidly, far beyond its source.

Working at Diffusion

 Anthropologists used to deal largely with the diffusion that “just happens.” People unthinkingly learn from each other. More recent efforts look more seriously at the sheer work involved in scouring for information and in transferring it.

 An astonishing case of information management is presented by the Mongol Empire created by Chinggis Qan (“Genghis Khan”) in the 13th century. No one in history had a livelier sense of the value of up-to-date, accurate information. He sought it everywhere, and kept it secret when it was useful. He created the Pony Express, later re-created in 19th-century America; his horsemen could ride over 100 miles a day, using relays of horses kept at strategic stations (Weatherford 2004). He perfected a strategy already known, but never so systematically pursued, of saving the scholars and craftspeople when he sacked a city, and deploying them wherever they were needed. In the later Mongol Empire, officials from Persia wound up governing parts of China, and vice versa. When the eastern empire conquered China and became the Yuan Dynasty, an industry of knowledge transfer developed, leading to a court diet and nutrition manual that was filled with Near Eastern recipes (Buell, Anderson and Perry 2000) and a vast encyclopedia of Near Eastern medicine written in Chinese to bring the benefits of Hippocratic-Galenic medicine to the Chinese people (Buell and Anderson, ongoing research). In Persia and Mesopotamia, a similar industry of histories, medical books, and practical works flourished.

 All this was unique in the world at the time. Lesser but highly impressive transfers of knowledge were, however, going on constantly, as will appear below. The steady flow of Arab knowledge into Europe led in the end to much more knowledge transfer than the Mongol effort. After their conquest of Mexico and Peru, the Spanish very deliberately sought out Native American lore, and in return taught all they could, in schools, colleges, religious institutions, and workshops. Much of what they taught was material they had only recently learned themselves, from the Arabs. The result was as striking as the Mongol transfer, and has had a longer-lasting impact. We find today medieval Arab recipes and irrigation techniques among the citizens of Puebla and the Hispanics of New Mexico.

Status Emulation

 One of the most universal and common ways for diffusion to take place is status emulation. Humans everywhere love to copy anyone who is more esteemed than they are. Where money matters (which is almost everywhere), the rich are emulated. In warlike societies, people value military prowess and thus emulate successful warriors. Even successful criminals and thugs are wildly popular, setting countless styles worldwide, notably in music (from rembetika to rap).

 There has been a myth that people imitate “those below” just as they do “those above.” No, they imitate successes. Successes can be successful criminals or rough but happy peasants. The only thing they can’t be is failures. Genuinely poor people don’t get imitated. Neither do inconsequential rich ones—misers, rich hermits, ordinary nice guys who got lucky. Those imitated are the flashy, visible, self-consciously stylish ones. Rarely, people get so sick of this that they imitate a dull, ordinary “celeb” simply because they identify with her. Even so, it’s imitation of success, even if the success has not been reflected in glamourous style. Significantly, “glamour” is an old word for “magic.”

 The effects of this on style are so universally known that one is forced to attend only to the exceptions. Obviously, people emulate selectively. Those who imitate the criminals are generally rebellious teenagers. The sophisticated ways of European old money are more likely to find new home among European new money or American old money. American rural people are more apt to imitate country singer styles.

 The farther from the original they are, the more people blend and dilute the styles. Rebellious teenagers from marginal or slum environments are more pure emulators of rap stars than are rich high school kids—however much the latter adore the music! Even the most dedicated Society for Creative Anachronism members are less faithful imitators of medieval knights than medieval pages were.

Immigrants rapidly dilute their national traditions as they acculturate to their new land, but they usually retain a rapidly-shrinking but still important chunk of Old Country culture. It gets progressively diluted and reinterpreted. Among other things, it usually gets progressively idealized. The earthier aspects of Old Country culture, and the ones that seem “weird” in the new land, rapidly give way. The more idealistic and respected cultural traditions may actually increase. This can lead on occasion to rather paradoxical effects. Chinese immigrants who never heard of Tu Fu or Li Po sometimes have American-born children majoring in Chinese literature. Mexican parents sometimes learn of Zapata from the posters on their college-attending children’s walls. By the third generation, immigrants typically have an idealized sense of the high culture of the Old Country, sometimes even a lively participation in the pop culture currently found in the Old Country, but little or nothing of the culture their grandparents actually brought. It is rather striking to one who has followed Chinese popular culture for 50 years; my young Chinese-American students participate in modern internationalized Chinese culture, rather close to what is seen today in Beijing or Hong Kong, but they have little or no sense of what life was like in rural South China when their parents or grandparents left it (and when I was researching there).

 In all cases, people not only emulate and adapt, they also personalize. No two emulators pick up exactly the same thing. Slavish copying is rarely approved, though selective emulation of success is universally practiced and valued.

 In short, diffusion does not “have a passive connotation” (contra Hastorf 2007), and accordingly the term need not be avoided.

Innovation

 Homer Barnett (1953) showed that innovations build on what has gone before. They tend to come when someone combines already-known ideas or techniques in a new way. Culture thus grows incrementally, rather than through brilliant original creation *ex nihilo*. We have seen in recent times how varying costs of oil lead to higher or lower transportation costs, and thus to more or less importing, exporting, and general moving of heavy goods over long distances.

 Douglass North (1990) drew on such ideas to develop a general theory of change. He saw institutions as developing or changing when such cost bottlenecks occurred. Specifically, he showed that legal institutions and new business structures emerge when transaction costs get disproportionately high. This could serve as a general theory of culture: people innovate to reduce the difficulties of interacting. Social rituals make socializing easier. Religion makes morality and other social coordination easier.

A predictive theory—now surprisingly forgotten, though it is one of the few successful predictive theories in social science—was Yujiro Hayami and Vernon Ruttan’s theory of induced development (Hayami and Ruttan 1985). They pointed out that innovation can be expected when there is a bottleneck that can be removed or circumvented—especially by using what you do have to replace what you don’t. They proved this from agricultural history. Labor-rich but capital-short and land-poor East Asia developed an agriculture based on pouring a great deal of labor and skill into a system with little capital. Productivity per acre was high, but per worker not so high. Capital-rich and land-rich but labor-short America developed an agriculture based on machines (capital) to spare labor, but had low productivity per acre. Denmark, with limited land and labor but much capital, poured capital into intensive land management as well as mechanization. Nations, universities, and rich farming interests usually did the research, not the ordinary farmers, but the latter did do a great deal of small-scale innovation, especially by breeding all sorts of plants and animals that did better under local conditions.

The current bottleneck, worldwide, is environmental degradation. Fresh water, good farmland, and resources like phosphorus are limiting or will soon be. This will predictably unleash considerable new technology. A few people who care very deeply about the matter at hand, usually because they love it or depend for cultural survival on it, will take the initiative and go against the existing system. They will attract followers who are equally concerned but more shy, or who are less concerned but want to be in on the new and exciting action, or who have a wider sense of social responsibility. Only after these people are active do people join in for economic reasons. The history of saving natural resources shows that they are almost always saved by people who love nature or who are specifically involved with the resource in question. Even people who depend utterly on a resource will not bother to save it if it is purely an economic item.

Errors Become Cultural Knowledge

To many people, the most fascinating thing about culture is the way it can serve as a storehouse of adaptive, useful knowledge, and yet include the most astonishing errors. We have seen, in earlier chapters, how individual humans are trapped into mistakes by their information-processing biases—often by the very best of our skills.

Culture, of course, is merely individuals writ large in this matter. If individuals naturally infer agency until proven otherwise, culture will inevitably create gods and spirits. If individuals naturally misjudge probabilities, culture will create whole systems (like astrology) based on failure to judge probabilities. If individuals wish for a better world, culture will always give them romantic literature, and songs about the joys of Heaven. If individuals want and expect stability and consistency—a major human heuristic—scientists will refuse for years to accept Ice Age glaciations, large floods, and other geological exceptions to simple uniformitarianism (Rudwick 2005), as well as continental drift.

The same heuristic gave us the completely false belief in stable, predictable ecosystems and “plant communities” that maintained a “climax” state. (The obvious disconnect of this model from the real world was written off as due to brief perturbations.) Conservative oversimplifying led to decades of refusal to recognize animal intelligence, and to countless other wrong positions. It now leads to denial of global warming and biodiversity loss, in spite of overwhelming proofs.

From Locke onward, religion has been a particularly salient example of human delusion. Durkheim, however, showed that religion is the collective representation of the community (Durkheim 1995 [1912]), thus allowing us to explain the often-strange beliefs that accompany it. The afterlife usually reproduces the political structure of this life, and God always looks suspiciously like the latest media stereotype of a father. Heaven is everyone’s dream, and cultural groups use the promise of it, as the song says: “Work and pray, live on hay, you’ll have pie in the sky by and by when you die.” Hell is everyone’s fear, and cultural groups always use the latter to scare individuals into doing what society wants. Few indeed are the social scientists who have failed to see religious beliefs as social constructions of personal wants and worries. Religion always serves as an anxiety-reducing device, a social bonding and solidarity device, and a social integrator. It has the role of defining a society and telling who is in and who is out. Heresy thus takes on a particularly heinous character.

More confusing and often nearly impossible to explain is the vast catalogue of ordinary human error that gets culturally constructed: astrology, alchemy, flying saucers, the War on Terror. Usually, the wish-fulfillment aspect of such beliefs is clear. Alternatively, normal human fears can explain things like shunning black cats (creatures of the scary night) and ghosts (projections of one’s guilt about how one treated living persons—among other things). The wondrous conspiracy theories that propagate in modern America include a belief, apparently quite widespread, that the world is run by giant reptiles from another galaxy who live in caverns underground (Barkun 2003). This began with a science fiction story, but is now taken seriously, and the reptiles have even gotten involved with the Trilateral Commission and other things that conspiracy addicts love to fear.

In addition to assuming too much order and stability to the world, cultural groups follow individual humans in assuming too much perfectability in it. Hope runs far ahead of sense. Astrology is the perfect case of a self-serving belief turned into a cultural institution. The universe literally revolves around *me*—the stars are there just to tell me my future.

Control and security needs explain all manner of defensive mechanisms in culture. Repression of women, for instance, correlates best with a history of brutal mass warfare with rape as a weapon of choice. *Contra* some media myths (more conspiracy theories!), it does not have anything to do with plow agriculture, Islam, Christianity, or the Indo-Europeans. It correlates most obviously with the length of time that a society has been civilized; it is most extreme in the core areas of the Near East, India, and China. Here the power state has been around for the longest, and has dominated through imperial wars. More remote or sheltered areas in those parts of the world—the Caucasus, South India, south China—are notably less hard on women, though they have plow agriculture and the rest. Several areas of New Guinea and native Australia also keep women repressed and sheltered, and they too are areas with histories of warfare that targets women.

Areas with relative equality or opportunity for women are precisely the opposite: frontier or thinly settled regions where the major threats were from nature, not culture. Where one’s problems were hail, wolves, crop blights, and tornadoes, women have to cope. So they move toward equality—though rarely reaching it. Scandinavia, Mongolia, frontier America, and the wild mountains of south China serve as examples.

IX: Culturally Constructed Knowledge of the Environment

“Every day will have its dog.” Erving Goffman (cited Collins 2001:5).

The Accuracy of Traditional Ecological Knowledge

My own expertise in cultural matters lies in studies of traditional ecological knowledge (“TEK”). This gives me a relatively positive view of culture, since such knowledge normally includes much of the most accurate, useful, and adaptive body of knowledge that a cultural group has.

Anthropologists who study traditional ecological knowledge bear some of the blame for neglect of the extreme accuracy and value of traditional knowledge. Anthropologists notoriously love the exotic, and often would rather write about dogs that dream the future (Kohn 2007), glaciers that hate the sound of frying meat (Cruikshank 2005), and mile-long fish that cause earthquakes (Sharp 1987, 2001) than about more conventional matters. Moreover, anthropologists are no longer routinely trained in biology, and too many now dismiss the old emphasis on really long-continued field work. A few months in the field is inadequate to get at the depths of traditional environmental knowledge. It takes a full year to make a good beginning, and then only if one is biologically trained and works in cooperation with actual biological researchers. And by “the field” I mean the field—out there in the forest or on the water or on the tundra, not back at headquarters.

Many anthropologists study indigenous groups that have been sadly shattered by conquest, colonization, brutal oppression, attempts to destroy their languages and cultures, and even outright genocide. Amazingly, environmental knowledge persists, but is inevitably impacted. Studies of traditional plant knowledge among the Northern Paiute have been conducted since the early 20th century, and show a steady decline in knowledge (C. Fowler 1992); and the Paiute had been subjected to appalling massacres and oppression even before the first study. The Tohono O’odham also show drastic loss of knowledge, especially when language is lost (Hill 2003). The first knowledge lost is apt to be the relatively arcane material that is least likely to be known to international biological science and thus potentially the most valuable to the world.

Then, What *Is* Working Knowledge?

 Ethnographers quickly realized, after research in the field, that knowledge develops through interacting with people and things. This is true not only of ecological knowledge but of other kinds of knowledge: kinship, medical knowledge, and language. It is only secondarily abstracted into formal systems. It is genuinely *working* knowledge. As Marx and Engels said (Engels 1966), it develops as people work (and play) together to get their necessities and wants satisfied. As such, it is inseparable from experience, and is often best understood through phenomenology (Ingold 2000) or, better, through direct practice (Bourdieu 1977, 1990; Lave 1988).

It is often truly embodied knowledge (Mauss 1979). Ways of planting seeds, gathering wood, making stone tools, and millions of other vitally important tasks have to be learned by doing. They cannot be taught by verbal instruction. The learner has to keep trying, under the direction or at least following the example of a mentor (Anderson ms; Greefield 2004; Lave and Wenger 1991). The necessary eye-hand, or eye-ear-nose-body, coordination requires much physical practice until it becomes automatic. As Marcel Mauss brilliantly pointed out, the muscles actually grow and change accordingly; when he learned to swim “properly” instead of dog-paddling, his whole arm and shoulder musculature became visibly very different. Social skills are also learned at such a deep level that they cannot always be brought to consciousness. Even linguistic rules that cannot be brought to consciousness are true rules—real structures in the brain, certainly with actual neural connections to “embody” them.

This has led some anthropologists to maintain that traditional knowledge lacks formalization, and thus differs from modern science. This is not the case, and it is a most invidious distinction. It relegates traditional knowledge to the level of unsystematic, ad hoc stray facts. At worst, it makes traditional people sound like animals moved by instinct. This is totally wrong. Systematic knowledge exists and isformalized, even in highly “traditional” and “small-scale” societies. However, the full formalization may be confined to experts’ knowledge. My fisherfolk friends in Hong Kong all knew how to use ordinary kinship terms in ordinary conversation, and how to act toward kin, but they rarely knew the whole formal Chinese kinship system. However, there were older experts who did, and they were frequently consulted; for example, if one needed the proper formal term for one’s father’s father’s younger brother. Similarly, among the Maya, everyone knows an incredible number of plant and animal terms; some actually think about the structure and principles of the classification system.

The idea that “indigenous” people find their way around the environment by a rather mindless process was devastatingly refuted in a brilliant study by Istomin and Dwyer (2009). People, including traditional indigenous people, have mental maps, and can draw perfectly good maps when they are used to pencil and paper. Franz Boas and his students showed this long ago, and Istomin and Dwyer greatly extended those earlier findings.

Again, the resemblance to modern science is close (Lauer and Aswani 2009). Actual scientific research involves physically dealing with subjects and data. There is some formal theory-building, but most scientists are busy most of the time in the lab, field, or observatory, dealing with the messy and refractory reality from which they must abstract theories. The public (whatever that means) seems to think that science is a cut-and-dried enterprise in which the scientist generates a formal mathematical theory and tests it by perfectly controlled laboratory experiments. Scientists know better, and now that we have such studies as those of Bruno Latour (1986) and Paul Rabinow (2002) others too can know better.

How Much People Know

That being said, what impresses all of us who have worked with traditional ecological knowledge (by any definition) is how enormous it is.

Consciousness that other people had real science (in the wide sense of the term) goes back to early times. Herodotus credited Egypt and other areas for much of the material the Greeks came to call *scientia.* Early modern science drew heavily on New World and Asian traditions, and the first really outstanding studies of traditional nonwestern science were done by the Spanish in the New World. Europeans at that time realized that they had much to learn from other civilizations, whose sciences were often as well developed as anything Europe had at the time.

Appreciation of the enormous extent and value of small-scale, traditional, and nonwestern systems thus goes far back. In anthropology, it was emphasized by Lévi-Strauss (1962), among others. Traditional systems of knowledge can be as purely empirical, self-correcting, developing, and truth-driven as any western science (Anderson 2000, 2003, 2005). They also share with scientists a concern with insight, sensed experience, testing and probing, and the like (David Kronenfeld, personal communication, 2004).

It has often been left to biologists and agricultural scientists to be properly amazed at the level of knowledge encoded in small-scale cultures. One of the earliest and still one of the best studies was done by a marine biologist, R. E. Johannes (1981, 1991). He found that the fisherfolk of Micronesia and of the Torres Straits Islands (Australia) knew far more about local marine life and its reproductive cycles than the scientists did, and in fact calculated that he saved himself a lifetime of research by simply taking down their knowledge and checking it quickly.

The Yucatec Maya, the group that I study in the field, first impressed agricultural scientists like Efrain Hernandez Xolocotzi (1987) and biologists like Arturo Gomez-Pompa (e.g. 1987; see also Fedick 1996, Gomez-Pompa et al. 2003). Anthropologists had recorded their agricultural knowledge, but were not always able to dig deeply into it or assess its richness. Recent work has shown an incredible level of knowledge of agriculture, forestry, beekeeping, plant medicine, and other field skills. (My publications review much of it: Anderson 2003, 2005; Anderson and Medina Tzuc 2005). Traditional Yucatec knowledge of oriole classification, flycatcher behavior, and bee habits included details discovered (independently) by biologists only in very recent years.

The Yucatec know and use well over 2,000 plant species. The most complete compilation, by J. Arellano Rodríguez et al. (2003), lists 2166 species named and/or used. More have turned up since. I recorded about 700 species known in a small area around the town of Chunhuhub in Quintana Roo. This is certainly an incomplete list. I learn more every time I go down there.

More exhaustive was my list of 136 bird names known and used by the Quintana Roo Maya. I recorded 261 bird species in and around Chunhuhub, probably a fairly complete figure for regular species. The Maya lumped small, not-very-significant birds into broad categories (hummingbirds, warblers, small flycatchers). They had names for two species now extirpated locally. Eugene Hunn’s 118 names for 190 species in a small village in Oaxaca is comparable (Hunn 2008:110).

In fact, Hunn’s meticulous and long-running studies not only of highland Maya (Hunn 1977) but also of the Sahaptin Indians of Washington state (Hunn 1991) and the Zapotec of Oaxaca (2008) show an incredible level of knowledge, extending to insects and other small invertebrates. Hunn found that the Sahaptin correctly differentiated two species of *Lomatium* (wild parsley) that had not been recognized as distinct by biologists until very recently.

Hunn finds that most small groups know about 500 plant species and 500 animal species, and that a typical local small community will have about 500 named places in its range. He has thus tentatively proposed that 500 is a good round figure for the number of items in a given domain that a person can easily to learn and remember, though an expert may know many more (Hunn 2008). The Yucatec figure above does not contradict this; though the total Yucatec Maya community of over a million people knows far more than 500 names, no one community seems to have much more than the 700 plants and about 500 animals I recorded for the Chunhuhub area. Fairly complete lists of plant knowledge among other Maya groups approximate these totals.

Similar studies could be cited from around the world. What is impressive is how much the local people know that is unknown to biologists. This is especially true of arcane but potentially useful matters like bird nesting and behavior, snake habits, marine animals’ life cycles (Johannes 1981), local soils and their agricultural value, and tree saps and gums (Langenheim 2003).

Books by Ian Saem Majnep (1977, 2007) about the biological knowledge of his Kalam people in highland New Guinea confirm the testimonies of many biologists about the incredible knowledge of New Guinea’s indigenous peoples. Western biologists have learned much from this data base. In South America, many birds known only from specimens brought in by indigenous hunters have only recently been found in the wild by Euro-American biologists. Some still remain unknown to outsiders.

Agriculture and food technology may be the fields most enriched by traditional knowledge. Local potato knowledge in Peru, Bolivia and Chile has been a world resource for centuries. Chinese agricultural innovations, such as the raised-bed system of cultivation (sometimes miscalled the “French” system), have gone worldwide. And of course all our common food technologies—the ways we make bread, wine, soy sauce, yogurt, cheese, fish pastes, dried meats, smoked sausage, and all—were developed millennia ago by nameless but brilliant minds.

An area taking specialized research knowledge and methods is the study of mushrooms. Two recent studies have explored this seriously: Aaron Lampman’s study of highland Maya ethnomycology (2008) and Sveta Yamin-Pasternak’s studies in Alaska and Siberia (forthcoming). They found local knowledge of edible forms, and how to make marginal ones edible, was well ahead of most biologists’ knowledge. Lampman found a number of medical and nutritional uses of fungi that await further research.

Areas like this, rather little studied by biologists but of real practical importance to local people, present frontiers for ethnoscience. Superficial studies of “TEK” miss them entirely, and thus sadly misrepresent and underrepresent cultural knowledge. Alas, tentative, incomplete, poorly-done, and preliminary research on traditional thought was the rule in early days, and led to endless nonsense about the “primitive,” “prelogical,” and “rudimentary” thought-processes of the nonwestern world. It has taken a hundred years to scratch the surface of Maya knowledge. One is reminded of the misinterpretations of traditional religions that still overwhelmingly dominate much of the sociological and religious literature. Emile Durkheim wrote *Elementary Forms of Religious Life* (1995 [1912]) on the basis of the first preliminary descriptions of Australian Aboriginal religion. Had he lived to see our modern knowledge base, built on more than a century of further study, he would have realized how very far from “elementary” those forms were.

The most research has been done on medicine, because pharmacology began with traditional field knowledge and has continued to profit from it ever since. A large percentage of our everyday biomedical drugs is derived from folk remedies. Countless new ones are out there, but again the intellectual property rights issue prevents using most of them. Some idea of the future is found in the fact that the leading, and often only, effective malaria cure today is artemisinin, the active principle in the ancient Chinese malaria cure *qinghaosu* (*Artemisia annua*). Artemisias are also still used for many other parasite treatments. China’s classic herbal, from 1593, described 1897 remedies; the Chinese Great Medical Dictionary (*Zhong Yao Da Zi Dian,* 1979) brought the total to 5767; I estimate the current known total of traditional and folk medicines at around 30,000 species.

Among the Yucatec I found 350 plant species with known medicinal uses, again comparable to 215 turned up by Hunn in Oaxaca (Hunn 2008:163). Many of the Maya remedies are effective and are unknown to bioscience. Some are more effective, for me at least, than anything I can find in the drug store. Alas, my lips must be sealed, pending the resolution of intellectual property rights issues that currently tie up indigenous medical knowledge in legal knots.

Why People Know What They Know and Not Something Else

“This…may give us some light into the different state and growth of Languages, which being suited only to the convenience of Communication, are proportioned to the Notions Men have, and the commerce of Thoughts familiar amongst them; and not to the reality or extent of Things…. From whence it is easy to imagine, why, as in some Countries, they may not have so much as the Name for a Horse, and in others, whre they are more careful of the Pedigrees of their Horses, than of their own, that there they may have not only Names for particular Horses, but also of their several Relations of Kindred one to another” (Locke 1979 [1697]:349-350).

 Of reasons to believe something, the foremost is, obviously, that it is true and useful knowledge. We are fascinated with error precisely because it is unusual and needs explaining. The vast majority of what we know is basically correct. Since we are mortal beings, all knowledge incomplete and imperfect, and much of it is distorted, but at least it gets us through the day.

 Even so, error is common enough that accurate knowledge needs some explaining. Humans are prone to mistakes. They also tend to be lazy—learning only what they absolutely need to know, and not always even that. The sort of curiosity that leads scientists and explorers on into uncharted realms is by no means confined to modern society, but it is by no means universal, either.

The obvious reason for most environmental knowledge is that it is necessary for survival. We need not bother to inquire long about why hunters know everything about deer, farmers know everything about maize, and fishermen know everything about catching their major staples.

For equally obvious reasons, dangerous things are relatively well known. Every society drills knowledge of local poisonous snakes into its young. Poison oak is often the only native plant known to my friends in California. One of the more fascinating bits of lore learned by biologists from traditional people concerned poisonous birds. New Guinea natives warned ornithologists that certain birds known as *pitohuis* (genus *Pitohui*, family Pachycephalidae) were dangerous to eat. The biologists “knew” that no birds are poisonous, so they tried a few of the dull-brown pitohuis, and of course got seriously ill. It turned out that the birds eat poisonous caterpillars and deposit the poison in their flesh, as a defense against predators (see e.g. Majnep 1977). Similarly, arctic explorers in the 19th century learned the hard way that Inuit were correct in warning them to avoid eating polar bear livers. Biologists eventually found that the bears store vitamin A in the liver against the long arctic nights, and vitamin A, so necessary in small quantities, is deadly in overdose.

Cultural “scariness” is involved: snakes frighten people more concern than automobiles, though snakebite kills perhaps one American a year and cars kill 50,000. Thus people tend to watch for poisonous snakes and know how to recognize them—or else simply kill all snakes, on suspicion. (Some of this is probably instinctive; all primates apparently fear snakes.) This relates to the notorious problems humans have with risk assessment, a subject well covered in the literature (Beck 1992).

Immediate threats naturally command the most attention. Epidemics always lead to brief flurries of intense interest in the disease in question. Such fascinations wax and wane with current headlines.

Another proof of the sociable nature of humans is that mass disasters or even small disasters that involve several people always displace far wider and more serious problems that kill one at a time and in obscurity. A single mass murderer causes more concern than the huge daily toll of individual killings. A very small epidemic gets more attention and worry than the routine infant and maternal deaths that kill millions of people every year (on such issues see, again, Beck 1992).

However, this is only a beginning. First, what knowledge is necessary depends on what mode of livelihood is present. Americans now have to know a very great deal about computers, cellphones, and other gadgets if they want to be functioning members of society. Most of this knowledge did not even exist fifty years ago. Conversely, the vast majority of Californians today would be hard pressed to survive as hunters and gatherers; the knowledge is almost gone, because we no longer live as Californians did 300 years ago. On a finer-grained scale, traditionally-minded Anglo-Americans know how to bake bread, but almost no traditional Chinese did, because their staple grains such as rice did not work well for baking. A full account of why I know how to bake bread would thus begin at least 12,000 years ago, with the choice to begin domesticating wheat in the Near East.

More interesting still is the true and potentially pragmatic, but extremely arcane and usually useless, knowledge of the world possessed by men like my friend and coauthor Don Felix Medina Tzuc. His formal education consists of two years in a tiny rural schoolroom 60 years ago. His real education includes knowledge of the behavior of dozens of species of almost invisibly small insects, the names for obscure and rare varieties of lima beans, and enough further lore to fill many books. A moment of truth for me was when we spotted a Piratic Flycatcher, a very rare bird in Quintana Roo, and he told me that it was trying to take over an oriole’s nest for its own use. Indeed, this is the habit of Piratic Flycatchers, hence their English name. But knowing such an obscure fact about a bird that we saw only once in two years of work indicates a quite incredible level of ornithological expertise.

The only motive for learning most of this was his native curiosity, which he exercised to the full in a life of rural toil that would otherwise have been boring. The nesting habits of flycatchers could be of no conceivable use to him. Yet, why did his curiosity light on these matters, when even in Chunhuhub (his town of residence) there are many who confine their attentions largely to people’s affairs and town issues? Partly because he is an exceptionally interested individual, but also because he is a traditional Maya. For the Maya, knowledge of the forest and the fields is important and is valued. A Maya who really knows the woods and fields is highly respected. The knowledge is valued and esteemed, exactly as knowledge of computers is esteemed in certain sectors of American life.

The true definition of an expert, whether in the rainforest of Quintana Roo or the labs of Silicon Valley, is that such a person knows far more than necessary about a subject. He or she is so fascinated with the subject that learning becomes an open-ended task. Motives include sheer pleasure, winning more prestige and respect, having knowledge in case it is needed, reaching closure or completeness, winning higher social position, and even the joy of beating a rival in expertise. Often the highest motive is helping: an expert knows a great deal of material that can potentially save crops or lives. The lowly end of getting more maize or money is not as motivating to such experts.

Consider one of the last areas of folk knowledge that is at all widely known in America: how to cook. Even that skill is vanishing among the young, but many still learn it. In this age of fast food, no more than very minimal cooking skills are necessary, and most Americans accordingly stop there. Yet there remain literally millions who cook for fun, as a hobby, and know hundreds of recipes. They may specialize in midwestern or Chinese or ancient Roman cooking, or in chicken recipes, or in seafood. As a hobby, it produces edible results that can be shared (hopefully with delight) by friends, and that win respect in our society.

This is not an area of great elaboration among the Maya. Many do know Maya cooking far beyond mere need, however, and some are real “foodies” in the American sense, at least as far as Maya cuisine is concerned. (They have little opportunity to learn any other kind.)

By contrast, knowing wild plants is almost a lost skill in the United States. Many Americans do not know the name of a single locally native tree or flower, and do not care in the least. Asking my classes in California over the last 40 years has revealed that most of them know the state flower (California poppy) and state tree (redwood), and often poison oak (as noted above), but very few know any more than that. Some know that “pines,” “oaks” “grass,” and perhaps a few other very broad and vague categories are native.

The reason for this ignorance is obvious: it is of minimal use for daily living, and thus of minimal concern to society at large, and thus of minimal value for prestige. Hobbyists and devotees may learn it, and may even become professional botanists who know thousands of species, but this is truly rare. I probably know most of the professional field botanists in southern California; there are perhaps a hundred of them. It is truly a specialty. Most botanists are now “lab rats,” studying plant genes and chemicals. There is a joke that part of the celebration of a botany Ph.D. is showing the new doctor the actual plant she worked on. This is exaggerated, but it is literally true that bright Maya children know more plants than many botany graduate students.

Thus, knowing accurate and practical knowledge involves several factors. Basically, the knowledge must be useful. It must be seen as useful by the society, and therefore considered important. It must be respected; knowledge known to be useful, but identified as “lower class,” is avoided by those who want to feel “upper class,” no matter how valuable.

Knowledge is learned in direct proportion to how much it is valued by the wider society, and especially by the leaders of the reference groups of the individuals doing the learning. This point should be too obvious to need making, but it appears to be totally lost on, for instance, American politicians; they constantly attack schoolteachers and educators, cut funding until the school is usually the shabbiest building in any American town, and then seem genuinely surprised when children blow off school learning. This could never happen in any traditional society. Life skills are actually valued, and those who excel in knowing them are respected accordingly.

The Sorrows of TEK

 The most unkind cut of all to TEK has been the recent attitude of the more radical “discourse” theorists and cultural relativists. Basing themselves loosely on Foucault (e.g. 1980) but going far beyond him, they allege that all scientific discourse, modern or traditional, is mere power/knowledge. Scientific knowledge is claimed solely so that the claimant can take power over those he or she convinces or browbeats into accepting his or her statements about the world.

This cynical view is adopted by many of the recent champions of indigenous peoples. Arturo Escobar (2008) gives a particularly good—and rather merciless—discussion of it, citing dozens of sources. If all alleged knowledge is mere power-jockeying, then traditional knowledge is at least as worthless as modern science. In practice, these scholars treat traditional knowledge as much more worthless than modern science. These scholars reject “truth claims” and “power/knowledge,” but, in regard to modern international science, they cannot possibly live as they talk. They take planes, drive cars, write on computers, eat GM foods, and in every way live by modern science, thus living a lie. They are, however, under no such real-world obligations toward traditional science, and thus reject or ignore all such systems of belief, teaching, knowledge, and wisdom. They reserve the right to claim “real” truth for their own statements and opinions.

Thus postmodernists are practicing racist dismissal of other cultures on the basis of a dishonestly-claimed universal relativism.

 We can do better. Most, probably all, traditional systems of thought have special features worth studying, if only because they are achievements of the human spirit, comparable to great poems and works of art.

Conversely, however, those who realize this often go too far the other way. They idealize TEK too far or essentialize it. There is no one “TEK,” let alone a single, ancient, spiritual view of life such as New Age prophets love to promote. Traditional knowledge is local. It differs profoundly from place to place, because it results from deep and long-continued interaction with place and landscape. In so far as one local knowledge system does share basic views with other traditional knowledges round the world, the sharing is apt to be the product of human perception at work, and thus very often the product of human error. Some aspects of the “spiritual” nature of much TEK is arguably a case in point. Gods, spirits, witches and devils exist everywhere in human belief, but nowhere in demonstrable reality.

On the other hand, a broadly numinous, mystical, experiencial vision of the world may indeed be one of the greatest strengths of traditional systems. All such systems are engaged, in that they are the working mental tools of people who are intensely engaged in their landscapes, labors, interactions, and daily encounters with the world. Traditional knowledge is reflective and often highly abstract. It is not merely the “science of the concrete” that Levi-Strauss called it (1962). However, it is also informed by continual, intense interaction with its subjects—rocks, trees, animals, waters. It incorporates rich perceptions and understandings that come from such limited but constantly renewed encounters.

One form of TEK: Traditional Views of Causation

Probably the most famous minor accident in anthropological literature was the stumbling of a small Azande boy over a stump in the Sudan in the 1920s. It achieved fame because it was witnessed by E. E. Evans-Pritchard, then a young field worker, later one of the greatest anthropologists of all time. He heard Azande bystanders mutter “sorcery.” He was surprised, and asked them how they could say this, since—to all appearances—the boy had hit into the stump by accident. The elders pointed out that the stump had always been there, and the boy certainly knew about stumps and was normally careful enough. The only way to explain this particular event—unusual and out of the normal character of things—was through sorcery (Evans-Pritchard 1935:66).

Evans-Pritchard went on to learn that the Azande explained all unusual and unpleasant events by sorcery. More: he realized that it made perfect sense. They knew the world was usually orderly and lawful. They had no place in their scheme of things for purely random but highly disruptive events. Evans-Pritchard realized that it is we of the western world whose belief in chance, however accurate, seems strange to common sense.

People need to explain, understand, and predict. This traps them, because the world is often genuinely unpredictable, and the most logical and reasonable explanations of things are often the wrongest. People are thus fond of inventing causal explanations that are too limited or simple, or are downright wrong, and their fond beliefs about the depth and accuracy of these is yet another of those “positive illusions” we know and love so well (Alter et al. 2010).

As J. W. Powell pointed out as long ago as 1901, traditional small-scale cultures naturally attribute thunder to a giant bird, the creation of hills to the animals in prehuman times, and, in short, all natural processes to active supernatural agents. These are seen as causing anything and everything, especially when other explanations are hard to find. Powell delightfully described his moment of truth:

“Kanosh was the chief of a Shoshonean tribe in the central part of Utah…. I was wont to sit at the feet of the venerable Kanosh and listen to mythic tales. Once on a time he explained to me the origin of the cinder-cone and the scarcely-cooled lava which in times past had poured from it. He attributed its origin to Shinauav—the Wolf [actually coyote] god of the Shoshoneans. When I remonstrated with him that a wolf could not perform such a feat, ‘Ah,’ he said, ‘in ancient times the Wolf was a great chief.’ And to prove it he told me of other feats which Shinauav had performed, and of the feats of Tavoats, the Rabbit god, and of Kwiats, the Bear god, and of Togoav, the Rattlesnake god. How like Aristotle he reasoned!” (Powell 1901:62; Powell’s article started out to deal with the study of imparting instruction, but focused largely on folk knowledge of causation. It is still a very worthwhile read.)

The mention of Aristotle refers to the ancient Greek fondness for using myths to explain all, and justifying the truth of any given myth by appealing to other myths. This was the original “dialectic” method. Indeed, what better way to explain than to have recourse to stories that everyone knows and regards as sacred? We have our own today—the economic theories that have been disproved by every fluctuation in the stock market but are still taken as Gospel by presidents, prime ministers, and the world at large.

A classic argument by David Hume points out that no one can really know, for certain, the cause of anything. If I move my hand to grab a drink, is it conditioned reflexes, or my brain’s neurohumors flowing, or thirst, or random twitching, or my soul, or God, or sheer chance? Or is it all of the above? Or none of them? It is still more difficult to specify the reasons why tigers eat deer, or why stars collapse into black holes.

 Yet, humans seem compelled to think causally. This is another inborn habit of thought. We have to find a motive. Typically, we first look for an active, thinking agent. If that fails, we look for a covering law—not usually a formal one, just a rule of thumb that will serve. Only if that too totally fails do we accept blind chance, or probabilistic factors, as a reason (see e..g Nisbett and Ross 1980). As Geoffrey Lloyd says, “humans everywhere will will use their imaginations to try to get to grips with what happens and why, exploiting some real or supposed analogy with the schemata that work in otherwise more mundane situations” (Lloyd 2007:130).

 Aristotle described four types of cause, or rather of *aition* (pl. *aitia*), which has also been translated “factor” (Aristotle 1952:9, 88f). The first is material cause—what the object we are contemplating is made of. This would not occur to modern people as a “cause”—the hickory wood does not cause the baseball bat—but Aristotle was thinking partly of the elements of Greek thought. Earth, air, fire, and water were generally thought to have dynamic qualities that made them evolve into things. Chlorine purifies water by virtue of its violently oxidizing nature, which destroys bacteria and toxins; this is an example of material cause in action.

Second is formal cause: the definition of the object, its pattern, its essential character. A baseball bat is a rounded stick made of hickory wood, and is patterned so as to hit balls in a game. Third is efficient cause—the direct, proximal cause, specifically the causing agent, of an action. The bat is made by a factory to be sold to a player, who then uses it to hit a ball. The chlorine is bubbled through water, where it reacts chemically with toxins and bacterial membranes. Fourth is the final or ultimate cause, the reason for the action or object: the water is purified so people can drink it safely; the bat is used in a game for the purpose of entertaining people. This last can go into infinite regress: the bat is to hit a ball, so that the game will go on, so that people will be entertained, so that they will enjoy life and buy the sponsors’ products, so that…. And this only scratches the surface of Aristotle’s theory of cause, and he was only one Greek philosopher (see Lloyd 2007:108-130).

 The endless debate on cause in philosophy since Aristotle need not concern us, since we are here considering folk and traditional knowledge. In that realm, our heuristics and biases play out at their most florid. Aristotle’s efficient cause is stated in agent terms. This default attribution to intentional action by an agent gives us the universal belief in gods, spirits, and other supernatural beings.

 In explaining something, we have to worry about what level to invoke. Andrew Vayda points out that a truly *complete* causal explanation of everything would have to start with the Big Bang, or even before (Vayda 2009). At the other extreme, my taking a drink is directly caused by my moving certain muscles in my hand, arm, and mouth. But if my wife asks me “Why did you take a drink?” she expects me to answer something like “because I was thirsty from working in the garden.” She does not want to hear “because water is necessary to life” or “because my hand moved the glass.” An amazing thing about humans is that we almost all can instantly and accurately infer exactly what level of cause is intended in questions like that. Out of the endlessly long causal chain from the Big Bang to my finger muscles, we know exactly what level to answer at.

 This is not always true in science. Indeed, that is the point of Vayda’s article, which critiques overly broad, general, or remote causes and argues for looking at local, immediate ones. If we want to explain the deforestation of Indonesia, it may be useful to look at global economic forces, but it is certainly useful and even necessary to look, village by village and logger by logger, at just how and why trees get cut. Vayda is generally hostile to high-level explanations, even when they would seem necessary to most observers, but his attention to lower-level, local, proximate causes is highly salutary.

 Traditional people have the same problems, and—like other scientists—they can disagree about the appropriate level of cause to look at. Illness may be due to a simple, direct thing (getting in a cold draft) or a more remote one (the generally bad climate these days). It can be a pure accident, or the result of foolishness (drinking a cold drink when overheated), or witchcraft, or divine punishment. If bad luck happens to three or four people in succession, it may be due to three or four random and immediate accidents, but it begins to look suspiciously like the wrath of the ancestors, and the prudent family will check (through a spirit medium, perhaps) whether somebody forgot a sacrifice or broke a taboo. Enough bad luck may call forth a ritual on village or tribal scale, to cleanse the district or even to renew the world.

As scientists, traditional people are limited more by lack of scope and equipment than by lack of some (mythical?) scientific mentality or method. One result is that traditional peoples often explain things by recourse to entities they have had to infer. Modern scientists like to call these “supernatural.”

All cultures encode considerable knowledge of what leads to what. These can be modeled as simple X-before-Y models, flowcharts, entailment chains, decision trees (Gladwin 1989), and so on. To burn a field, one has to know that starting a fire will cause dry vegetation to burn. To catch a fish, one has to know that a baited hook will lure the fish to bite, and one usually has to know also that the fish bite best at dawn or evening, are found in still pools, won’t bite if people thrash around in the water, and so on. This sort of working knowledge leads to the formulation of Arthur Kleinman’s explanatory model*s* (mentioned above; Kleinman 1980).

Humans desperately want or need to know many things that they cannot really understand. It is here the explanatory models are most prone to run far ahead of real knowledge. This is most obvious in the case of illness. It was, indeed, Kleinman’s studies of cultural attempts to explain and cure illness that led him to investigate explanatory models. People everywhere desperately want to heal the sick. Unfortunately, before modern laboratories with all their equipment, there was really no way people could understand bacteria, viruses, or chemical-caused cellular mutation. We still do not fully understand cancer or heart disease. So people do their best—figuring out as much accurate knowledge as they can, and then applying the best guesses as to where that leads. Inevitably, they get it wrong, leaving plenty of room for revision.

In general, there is always a “black box” somewhere between cause and effect, and explanatory models exist to theorize about what is in that black box. Modern science has shrunk most black boxes to very small size, at least when we look at proximate causes. In traditional societies, the black box can be very large, leaving much room for cosmological speculation. Even today, we are at a loss to explain a great deal of mental illness and autoimmune disease, to say nothing of astrophysics, pre-Cambrian life, and the mineralogy of the earth’s core. It is quite astonishing to look back at my undergraduate education and see how much that I learned has been proved wrong since then. One should always be very modest about one’s black-box explanatory models.

Supernaturals act for their own reasons, but people in earlier times knew as well as anyone else when an event is caused by human intention or error. They sometimes added to this a supernatural explanation. An error may be attributed to a devil acting maliciously within the person’s brain. Usually, however, people understand ordinary causation perfectly well.

Contrary to a few thinkers who holds that nobody can predict anything because of the commonness of random events, the vast majority of the things humans deal with are broadly predictable. Throughout human, history, people have worried about whether the sun will continue to rise, over whether days will get longer again after December 21, and over whether sunflower seeds will grow sunflowers and not grass. They have rituals to control all these matters. But they realize that “the rituals work.” These matters are 100% predictable in practice.

 Belief in supernaturals has the effect of explaining how causal chains start (cf. Atran 2002), but the real advantage is that it allows the illusion of control. If rain gods control the rain, we can get rain by praying and sacrificing to them. If rain comes from the mindless interaction of warm and cold fronts, or winds blowing from sea to mountain, we can do nothing to relieve drought or stop flood. If disease is sent by God as warning or punishment, we can pray, but if disease is a mindless and unpredictable process caused by incomprehensible forces (as it was—recall—right up to the late 19th century), we have no control over it. Nothing is more terrifying than being hopelessly unable to control something so dangerous and unpredictable.

Epidemics, earthquakes, tornadoes, tidal waves, and similar catastrophes are the common lot of humans, but were totally beyond anyone’s ability to explain until the last century or two. Yet, people desperately needed to understand them, in order to try to predict when they might strike, or at least to feel in control of the situation. Understanding is the most basic form of control. Thus, all such events are explained, throughout the world—almost invariably and inevitably by resort to supernatural entities.

Nothing could be more logical than assuming that glaciers are living beings; they move erratically, act unpredictably, and do things that seem to be actual responses to human conduct. Thus, indigenous beliefs in glacial intelligence persist in northwestern North America, as brilliantly described by Julie Cruikshank in *Do Glaciers Listen?* (2005). Glaciers, for instance, hate to have meat fried near them. People who do that are likely to fall into a crevasse next time they are on the glacier. Such beliefs have spread to some White settlers. This all may seem “supernatural” to the reader of the present text, but it is based on the very best analysis that knowledgeable local people could do in premodern times. As Cruikshank points out, they probably reasoned by thinking that glaciers are like bears (both being huge, mobile, and dangerous), and bears will come after you (to grab the food) if you fry meat near them.

A nice example of the development of a heuristic is the widespread “doctrine of signatures” in herbal medicine. According to this idea, “like cures like”—plants with red juice build blood, the lung-shaped leaves of lungwort show it cures lung problems, and of course anything shaped like a penis or testicles must be aphrodisiac. On the face of it, this is logical misattribution at its worst. However, Bradley Bennett (2007) has recently shown that in fact the plants often do work for the conditions indicated. The “likeness” then has obviously developed as a mnemonic, rather than being the source of the indication in the first place. This explains why one must sometimes use a good deal of imagination to see the “likeness.” One can go on to infer that these cases were overgeneralized, to produce the plausible but wrong assumption that God had put signs on the plants and animals to show what they cured—this being the actual “doctrine of signatures.” Hence the Chinese idea that port wine builds blood, the European idea that asparagus is a male aphrodisiac, and so forth.

Another important case study is the worldwide explanation of earthquakes. Almost everywhere, people left to themselves conclude that earthquakes are caused by a giant being in or under the earth. The being sometimes becomes agitated and shakes. The Greeks held the god Atlas, who holds the earth, responsible. The Northwest Coast Native peoples believe a giant fish or serpent is responsible. Other groups worldwide blame turtles, crocodiles, and other large sluggish creatures.

Other, more scientific speculators have thought that winds caused earthquakes. The Greek Anaxagoras seems to be the first attested in this regard. Thomas Gage in the 17th century thought that Mexico City’s many earthquakes were caused by violent winds blowing into and through the great caves in the region (Gage 1958). The great Arab thinker Avicenna (Ibn Sīnā) had heard an earlier version of that story. He rejected it, and discussed other traditional explanations, including heavy rains, landslides, and motion of natural forces in the ground (Ahmad and Baipakov 2000:210). He was sharp enough to figure out the real explanation: large blocks of the earth’s crust moving slowly underground. He had, alas, no way to prove it. Science abandoned this idea, and as recently as my student days earthquakes were often explained by shrinking, or, alternatively, by expanding, of the earth. Slippage along fault lines was known by the end of the 19th century, but no one knew what caused it. Understanding the actual reasons for earthquakes had to wait until the mid-20th century, when plate tectonics finally solved the problem.

However, knowing “real” causes for things is not always necessary. People need to know what works, not necessarily why it works.

Many cultures learned long ago that certain herbal teas—from willow, wintergreen, and the like—cure headaches. As the *Grete Herball* of 1529 says, echoing Greek and Arabic knowledge, “the iuce of the leves of wilowe is good to delay the heate in fevers yf it be dronken” (quoted Isaacs 1990:362-363). The natural inference was that these plants contained an “antifebrile” principle or a divine spirit. We now know the “spirit” is salicylic acid, source of our aspirin. Knowing that we are dealing with a simple anti-inflammatory chemical reaction, instead of a god, helps us design better pills. But the traditional cultures did perfectly well knowing only that willow tea cured headaches.

My long-standing favorite among “wrong” views is humoral medicine. I have published extensively on it elsewhere, and need not go into detail here (Anderson 1987, 1996). It was based on the classical Greek theory that there are four elements: earth, air, fire, and water, and four qualities: hot, cold, wet and dry. Earth is cold and dry, fire hot and dry, water cold and wet, air hot and wet. They can transform into each other. Earth, heated, can turn to fire if it has enough organic material in it. Air, when chilled, precipitates water. Fire burns itself out, turning itself and the material it burned into gas as everything cools down. Water, heated, turns to gas. Nothing could be more reasonable to assume that these are all basic in the world. (There were also Greeks who asserted the primacy of one or two of these; different ones had different advocates.) Alchemy made perfect sense in such a world (Hill 1990a).

Similarly, it made perfect sense to see human illness as unbalance of hot, cold, wet, and dry, and the great Greek physician Galen developed a brilliant and comprehensive theory of this. The theory stood for over 1600 years as state-of-the-art medicine, and survives widely in folk and traditional medicine today (Galen 1997, 2000, 2003, 2006; cf. Anderson 1987, 1996). This theory extended from Europe to China, spread throughout the New World, and influenced most of the globe. It was probably the most widespread belief system in the world 200 years ago—far more widespread than any of the religions.

Humoral medicine was thoroughly scientific and did not resort to supernatural agents of any kind. It was based on the best observation, experiment, and inference possible in pre-laboratory days. It developed internationally. It allowed people to control their fates, and to heal themselves. It was, in short, one of the most stunningly brilliant and valuable creations of the human mind. It was also entirely wrong as to its assumptions about what went on in the black box.

A related theory was that of miasmas: poisonous humors that caused disease. This was standardly used to explain outbreaks of bubonic plague. It is interesting to see the greatest environmental scientist of the 19th century, George Perkins Marsh, speculating on malaria in his magistral work, *Man and Nature* (2003 [1864]: 353): “In fact,…the mixing of salt and fresh water in coast marshes and lagoons is deleterious to the sanitary condition of the vicinity…. It has been suggested that the admission of salt water to the lagoons and rivers kills many fresh water plants and animals, while the fresh water is equally fatal to many marine organisms, and that the decomposition of the remains originates poisonous miasmata. Other theories however have been proposed….”

The real explanation is that the malaria-carrying *Anopheles* mosquitoes of south Europe (where Marsh was writing) like brackish water. But the literally incredible saga of malarial transmission by mosquitoes was still unknown in 1864. Soon after, the brilliant work of Ronald Ross and Patrick Manson solved the problem. One component was Ross’ realization that some mosquitoes are different; those that have spotted wings and stand on their heads carry malaria, others do not (Desowitz 1991). So insect taxonomy, proverbially the most useless and worthless scientific activity (“butterfly collecting”), saved countless millions of lives—as it was to do again, time after time, in studies of plague, typhus, leishmaniasis, oncocerciasis, Chagas disease, and other insect-borne ailments. Not even Marsh, one of the greatest scientific minds of his century, could have imagined this in 1864. The most plausible theory, especially given its long history, was the one Marsh cautiously extended.

Today, humoral medicine has become “pseudoscience.” Monday-morning quarterbacking is the safest kind.

William Wimsatt (2007) has concocted a whole philosophy of science based on this principle. Instead of seeking perfect truth through deductive logic, he seeks “piecewise approximations to reality” by frankly using heuristics and other rough-and-ready search strategies. He sees science as an asymptotic approach to truth, won through messy processes, rather than a perfect, pure system of the sort advocated in science classes in the 1950s. This view brings modern science in line with early science and also with traditional empirical knowledge.

Roberto Gonzalez’ brilliant study *Zapotec Science* (Gonzalez 2001) includes the Earth God and several other forces considered by the Zapotec to be perfectly ordinary everyday reality. Most Zapotec science is perfectly empirical and factual (see also Hunn 2008), and Gonzalez shows it grows and increases like international laboratory science. Within Zapotec science, the gods are black-box variables inserted to make causal inference better. Gonzalez shows that they not only do not invalidate the science, *they actually allow Zapotec science to be more accurate than “western” science* in dealing with strictly local, familiar phenomena. International science may have better causal concepts in its black box, but it lacks the local knowledge that allow the gods to track reality. The gods connect X and Y perfectly well, not because they exist, but because the Zapotec know (better than biologists) how X and Y fit together, and simply infer that the causal connection is a divine agent.

The Zapotec also use, as explanatory variables, the humors of Hippocratic medical fame—hot, cold, wet, and dry. They were imported to Oaxaca from Spain in the 16th century, there to fuse with similar native concepts.

The ancient Greeks, with their many debates about causes, gave the European world one tradition. An independent tradition is found in Chinese science (Anderson 2007; Lloyd 2007). Even in China, ordinary Chinese believed that dragons in the sky caused storms, and dragons in the hills caused earthquakes (or at least many of them did, and often told me this). However, more educated people, and many not so educated, had a different explanation. They postulated that *qi* flowed in the ground. *Qi* literally means “breath,” but in this sense it means vital essence or subtle energies. Qi flows along channels in the ground as well as in bodies. Where the lines of qi concentrate and come together, or where they may be blocked, violent energies sometimes erupt, causing earthquakes. This explains the concentration of earthquakes along certain specific lines, characteristically marked by dramatic scenery. This is not too different from the current scientific explanation: earthquakes follow from extreme pressure and tension, usually caused by volcanic action or plate tectonics, and they occur along fault lines that often cause exactly the dramatic scarp faces that the Chinese see as markers of concentrated qi flow. The Chinese noted that earthquakes were common at particular points, often characterized by spectacular cliffs, and inferred the rest.

The Chinese have been accused of looking at “correlation,” not causation, but this is too simple. (I draw on my own research here, but see also Harbsmeier 1998; Lloyd 2007:124-130.) Chinese reasoning by analogy, correspondence, and correlation depends on assumptions of functional relationships. They knew that the liver, stomach, heart, and other organs must keep working together. None causes the others, but all depend on each other’s proper functioning. They compared this to the macrocosm: trees depend on water, flowing water depends on rain, and so on, but these things constantly interact in functional association, rather than one doing its thing and then the next in line doing its. Arguments in early Chinese philosophy make it clear that the analogies so often used in argument were not intended to be mere metaphors. An analogy was intended to capture some real, natural, functional relationship. Theories of causation were thus real enough, but they ran heavily to mutual or cyclic causation, not X-then-Y stories of the sort the Greeks preferred.

In other words, both the Greeks and the Chinese attended to real causal chains in the real world. The Greeks attended to X-then-Y chains, the Chinese to scenarios in which X-and-Y-mutually-interact.

 As in many other cases, this gives us a very interesting insight into how people reason when there is simply no way to find a perfectly correct answer. Marx, Foucault, and many other thinkers would assume that powerful people would fill the gap by some self-serving explanation, and force the masses to accept it (see below). This does not happen. There is no benefit to the powerful in thinking a dragon shakes the earth. There is no benefit to the powerful in believing in flows of qi. There is no benefit from coming up with the correct explanation, either; plate tectonics has not made anyone a dictator.

Similar explanations cluster around epidemics. Again, educated Chinese usually explained them as due to problems with the flows of qi. This seems minimally helpful to rulers.

However, in this case, other cultures do resort to explanations that benefit the powers-that-be. Worldwide, epidemics are often explained as punishment for sin or for broken taboos or other social rules. Today, for instance, we blame them on various kinds of pollution and unsanitary practice. The value of this type of explanation for shoring up rules, and therefore the positions of the leaders of society, has long been noted by social critics. Religious leaders are especially prone to claim their followers have sinned, and must contribute heavily to the church for relief. People in all societies can spot the shaman’s or priest’s self-interest in such explanations. Yet people are still easily fooled. Both epidemics and individual illness cases are often explained as due to witchcraft, or to “carriers,” which gives the leaders an excuse to eliminate their competitors or any unpopular individuals.

 The recurrent epidemics of bubonic plague that swept Europe from 1346 onward were first explained this way, and this remained the most popular explanation. Europeans, however, learned to cope. At first they killed the “witches,” Jews, and “heretics”—always the first suspects in such cases. When that failed, they tried prayer and self-flagellation. When that failed, they tried various purifying means, including sweet-scented items to drive away noxious vapors. (The pomander was invented for this.) Finally, quarantine and cleanup were discovered—quite early, as it turned out. Slowly the plague was controlled by such public-health measures (Anderson ms 2; Cipolla 1981). The AIDS epidemic went through the same stages, though much more rapidly. Even now, many people believe AIDS is God’s punishment for homosexuality, or the result of a conspiracy, or otherwise unrelated to viral cause (Kalichman 2009).

In general, we “moderns” claim to be too sophisticated to believe in evil witchcraft, but many liberal beliefs about conservatives and right-wing beliefs about liberals are cut from the same cloth A Martian anthropologist would surely class them with the sorcery beliefs studied by Evans-Pritchard. Conspiracy theories abound. Lunatic-fringe theories like blaming mercury in inoculations for autism (Offit 2008) propagate like wildfire on the Internet.

In short, inference about causation—like much other inference—is difficult (Hume would say impossible) in the real world. This is not only because it is intrinsically difficult, but because the common-sense explanations are wrong. It is common sense to look for simple, straightforward explanations, like the Greek “four element” theory. It is common sense for humans to infer agency unless it is certainly absent, and thus to assume that every event is caused by a conscious, deliberate act of some sentient being. It is common sense to recognize that insects are always around and biting us, and we aren’t always sick, so how can insects carry disease? It is common sense to think that CO2 is only a small fraction of the air; how can it cause global warming? Lloyd (2007:129) points out that children develop theories of cause in similar ways—they make the simplest inference given human heuristics and biases, not the one that fits observation.

Are Cultural Knowledge Systems Incommensurable?

In ordinary working philosophy of science, systems are commensurable in so far as they can be described and understood in each other’s terms (Kuhn 1962). Thomas Kuhn pointed out that two theories may be so different that they cannot be tested in each other’s terms, because the measures are so different. They are noncomparable. An obvious example is provided by creationism vs. evolution; creationists reject the entire scientific enterprise on which evolution theories are based, and evolutionists generally rule divine arbitrariness completely out of their universe of explanation. Much less obviously different theories can still be incommensurable. Consider, for instance, a theory of economic development that relates to total overall wealth creation, versus one that relates to and is evaluated by its contribution to raising the incomes of the poor and reducing social inequality. The outcome measures of these theories are basically different, so the theories cannot be directly compared.

Radical incommensurability would be found if cultures were so different that no cross-cultural understanding were possible.

I have demolished, above, the idea that cultures are utterly closed phenomenological worlds. If that view were were true, the attempt to understand other people would be a kind of violation of the “other” culture and of its bearers. Knowledge can be exploitatively appropriated—stolen—but it cannot be shared, because cross-cultural communication does not involve true sharing (cf. Plotkin 1993 vs. Shiva 1997). In this view, modern agriculture—based on bread wheat that originally came from the Caspian Sea area, rice from China, potatoes from Peru and Chile, chickpeas from Anatolia, cotton from South America, and so on—is nothing but a vast biopiracy project.

Yet, social life and communication struggle on, somehow, and are not greatly hampered by cultural lines. Not only do we share enough to talk. We interact enough, talk enough, to bring us ever closer. We can learn.

The Maya Case

Ronald Nigh (2002) has described Maya medicine as incommensurable with “western” medicine (he meant contemporary international biomedicine). He postulates that studying Maya botany from the point of view of biomedicine (to find new medicines) invokes a reductionist “gaze” that amounts to “herbal fetishism.”

 To be sure, Maya beliefs about the universe are not always the same as what one finds in a college botany textbook. Maize is a god (now equated with Jesus), animals have spirits and divine guardians, and rain is not only god-sent but the rainclouds are actual incarnations of the *chaak* gods. One must apologize to the forest for cutting fields in it, and then thank the spirits of forest and milpa for the harvest.

Carlos Lenkersdorf’s wonderfully evocative description of the highland Maya view (Lenkersdorf 1996) contrasts their “cosmovision” with the “western” (in his book, the educated Hispanic-Mexican) one. Certainly, the Maya have a cosmic vision of the world—a beautiful, powerful, poetic one, filled with spirit and emotion. As described by Nigh, Lenkersdorf, and other authors (e.g. Gossen 1974; Tedlock 1985; Vogt 1969), the highland Maya see a world not only of maize and beans but also of gods, animal spirits, magical creatures, wizardry, and ritual song. The lowland Maya are slightly different but broadly similar (Anderson 2003, 2005b).

However, this does not mean their medicine is incommensurable with biomedicine. Maya medicine (and probably any other traditional system of this sort) can be described (with some, but not too much, violence to its inherent organization) by analyzing it into three parts:

 *Technology*. The actual drugs used and behavior carried out—what is actually done. This involves operations that can be verified by seeing if they work. My experience confirms that of the Maya: many drugs do work. Maya healers have successfully cured me, through herbal treatments and massages, of stomachache, canker sores, itch, skin irritations, headaches, rash, and other minor field ailments. Some of these conditions did not yield to biomedical remedies. In this case, the cures worked just as well for a Euro-American with biological and biomedical training as for the Maya. Anita Ankli has shown that many of these Maya cures work because of powerful antibiotic, antifungal, and anti-irritant chemicals that work perfectly well in a biomedical laboratory (Ankli et al. 1999a, 1999b). However, Maya medicine also uses religious charms and spells; these do not work for me but do work for the Maya (or so they tell me). So pragmatic medicines based on real chemicals work by anybody’s standards, but magic appears to involve genuine incommensurability.

 *Organization*. How this enterprise is managed. The sociology of the curing enterprise is addressed here. This, again, seems totally commensurable with modern international science. Maya healers (*jmeen* in Yucatec Maya; Anderson 2003) and midwives (B. Anderson et al. 2006) are perfectly comparable in their social roles to biomedical doctors and midwives. One can easily describe the social organization of Maya medicine. Each large community has a specialized healer (usually one and no more than one), a genuine expert knowing hundreds of herbs and many ceremonies. Each household has one or two or three people who are moderately knowledgeable—knowing perhaps fifty or a hundred herbs. Each community has one or a few midwives. There are also individuals who know massage, bonesetting, and other field first aid in most communities. They do not always do the same things as biomedical caregivers, but their organizational world is comprehensible.

 *Ideology*. Here, commensurability is harder to find, but not insuperably difficult. I follow Weber (e.g. 2001), in using the term to mean ideas and plans in general (not the public display-values of the elite) and in seeing ideology and behavior as mutually influencing each other. Ideology is not purely a result of economics. Maya medical ideology (explanatory models, cosmovision, religion) involves considerations of mystical winds, “heating” and “cooling” forces not related to anything physical or thermal, demonic animal-like beings, and other forces that are imponderable from a biomedical standpoint. It is indeed difficult to see how biomedicine could accommodate evil winds or the demon opossum *(bok’ol ooch*) within its framework, or evaluate the effectiveness of a soul-cleansing ceremony. Conversely, the Maya have no way to measure or test, within their system, a study of the genome of a virus. These matters are, indeed, truly incommensurable between these systems.

Even so, with competent ethnography, the outsider can come to understand the Maya system. Significantly, there are Maya who combine both systems, such as Dr. Gilberto Balam, who is both an MD and an expert on Maya healing (Balam 1992).

 So *technology* is commensurable with biomedical or any other technology that is judged by its immediate empirical value. The outcome measure is whether the patient gets better. This is easily determined, in most cases; there are always vexed cases, in both Maya medicine and modern biomedicine, but an itch, a rash, or a headache either go away or do not go away. *Organization*, too, need present few problems. The question of incommensurability lies largely in the sphere of cosmology*.*

Even this is not always incommensurable. The Maya have a superb conservation ideology, and a superb technology for applying it in managing the forest (Anderson 2005b). The ideology depends on beliefs about the gods and spirits who guard the forest and its animals. Unfortunately, the ideology is now becoming inadequate. There are more people and more guns, to say nothing of chainsaws, tractors, trucks, and other things unimaginable in traditional times. The technology is still adequate, but the chainsaws and tractors provide a most challenging context for it. A highly traditional community like Xocen is breaking down ecologically due to population growth coupled with modern education and technology (Terán and Rasmussen 1993).

The actual behavior toward the environment is fully pragmatic, and fully commensurable with anything in modern conservation biology. The belief system behind it, however, is quite different from anything outside the Native American world. Few outsiders believe in, and perhaps still fewer understand, the whole system of Lords of the Forest, God of Deer, patron saint of peccaries, and other inhabitants of a remote and fading cosmos. A modern biologist would find preposterous the Chiapas Maya folkbiological theory that each person has a *ch’ulel*, an animal doppelganger who lives in a corral under a sacred mountain (Gossen 1974, 2002; Nigh 2002). A Maya would find equally preposterous the belief, most famously enunciated by Descartes (1999 [1637]:40-42) and still alive in some biological circles, that animals are mere machines that lack the ability to think and feel.

Yet, it is important to note that each can understand the other’s view perfectly well, and can analyze it to dismiss it. Each has enough data at hand to cast very serious doubts on the veracity of the opponent view. Also, each potentially has enough data at hand to understand how the view fits neatly with other views in the opponent system. A biologically trained anthropologist can readily see how the Maya habit of personalizing the cosmos leads naturally to a belief in animal souls. By the same token, Maya trained in Mexican schools now often understand how the mechanistic views of scientists lead them to deny mental function to animals. A biologist finds the *ch’ulel* belief unsupported by the evidence; similarly, the Maya know from experience that animals do think and feel. In short, we have here two scientific traditions, mutually able to understand each other, to evaluate each other’s principles, to catch each other’s errors, and—most importantly of all—*to understand how those errors were produced by logical extrapolation from different basic assumptions.*

The Maya with whom I have lived and worked off and on from 1988 onward have no concept of their knowledge as “science,” but their knowledge of plants and animals and of agricultural and forestry practices is stunning (see Anderson 2003, 2005b; Anderson and Medina Tzuc 2005). It indicates a long history of serious investigation of nature. Moreover, this is anything but passive learning of ancient traditions. They are constantly adopting new plants and animals, techniques and tools, ideas and beliefs. My beekeeper friend Antonio Chel was always learning more about bees. My guide and coworker Felix Medina Tzuc was constantly learning more about useful plants and about bird behavior. Healers like Don José Cauich Canul learn more all the time; Don José had gone as far as Veracruz to learn new skills and healing practices. Maya folk biology recognizes more or less the same species or species-groups as Linnaean taxonomy, and even many families; flycatchers are seen as a natural group (sharing the terms *takai* and *yah*), and so is the bean family (Fabaceae), as shown by such terms as “rat’s beans” (*iib ch’o’o)* as a general term for all kinds of small wild beans. These are also sometimes playfully called *mask’abch’ikbuul*, “ani’s machete”—not because they are lumped with machetes, but because the pods look like little machetes, anis—black, noisy birds—live in the tangled vines, and the ani’s loud call, “chick-bool!,” sounds like the Maya word for “bean,” *bu’ul*.

The Maya world is orderly and systematic, and falls into natural groups. It is also useful: separate schemas cover the uses of these plants and animals as food, fibre, and so on. The Maya know how all the plants and animals of their environment relate ecologically to each other and to humans. They see cutting milpas (maize fields) as a necessary activity to keep the forest going, and scientists now tend to agree. Cutting milpa becomes a moral activity, such that even people living on remittances from sons and daughters in the cities will still cut milpa. Don Felix is one such. (The anthropologist Alicia Re Cruz, 1996, tells of her experiences as a milpera; she found it necessary to make one for purposes of rapport. Women do not normally make milpa, but single adult women may do so, since they are heads of household.).

They have, however, various concepts not shared by modern western science: humoral qualities, supernatural guardians such as the Lords of the Forest, and unseen transcendent forces that can carry good or evil. These last are assimilated to the winds (*ik’*) but are not like the winds we normally feel blowing around us. In these latter cases, we must assume that human information processing biases, and, perhaps, Foucaultian distortion of knowledge by power concerns, is at work. I believe all these dubious concepts can be explained by ordinary information processing heuristics. People everywhere overextend hot and cold qualities, infer agency where there is none, and see good and evil as natural forces rather than human judgements. These tendencies seem to be hard to avoid. They are part of our heritage. More directly Foucaultian are judgements of witchcraft; the Maya, like most traditional people worldwide, enforce moral authority and social conformity by witchcraft accusations.

Chinese Medicine

 “Medicine” is a contested term in the world, and its application to Chinese traditions reveals many of the complexities.

 Paul Unschuld, the leading expert on the history of Chinese medicine, has recently proposed restricting the term to scientific healing—healing based entirely, or fundamentally, on inferred natural laws that transcend the whims of supernatural beings, spirits, witches, and other troublemakers. By that standard, medicine has been invented twice in the history of the world: by the Greeks in the 6th-7th centuries BCE and by the Chinese in the 2nd-3rd and after (Unschuld 2009). One might question the dates slightly, and one might feel a need to add ayurvedic medicine as a third contender, but otherwise it does seem that true scientific medicine is sharply and narrowly confined to those two (or three) cases.

The word “medicine,” however, is almost universally used to include the healing practices of all the world’s peoples, and I will continue to use the word in that wider sense. Moreover, all medical traditions, everywhere, are a mix of empirical knowledge, inferred general principles, and agentive claims. Chinese medicine before the Han Dynasty had its protoscience, including ideas of *yang* and *yin*. It was by no means totally committed to explaining all by the whims of gods and ancestors—though indeed serious illnesses of royal personages seem to have been explained that way, from what records we have. And the separation of scientific medicine from supernaturalism and purely empirical pharmacology was never as thorough in later years as Unschuld sometimes implies. But Unschuld has a point, and a very important one. The highly rational, deductive, scientific medicine of Han is a quite amazing accomplishment, even though the science now seems wildly wrong by modern standards.

Unschuld argues that the need arose with society. We know that Chinese political society during the Warring States Period was undergoing a rapid and forced rationalization. Unschuld points out that laws and managerial systems were coming in, serving as models for scientific laws. I would add that states that did not rationalize their militaries, bureaucracies and economies (in Max Weber’s sense) could not compete with those that did. Either way, people came to feel that laws (*fa* in Chinese, a broader term than English “law”) transcended, or should transcend, whims—whether the whim of a sovereign in regard to justice or the whim of a god or ancestor in regard to medicine. Unschuld assumes that something similar happened in Greece: the development of the *polis* and of methods for administering it was contemporary with the development of scientific medicine by Hippocrates and others. He sees key proof in the fact that Greek medicine seems to treat organs as separate, independent, self-correcting items, like citizens in a democracy, while Chinese medicine sees organs as having designated roles in a single harmonious system, like people in a Confucian family or polity. I leave to experts the task of evaluating this theory.

Unschuld is aware that Chinese medicine, by the start of Han, already had a highly developed and effective pharmacopoeia. He is interested not in such pragmatics but in the development of a self-conscious system of principles and rules—a true theoretical medical science.

 The greatest expert of his time on Chinese science and its history was Joseph Needham. A biologist and biochemist, Needham explored Chinese medicine with the help of his longterm partner Lu Gwei-djen. Nathan Sivin has recently edited key documents of Joseph Needham’s work (with Lu Gwei-djen) on Chinese medicine (Needham 2000; Sivin 2000). Needham died in 1991, leaving Sivin the task of completing the “Medicine” volume for the monumental project *Science and Civilisation in China* that had become Needham’s life work. Sivin is a leading authority on Chinese medicine, and his introduction to this book provides a superb guide to the state of the art—brief yet extremely clear, informed, and authoritative.

However, he and Needham differ on a key point. Needham saw Chinese medicine as part of a world medical science, though developing in some isolation from other emerging medical traditions. Sivin points out that almost all contemporary scholars of Chinese medicine see it strictly in its own terms, as a unique tradition that cannot be discussed in connection with others except to show how different it was.

Both have reason to say what they say. Chinese medical science is based on concepts so totally different from modern biomedical ones that they do indeed seem incommensurable. Chinese speak of *qi* (a word hardly even translatable), which flows in conduits that do not exist in biomedical theory. Chinese (like the Maya and the ancient Greeks) see mysterious heating and cooling influences. Chinese medicine deals with nonexistent “organs” like the “triple burner” (a “virtual” triple organ corresponding loosely to metabolic function), and even of ghosts and demons as sources of sickness (*pace* Needham’s overstated claims for rationality). Chinese medicine is so completely incommensurable with other medical traditions that some have even suggested that it not be called “medicine” at all (Paul Unschuld, personal communication). Unschuld takes a middle position, seeing Chinese medicine as fully comparable to Greek but not part of the same tradition—though he leaves significantly open the possibility of actual contact between the two civilizations and their medical traditions.

Needham was aware of the problem, pointing out that “the concepts with which it works—the yin and the yang, and the Five Elements…are unquantifiable…” (Needham 2000:65) and that, to be usable in biomedicine, Chinese medicine must be stated in terms of “the universality of modern mathematised natural science. Everything that the Asian civilisations can contribute must and will, in due course, be translated into these absolutely international terms” (Needham 2000:66). To Sivin, this makes Chinese medicine utterly different from biomedicine; Sivin is fixing his gaze on the underlying principles, the philosophy of the system. To Needham, the difference is real, but can be overcome; Needham is fixing his attention on practices and remedies rather than on underlying principles, so to him the difference is merely a minor roadblock rather than a total barrier. Sivin cares that the Chinese *did not* mathematize the system; Needham cared that they *could have.*

Another way to look at this is to see Sivin as basically interested in cosmological principles, especially the most exotic ones, like the fivefold correspondence theory. Needham was much more interested in practical matters, where Chinese medicine is much closer to western—if only because one cannot ignore the reality of sprains, broken bones, effective herbal medicines, dietary regimens, and so on. Whether you believe in fivefold correspondence or biochemistry, willow-bark tea works for fevers and oral rehydration therapy treats diarrhea. Since practice is more apt than theory to be based on actual working experience, it is more apt to be commensurable across cultures.

Sivin correctly emphasizes throughout his Introduction that Chinese medicine is itself incredibly diverse; by his own logic, we should not really be talking about Chinese medicine, but about several different medicines. Some might be incommensurable with biomedicine. Certainly the dragons-and-demons material is. So, I think, is the fivefold theoretic that is basic to Han medical writing. But the practical lore that actually mattered in daily medical behavior is perfectly translatable.

 Can Needham’s view be salvaged? There are two ways to salvage it; I believe Needham would have invoked them both had he lived. First, we can point out that the Chinese of the great dynasties were under no illusions of “incommensurability” between East and West. They imported vast amounts of western medical learning. Indian medicine came with Buddhism; many Buddhist missionaries had learned the trick of attracting converts through medical care. Indian drugs, practices, and concepts saturated Chinese medicine from about 300 to 800 CE, and left a residue that is still vitally important. Hippocratic medicine reached China well before the 6th century (Anderson 1988), perhaps by the 1st or 2nd centuries. Chinese doctors had not the slightest problem combining it with traditional Chinese medicine, proving that it was not at all “incommensurable” to them. Sun Simiao’s great book *Recipes Worth a Thousand Gold* (654 AD)consciously fuses both traditions (Sun 2007).

Hippocratic medicine also reached Tibet, to the point where the court physician in Lhasa in the mid-7th century was a Byzantine calling himself “Galen”! (See Garrett 2007.) Under the Mongols of the Yuan Dynasty, massive transfers from west to east took place (Buell, Anderson, and Perry 2000). These climaxed in an enormous medical encyclopedia known as the *Huihui Yaofang* (“Muslim formulary”), one of the most amazing examples of international knowledge transfer in the history of the world (Kong 1996). How much influence it had on China remains to be seen, but we know that veterinary medicine entering at the same time completely remade Chinese veterinary practice (Paul Buell ms.). Chinese medicine also borrowed remedies (and probably theories) from southeast Asia and elsewhere. The Chinese physicians themselves would evidently side with Needham rather than Sivin, since they borrowed continually from any source available. They knew perfectly well there was no incommensurability.

 This is because medical science is not an example of philosophers spinning beautiful dreams in isolation. It is about maintaining health. It is tested against results. To be sure, most Chinese physicians, like western ones, rarely question their systems when they fail in curing—they usually blame the unique situation at hand. But, in the end, the system has to deliver. All medical systems are kept on course (and occasionally even forced to change) by being tested against results. Biomedicine has found a somewhat better way to test (though be it noted that the Chinese invented case-control experimentation—for agriculture, around 150 BCE; Anderson 1988). So much the better for biomedicine; we can now test traditional Chinese remedies, and prove that many of them work. Ginseng, artemisinin, chaulmoogra oil, ephedrine, and many others have entered world medicine. This proves the systems are commensurable. Survival rates are the common measure, and a very fine measure they are, too. Biochemistry has now also entered the picture, and it proves that many Chinese herbs work because they contain chemicals bioactive by anyone’s standards.

 Yet the classical tradition of Chinese medicine was profoundly different in concept from modern biomedicine. I believe that the conceptual framework that so strikes Sivin and others was worked out because it fit with other Chinese explanatory models, and seemed to make sense of actual clinical reality, as observed by medical personnel (Anderson 1996). Medicine was interpreted in the light of wider understandings of world, person, and cosmos.

 We can see Chinese medicine in its own terms, appreciating the intellectual excitement of dragons and *qi* channels, whether they exist or not. We can also see them as part of the vast human healing enterprise—a part that has contributed substantially to modern biomedicine and will surely contribute more in future.

 Sivin’s position would relegate Chinese medicine to complete irrelevance. It appears as a now-superseded way of thought—a quaint, old-fashioned thing for specialist scholars to pursue.

The problem is rather like that faced in reading Chaucer. No one would deny that Chaucer’s English has to be understood in its own terms, as a basically different language from anything today. On the other hand, no one would deny that Chaucer’s English is ancestral to modern English; not only is Middle English the direct ancestor of the modern tongue, but Chaucer’s writings had a more than trivial influence on the development. It is perfectly possible to understand Chaucer in his own terms without denying the latter links. It is impossible to give a full account of the development of English from Middle to Modern without taking Chaucer into account, and that means doing so on *our* terms.

Fortunately, a new generation of scholars, many of them trained in the Needham Institute at Cambridge, has gone beyond this outdated opposition and are analyzing Chinese medicine with the same rigor and sensitivity that historians now devote to early European medicine (see major review by T J Hinrichs, 1999, and books by Elisabeth Hsu 1999; Hsu ed. 2001).

More purely scientific in the modern sense was folk nutrition (Anderson 1987, 1988, 1996). From earliest times, this was explained by assumed natural variables. These were unobserved, but were not regarded as entities with agency that could be placated with incense. They were regarded as purely natural qualities. The five tastes—sweet, sour, bitter, salty, and piquant—had to be kept in balance. So did *yang* and *yin.* Foods that were strengthening to the body were rapidly recognized (they are easily digestible, low-fat protein foods). “Cleaning” foods—usually herbal and low-calories—were important. At some quite early time, Hippocratic-Galenic medicine entered the picture; it was known by the 500’s AD and recognized as a western import by Sun Simiao in 651 (Sun 2007). It was soon integrated with yang-yin theories, since its emphasis on heating and cooling humors were directly “commensurable,” and drying and wetting could be easily folded in and largely forgotten. Integration with the five-flavor theory was less easy, and the two remained somewhat separate. The resulting folk and elite nutrition theories were perfectly naturalistic and allowed individuals a very high degree of perceived control over their health and lives. A great deal of empirical, factual observation could be integrated sensibly by these theories. The fact that the theories were deeply incorrect was less important than the fact that they were the best people could do before modern laboratories. Early recognition of the value of fresh foods for beriberi, of sea salt for goitre, and of oral rehydration therapy for diarrhea were among the useful findings incorporated into tradition. One need not know about iodine to know that sea foods alleviate goitre.

Thus, pragmatic, observable data were explained by inferring nonobservable but plausible intervening variables, and constructing simple and reasonable theories. This is what science does everywhere. It makes perfect sense. The only problem in China was that innovation sputtered after 1400, for reasons to be considered in due course.

Similarities: How Commensurable Sciences Really Are

All this is relevant to the debated claim that only the modern west has anything recognizably like “science.” (Some racists in earlier times even said that only the west has rational thought.) If we specify a firm meaning for “science,” or if we maintain that cultural knowledge systems are truly incommensurable, we have postulated something potentially testable.

Even sympathetic observers of east Asia tended in the past to deny it “science,” because Asian science is couched in unfamiliar and mystic-sounding terms. For instance, Pierre Huard and Maurice Durand (1954), writing in an otherwise sympathetic book about Vietnamese culture, contrasted Vietnamese traditional lore—based on ancient texts, religion, and tradition—with the rational, progressive west; but their sympathy was qualified by the fact that they were apologists for French colonialism in Vietnam. They saw France as bringing the blessings of rational civilization to the benighted if appealing Vietnamese.

Observers even less sympathetic than Huard and Durand have also surfaced. The biologist Lewis Wolpert (1993) has argued that only “the west” has, and has ever had, true science. He defines science as a way of knowing that produces unexpected results—beyond common sense. He excludes mystical, religious, or cosmological thinking. He maintains that science, in his sense, goes back to the ancient Greeks, and that nothing like it existed in China, India, or other nonwestern societies.

 Is this the case? Not even by his own showing. First, almost any knowledge system includes a great deal of counterintuitive material; it is not obviously intuitive even to realize that objects fall when dropped, or that the sky is generally blue. Children learn these things by experience, not by intuition. It is certainly not intuitively or commonsensically obvious that some birds nest-parasitize other birds, that squash plants are especially good at keeping weeds down, or that rain comes after May 15—yet all these facts are well known to the Maya of Quintana Roo. He apparently “really” means that *theoretical generalizations* beyond the obvious are a specialty of the west. However, this also is not the case. The great systems developed in the Near East, China, and India all have profound and rich theoretical groundings. His “out” in evaluating these cases is that their knowledge systems were too mystical. However, not only the ancient Greeks, but also such founders of modern sciences as Descartes, Boyle and Newton, were intensely and mystically religious in ways that influenced their science. Even Einstein had his mystical side. Conversely, such Chinese medical men as Sun Simiao were as rational as the finest Western minds.

Wolpert’s definitions appear to be purely a ploy to reserve the prestigious S-word for white males. The fact that contemporary international science owes a great deal to Chinese, Japanese, Indian, and other scientists—and to their cultural traditions—is conspicuously ignored in his book.

Book Knowledge and Bush Knowledge

 The various ploys critiqued above depend to some extent on a highly overdrawn contrast between the rational (or rationalized) knowledge of the “West” and the experiential, intuitive knowledge of the “rest.”

There is a real contrast here, and it is between knowledge learned from actual practice, especially in “the bush” (whether it be farm, forest, or fishery), really is phenomenologically different from book-learning. It is embodied; it is situated in particular places; it is associated with particular events. It is learned through total personal experience, involving physical action with all senses typically alert. It is, because of these factors, normally taught by example and by personal and traditional stories, not by rote memorization of lists (Nadasdy 2004, 2007).

 People exaggerate the differences and polarize their ways of knowing. Mario Blaser (2009) has coined the term “political ontology” for the selective and politicized deployment of theories about the world. Bureaucrats and indigenous peoples, liberals and conservatives, scientists and humanists all have their claims about being, and often greatly overstate these and overemphasize the differences when they are jockeying for control in a given situation. Blaser’s example was a conflict between scientists and local indigenous people over hunting and its sustainability in Paraguay; evidently both sides cut corners on practice and rhetoric. (See also Nadasdy 2004, 2007.)

A superb study of the complementary roles of experiential learning and book learning, and how they are perfectly integrated in cattle ranching, has been provided by Kimberly Hedrick (2007). Far from being incommensurable, experiential and rational learning are totally dependent on each other in a real-world modern enterprise like ranching, or fishing (as my own research has revealed), or farming.

 The contrast of experiential and academic knowledge is based on a still deeper contrast of procedural and declarative knowledge. The former is a matter of how to *do* something, the latter of remembering words and similar symbolic chains. The former nests in the motor and emotional centers of the brain, and is hard to translate into words and symbols. The motor centers, like the smell center of the brain, are rather poorly connected to the language center (which is usually in the left temporal lobe); so we have trouble talking about physical and olfactory sensation. Many of us have had the task of teaching our children to ride bikes, swim, and skate; we know how hard it is to teach by words, and how easy to teach through guided practice. Experiential knowledge of hunting and fishing is overwhelmingly procedural, and the Native people are right not to waste much time talking it out.

Arturo Escobar on Knowledge

Arturo Escobar has recently written a major book, *Territories of Difference* (2008), that has much to say about science and knowledge. He (2008:122-128) classifies scientific knowledge into several useful categories. He begins with “epistemological realism,” and separates positivist science from systems science. Either way, epistemological realism is the standard scientific view: we know the truth through observation, hypothesis, test, and experiment. Positivism founders on reefs of indeterminacy, imperfect knowledge, and tendency to fragment reality and look only at what can be tested easily. Systems science gets somewhat beyond these.

There follows “epistemological constructivism,” including several positions that see science as culturally constructed. Escobar is somewhat, but only somewhat, aware of the fact that science is constructed through interaction, not in a vacuum, and thus that it usually constructs knowledge that checks out increasingly well with reality (a point independently made by myself, 2000, and Latour, 2004, 2005:90-100). Of course science and scientific “facts” are constructed. But “constructed” does not mean “wrong” (Anderson 2000; Latour 2005). It takes a great deal of work, thought, and interaction with the world to produce a scientific fact. This is true even of ones as obvious as that birds lay eggs, and that rattlesnakes can bite you fatally. It is correspondingly more true of modern discoveries. The theory of relativity and the germ theory of infective illnesses are no less true for being constructed.

The truth is, rather, that culture is knowledge we need and use to adapt to our environments (see, e.g., the good discussion of this in McElroy and Townsend’s classic textbook of medical anthropology, 2008). There are no “cultural constructions” hanging out there in spirit land; there is only cultural knowledge instantiated in individuals, as part of their learned knowledge.

Most of that knowledge is factually correct, and is tested all the time against reality. A culture that taught that strychnine was good food would change or die out soon. The level of sophistication of folk science is shown in the very widespread ability to identify poisonous plants and mushrooms, telling them from edible ones that are almost identical in appearance.

Culture always includes several alternative plans or courses of action for any given situation; the individual actor must decide which one to use. He or she then learns to fine-tune these plans in the light of reality. To say that people all mindlessly follow one cultural construction is to say that learning and change cannot exist.

 “Phenomenological perspectives” are even farther from realism in Escobar’s view, and are associated with Tim Ingold’s ecological writings (Ingold 2000) as well as with phenomenological philosophy. Escobar takes phenomenology as showing that all is viewpoint, and that the world is what we see, not what “is.” Again he seems unaware of the hard-headed scientific background of phenomenologists like Husserl and Merleau-Ponty, and their common-sense views of what we can know through science and what remains basically “viewpoint.”

Then follows “poststructuralist antiessentialism,” basically the view that there is no truth or reality and that all is political power games. Interestingly, the backers of this view are the most dogmatic of all epistemologists in asserting the absolute and unquestionable truth of their statements. They dispute only the statements of others. This puts them in the odd position of categorically asserting their own profoundly debatable views, while dismissing claims that water is wet and that trees grow.

Finally, Escobar’s own view, heavily influenced by the excellent and thought-provoking writings of Manuel de Landa (esp. 2002), is “epistemological neorealism.” This holds that reality exists and is more or less knowable, but is a vast process rather than a set of discrete facts. (De Landa claims that his views come from Deleuze, but it appears to me, after reading De Landa 2002 and checking it against Deleuze’s writings, that de Landa came up with his own view and then scoured Deleuze for random remarks that could support it. It is hard to imagine Deleuze having concrete or specifiable views on anything. In any case, the view really comes from Heraclitus, millennia before either de Landa or Deleuze; it has been passed on in Western philosophy continuously.) It produces and is produced by differences of various sorts, but the various differentiated parts are united into a system. This means that one must take full account of other people’s views (surely one did not need to read philosophy to know that).

In addition to de Landa’s Heraclitan realism, there exists “holistic realism,” which looks at systems, self-organizing processes, networks, and other emergent features of complexity (Escobar 2008:128; Escobar is deeply devoted to self-organization, because he works with community organizing, but is unfortunately silent on how it happens in biology or society). As noted above, Escobar long wished to find a way to avoid essentializing the world, or speaking about it from one perspective. He has found his epistemological niche.

It seems to me that the above classification of epistemologies is a good one, not only useful in itself but directing our attention to questions of why people think such different things. After all, almost everyone agrees that there is a reality out there but that we can’t know it easily. For the rest, no one has been more aware of human error and bias than postivists from Ernst Mach to Karl Popper and Philip Kitcher. Their procedures are specifically designed to minimize these problems. If they fail, they can answer that the need is for even more careful procedures and verification strategies (Kitcher 1993).

Conversely, constructivists and phenomenologists direct their attention to human experience and perception. Therefore, they take full account of those errors and biases as much as to factual perception. They are often, if not usually, more interested in understanding the biases and perspectives than in eliminating them. But this does not mean that phenomenologists live in a dream-world. Some do, or at least they push the envelope awfully hard (e.g. Berger and Luckmann 1966), but most are interested in seeing how we experience the world, rather than in denying the existence of both the world and the experience (Merleau-Ponty 1960, 1962, 1968, 2003).

Escobar has a balanced accomodation, one close to many current views on the matter. If we see reality as flux, unified at some level but highly differentiated in our experience, we can get a better understanding of both immediate realities and basic truths about the universe.

Of course, as we shall see in more detail, these views are conditioned by the backgrounds of the authors. Positivism began and still nests among classical physicists, who can do experiments and not worry overmuch about bias. (Other sciences try, and are accused of “physics envy.”) Extreme relativism and constructionism are commonest among critics of racism and sexism, fields in which the most blatant lies and nonsense passed as “science” for generations, discrediting the whole scientific enterprise in the eyes of many.

Intermediate positions like Escobar’s nest among people who combine several fields in anaylizing real-world phenomena. Biology and social science seem especially prone to produce such intermediate zones. They privilege solid predictive knowledge but are also anti-essentialist, process-oriented, and aware of alternative views. Escobar points to many systems biologists as well as social scientists (and see Anderson 2000; Latour 2004, 2005).

Escobar adds a powerful voice to the many who have critiqued the concept of “nature” (Cronon 1983; Escobar 1999, 2008; Hvalkof and Escobar 1998; for a vast compendium of “nature” views, see Torrance 1998). It is clear that “nature” is a highly contested culture-bound category that cannot be essentialized, and that, as Escobar points out, an essentializing political ecology would be hopeless nonsense. We are looking at processes, and usually at ill-defined ones.

On the other hand, there *is* a difference between Jasper National Park and Times Square, and a difference between the most remote Amazon forests and downtown Sao Paulo. The difference is highly relevant to human survival.

The sort of all-or-none thinking that equates such disparities is found in a great deal of academic writing, about a great many subjects. For instance, the concept of “tradition” once implied extreme stagnation over centuries. This has been quite properly and actively critiqued (Hobsbawm and Ranger 1985), but some of the critiques go to the other extreme, and deny the use of the whole concept. However, speaking English is more “traditional” in London than in Singapore, Scottish fiddle music on Cape Breton Island follows very old rules in spite of the new tunes constantly emerging, and sleeve buttons remain on coats. Of course traditions change and adapt. This does not prove that they do not exist, any more than the fact that I have changed greatly in the last 70 years proves that I do not exist.

Thus Escobar, like Latour (2005), quite properly makes the point that de-essentializing concepts does not consign them to the garbage bin; it makes them more useful.

Decolonizing Science

Escobar and some others have further argued that modern international science is in some sense “colonialist.” This is true in that it was associated with European expansion. Also, colonialism often drew on science, usually bad science, for justification. However, the corollary that modern science is a strictly colonialist enterprise, dedicated to domination and repression, is wrong. Claims that are indeed colonialist are better described as pseudoscience: racism, old-fashioned unilinear cultural evolution, and so on. Colonialism influenced genuine science in exactly the opposite way: knowledge from the colonies stung scientists into waking up and seeing a wider, more interesting world, in which nonwestern knowledge was valued to the point of lying at the very heart of modern science.

Escobar goes too far in branding what he calls “European” science as innately colonialist or racist. In fact, the racist shoe is entirely on the other foot: The racists are those who refer to modern international science as “European,” thus writing out of history the thousands of Asians, Africans, creole Americans, and others who contributed to modern international science. Old-fashioned racist ideas that contrast the superior, rational, empirical Science of “the west” with the mystical nonsense of the rest are still sometimes aired (e.g. Wolpert 1993), but few scholars take them seriously.

Escobar clearly does not mean to attack the whole scientific enterprise; he evidently refers more to a type of pseudo-rational, pseudo-scientific discourse in the modern world. That discourse is indeed pernicious, but it is both more and less than colonial. It is more, because it deludes and traps educated Europeans and Americans as much as it does the Third World; too many of the former confuse it with real science and real sense. It is less, because it is not really part of the colonial project, which was more about direct deadly force and brutal repression, though it used and uses mind-games when useful.

Escobar, otherwise dedicated to the thoroughly desirable and valuable goal of anti-essentialism, makes a sad exception for “colonialism,” a term he uses in a mystical way. Similarly, he uses “modernity” to refer to an imaginary and thoroughly essentialized thing that can somehow act: “modernity…aimed at the purification of order (separation between us and them, nature and culture)” (Escobar 2008:166), and so on. Besides the obvious absurdity of such verbiage, blaming world problems on abstractions gets the real humans off the hook. If “modernity” forces people to act in a certain way, there is no difference between Bush and Obama, Hitler and Gandhi, or the Ku Klux Klan and the ACLU. All of us are equally innocent (modernity drove us to it) and equally guilty (we all participated in the “modernist program”). As a corollary, we do not have to push reforms.

“Colonialism” is here, as it is quite widely, used as a cover term for projecting hegemonic Euro-American values on small-scale local peoples (Karen Capuder, pers. comm.; Smith and Wobst 2005). As such, it can refer to such things as separating local “science” from “religion” in knowledge systems that do not separate these. Such analytical violence is not really “colonial,” just foolish, but one can appreciate how indigenous peoples feel about having their traditions sliced and diced for the convenience of people who represent the dominant society. I shall retain “colonialism” in its original meaning, however, because the scientists and analysts who do this slicing and dicing do not usually mean to be colonial; they are merely doing their job, however imperfectly. They usually do not have the true colonial mind-set. Colonialism deserves to retain its real meaning: deliberate takeover and subjection of a population by an alien elite. Projection of Euro-American views onto colonized peoples is often a part of this takeover, but such deliberate missionization deserves to be separated from serious science.

Consider the pros and cons of one critique. Smith and Wobst (2005:5) write of archaeology that it “is a colonialist endeavor. It is based on, and generally perpetrates, the values of Western cultures. Privileging the material over the spiritual and the scientific over the religious, arcaheological practice is solidly grounded in Western ways of knowing the world.” It is indeed deplorable to elevate scientistic (not scientific) analyses above all else. It is much more deplorable to shut out indigenous voices and knowledges (this is the real theme of Smith and Wobst’s book).

But there are problems here. First, the Enlightenment attitude in question was developed exactly and specifically to *counter* the strongly religious, ethnocentric, autocratic attitudes that actually drove colonialism (including slavery and imperial expansion). Second, the Enlightenment view was developed explicitly with reference to Near Eastern and Chinese thought, which were seen as liberating. Also, the Chinese developed a quite rational and even scientific archaeology in the Song Dynasty (960-1278), long before the west did. Third, academic archaeology spread to Mexico, India, China, and other parts of the world before 1950, and been enthusiastically adopted by local scholars. Fourth, archaeologists differ; many, if not most, of them are far less dogmatically scientistic than implied by the quote. Fifth, comparative analysis does have value, and the fact that it may have come with conquering powers does not make it automatically bad. After all, inoculations and other modern medical techniques are clearly valuable and effective, however (wrongly) identified in some circles with “western” medicine and colonialism.

On the other hand, recapturing and revalorizing traditional ways of thinking may be, and is, properly be described as “decolonizing” (e.g. Smith and Wobst 2005), and this raises thoughtful issues. I certainly cannot be dogmatic on this or any other terminological issue; I do not intend my working definitions to be “hegemonic.” I merely try to use terms consistently and usefully.

 Anthropology has been particularly tarred with the “handmaid of colonialism” brush, because of several unfortunate truths about its early history. Early anthropologists included a fair number of racists, colonialists, and excessively zealous missionaries. These influenced theory, not only in regard to races and “inferior” peoples, cultures, and religions, but in the propagation of unilinear cultural evolutionism. Beginning with the ancient Greeks, Europeans loved to classify people as “savages,” “barbarians,” and “civilized,” always working their way up to whatever modern person is writing the story. The Chinese had something very similar, seeing an evolution from “raw barbarians” to “cooked barbarians”—those somewhat Sinicized—to those finally assimilated into Chinese civilization.

 However, this was not the end of the story. Racism and unilinear evolutionism were demolished by anthropologists, specifically Franz Boas and his school. Boas also moved more and more toward integrating Native Americans and other indigenous people in his programs, and toward getting people from a given culture to do the ethnography of that culture, rather than (or as well as) sending outsiders. Boas realized that both insider and outsider views could be valuable. Even before Boas, Native Americans and other indigenous minorities had been involved in anthropological scholarship, and a large literature by indigenous and minority scholars exists from the early 20th century.

The Boasian tradition flourishes largely in North American anthropology, but also in France and elsewhere. British anthropology remained more colonial for a longer time, and thus Britain has been the main locus of criticism of anthropology as a colonial discipline. However, even British anthropology was influenced by findings from other cultures. Moreover, just as Boas moved from doing his own ethnography to training people to study their own traditions, Bronislaw Malinowski, the prototypic colonial anthropologist, wound up strongly supporting his student Jomo Kenyatta, the father of independent Kenya (see Kenyatta 1962). There are learning curves in the world.

A point too rarely made in anthropology is the enormous influence of traditional cultures on theory and method. Veronica Strang and several discussants dealt with this issue in a major paper (Strang 2006), but there is more documentation needed; some will emerge in the present work. Suffice it to say here that cultural theories, like the rest of science, are now the product of an international or global enterprise. In any case, Strang and her varied interlocutors agreed that anthropology has taken account of other cultures and has not been a monolithic European enterprise with a unified European gaze.

So, very briefly, anthropology and anthropologists have ranged from apologists for colonialism and hierarchy to stinging critics and opponents thereof. Instead of blanket condemnations or praises of the field of anthropology, there should be three other actions: first, eliminate vestiges of racist or judgmental rhetoric; second, differentiate anthropology’s rather heroic critical and progressive tradition from the less enlightened parts of its past; third, carry on with the progressive tradition, to continue incorporating all types of views and above all to continue training researchers to study their own cultures and use their own cultural knowledge.

X: Some Theories of Complex Cultural Knowledge

“Knowledge is power” Francis Bacon, *Religious Meditations (of Heresies),* 1597

Cultural Construction

 From all the above—all the rules, models, classifications, causation inferences, and erros—people construct their world. Cultures “construct” in a different way. Cultural constructions and cultural representations are emergents in the Durkheimian sense (Durkheim 1995; Kronenfeld 2008). Cultural constructions diverge from cold objective reality—often quite far. Thus “cultural construction” has come to mean “phony” or “nonsense” in some quarters. Of course, this is exaggerated. Culture is an adaptive mechanism, allowing us to cope with the world.

 Cultural, and social, construction goes beyond models, to embrace the universe. A classic book by Peter Berger and Thomas Luckmann, *The Social Construction of Reality* (1967), said it all in the title. Mark Gottdiener’s *The Social Production of Urban Space* (1997) summarizes a great deal of work on the ways societies *literally* construct their worlds on the basis of their cultural beliefs. From cultural constructions of reality, and of what a city should look like, a society constructs actual buildings and highways.

There is not space in this chapter to discuss theories in detail; full treatment of the latter can be found in their cited works.

Functionalist Theories

 Several explanatory endeavors turn on the belief that culture exists to help people achieve particular goals. Such explanations are termed *functionalist.* They postulate that cultural lore has particular functions, for which it is adapted. They are thus sometimes called *adaptationist,* especially if they have a time perspective.

Culture, for example, might exist to get human material needs satisfied. This position was advocated, briefly and rather thinly, by Malinowski (1944), but a much more extreme position was argued at much greater length by Marvin Harris (1968, and many subsequent books that add little to his argument). Harris argued that culture and all its institutions must be understood as ways to get calories and protein. All other functions are dependent on this or are downright illusory. Harris was especially scornful of theories based on “cultural irrationalism,” his term for the idea that many cultural ways might involve nonmaterial causation. Harris’ notions were extremely influential at the time. They blended, at the time, with a narrow Darwinian school that saw all animal behavior, human included, in terms of “optimal foraging” (Winterhalder and Smith 1981): individual maximization of the benefit/cost ratio of food-getting.

Harris had the good sense to see that if his theory was wrong in its extreme form, it could still be a good place to begin—a “research strategy,” in his terms. As such, it has proved valuable, as have many of his criticisms of cultural irrationalism. However, as a full theory it has not stood the test of time.

The neo-Darwinian obsession with optimal foraging has also crumbled. Darwin’s theory actually includes a great deal about courtship, social behavior, and other matters not directly predictable from calories. Birds, for instance, use plumage features and colors to show how healthy they are, and thus to attract choosy mates (Zuk 2002). People, too, obviously do a lot to attract mates, and a lot of this involves conspicuous waste of calories—from the hunter giving his girlfriend a fresh kill to a modern swain taking his lady to the latest “hot” restaurant. Yet, here again, we cannot simply add courtship to calories and say we have explained all (as Zuk points out). There are too many other things happening.

The most derided of cultural-irrationalist theories was that of “vestiges.” We have noted these above. If they are at all important, they are reinterpreted. Ruins become attractive simply because they are ruins. Rome’s Colosseum is a tourist attraction, and California’s Gold Rush town of Bodie is maintained in what its promotional material calls a “state of arrested dilapidation” for the same reason. Such places were once vital urban sites; they now remind us of change and mortality.

Others interpret culture by looking for its social functions. Some very optimistic theories depend on pure human goodness. These—including the humanistic psychology of Carl Rogers (1961) and the utopian anarchism of Pyotr Kropotkin (1904)—have not fared at all well. I have known and talked to a lot of humanistic psychologists, and a few people who actually started Kropotkinian utopian communities. They were sadly disappointed; ordinary human social conflicts tore the therapies and communities apart in short order.

Far better at predicting are social-functional theories based on the perception that humans are preeminently social, and will do anything—good, bad, or conformist—to find and maintain social place. These allow prediction of social dynamics and individual action. Some of these, however, are extreme, seeing culture solely as a way society maintains itself. This social functionalism is identified with Durkheim, and more especially with the British anthropologist A. R. Radcliffe-Brown (1957). Theories that disregard individuals and their material needs to this extent—seeing individuals as simply cogs in a machine—have very low prediction ability.

A deeper problem, famously raised by Jon Elster (1983a) in his still-definitive work on functionalism, is that humans plan. Since their plans are limited by all the factors we have considered in this book, and since plans are usually set to accomplish more than one purpose at a time, neat smooth-working functionalism is simply not possible for humans. It works fairly well for most animals, creatures of naturally-selected instinct that they are, but even chimps and dogs plan enough to be beyond a narrow functional calculus.

Functionalists also have to deal with conflict. They simply assume that a society will normally be divided into subsets—factions—that are harmonious within themselves. Their conflict leads to greater harmony, through talking out differences and creating a dynamic unity. At worst, their conflict will change society or split it into two or more new societies. Obviously, this is a rather inadequate view of social conflict.

Functionalism, in short, has done poorly in explaining, and is now in extreme disfavor (see e.g. Elster 1983a; Turner and Maryanski 1979; Vayda 2008.) Yet, in fact, the vast majority of cultural knowledge does exist to fill a direct, specific need. No one questions the calorie-providing value of agriculture, or the courtship benefits of perfume and fine clothes, or the social-bonding value of a night with the gang down at the beer hall. Cultural irrationality is truly rare, usually confined to minor cases like the irregular plurals. Most cultural lore that does not have an obvious functional explanation is purely contingent—the result of local accident. (Thus Turner and Maryanski 1979 work to salvage the concept.)

The problem with functionalism came when scholars claimed that *all* culture was a perfectly harmonious seamless web, with every cog in its machinery perfectly adapted to getting calories, or facilitating love, or keeping society together. This Pollyanna view was so transparently silly that functionalism was somewhat unfairly laughed to scorn.

Dysfunctionalist Theories

Anthropology then careened to the other extreme. Dysfunctionalist theories depend on basic human evil. They predict the errors, lies, deceptions, wars and genocides. They do not predict any of the more orderly social phenomena. Actually, they are nothing more than a special class of functionalist theories, subject to all the same criticisms. They too depend on just-so stories that assume the basic harmony of society. The only difference is in the evaluation of the result.

The one exception to this generalization is that dysfunctionalists can accommodate social conflict, to varying degrees, by seeing it as reaction to evil leadership. There is then a range from something very close to the functionalist “conflict is good” position to a sober realization that society is inevitably conflicted because it is, in the end, an imposition on individualism. Of those discussed below, Marx is close to the former position; Foucault, Weber and Scott are definitely in the latter camp.

The pure dysfunctionalist position, as seen in much of Foucault and in Bourdieu’s writings about France, is a perfect mirror of the social-functionalist one: it portrays a social system that is harmonious and smoothly functioning, but wholly evil. Conflict theories, like those of Marx, Weber and Scott, are very different. By stating that the losers will eventually get the message and rebel, they predict dynamism, conflict, and change. Marx saw this as happening only in rare revolutions; Scott sees it as a constant process of low-grade conflict and accommodation; Weber saw society as constantly facing irreconcilable conflicts on all levels—economic, social, ideological—and thus was the father of a particularly deep and nuanced chain of conflict sociologies (Collins 1986).

Dysfunctionalism starts from everyday deception. We all know too much about that. Ordinary people lie in presenting themselves on Internet singles websites, where they lie about age, weight, looks, income, education, and anything else relevant (Epstein 2007). Then there is the daily inbox full of Nigerian emails, common enough to change culture by giving the English language the word “four-nineteening”; Article 419 of the Nigerian banking code allows essentially unsupervised transfers of funds, hence the nesting of con-games in that unfortunate nation.

Karl Marx created the most perceptive and detailed of these theories. He saw knowledge are basically deriving from human interaction with the world, and especially from labor. People engaged with each other and with the environment in work. The knowledge so produced was true consciousness. (Marx 1938, 1967, 1973; see also Engels 1966, and the particularly worthwhile analysis and anthology by Jon Elster, 1984, 1986; there is a vast primary and secondary literature beyond this, much of it very good.)

For Marx, the means of production were important, but what was most important was the *relations* of production: the system of actual control over the means of production and the production process. Whoever owned the slaves, or the land, or the factories, and had the actual power to initiate and direct the labor, was de facto in control of society. Such people would naturally come to believe certain things. They would, on the one hand, have a good understanding of their economic situation. On the other hand, though, they would hardly be able to escape the conviction that they were appointed by God or Nature to run the world. Even if they supported their regime by deliberate lies, they would come to believe, usually quite sincerely, in their God-given role and their own rightness. We certainly have seen plenty of cases in modern history of leaders who argued themselves into believing their own stories.

More generally, Marx believed that humans are social beings, concerned ultimately with social life and personal fulfillment, but they have to eat, drink, and find shelter before they can do anything else. Thus control of the means of production of necessary goods gives control over all life.

More important still, people construct their knowledge—their ideas and beliefs—from interaction with the world, *especially from laboring together to produce necessary staple goods*. The progression is from material need to working to satisfy that need to instrumental, pragmatic knowledge. This then is modified by social place. One’s social position determines how one will interpret the world. It also, farther down the line, determines who one will interact with, and who one will believe and trust. Thus is class consciousness born, and thus are belief systems created.

 Individual beliefs sum up into the shared beliefs of a social group. More crucial to Marx was the development of the shared beliefs of the ruling class into a true ideology. For Marx, this was a public narrative (a “hegemonic narrative” or “hegemonic discourse” to some of his followers, a “master narrative” to others). It was imposed on everyone, through formal education, public speeches, museum labels, newspapers, state ceremonies, and every other public form that the elites could control.

The counter-narratives of the workers could, with luck, surface in public as “consciousness.” Real consciousness included knowing that that they, the workers, were actually the critical performers, and could take over. It meant realizing they were exploited, which, for Marx, meant they were not getting their fair share of the product—the elites were taking most of it, and leaving the workers only the bare means of subsistence and, hopefully (but not always), of reproduction. (If the bosses could get slaves or immigrants, they did not even need to keep the workers alive and reproducing.) But “false consciousness” occurred if the workers fell for the elite ideological line. One common “false consciousness” was thinking that they could rise as individuals by hard work and self-sacrifice. Another was the division of the working classes through racism, religious bias, and other hatreds. Marx was aware that such hatreds were routinely whipped up by the elites. Every veteran observer of politics has seen this happen.

Elites created what Marx called “ideology” to delude the masses of workers into taking less than their fare share of the social product. The elites, of course got the rest—far more than their fair share. Ideology taught that the elites deserved this extra product because they were naturally better. In most societies over most of history, elites claimed were divinely appointed to rule. Failing that, they were racially or genetically superior, or at least had superior education.

Certainly, beliefs in divine kingship, sacred orders of nobility, and God’s blessing shown by wealth are of crassly obvious origin and motivation. Certainly, also, religious leaders almost always preach submission to the powers-that-be—especially when the powers-that-be fund them, or when the king’s brother is the high priest. Marx would have revelled—with due irony—in the mutual dependence of right-wing Christian leaders and corporate elites in the United States. These right-wing divines achieve incredible power. They use the crudest and most cynical deceits, such as getting perfectly sound men to sit in wheelchairs pretending to be cripples and then magically “being healed” and walking (Randi 1989). Ideology is generally extended far beyond this. Claiming religious superiority leads to a whole religion based on hierarchy and on enforcing it. Frequently this involves repression of women and sexual abuse of children. Claiming genetic superiority expands into racism.

Frightening examples of the effects of ideology—even the most bare-faced, blatant lies—appear throughout history, and still appear daily in the media. In Hitler’s day, most Germans were apparently quite genuinely convinced that Jews were the source of all major evil. Mao Zidong apparently convinced millions of Chinese that his insane programs were reasonable and manageable.

In short, evil people spin lies to keep the masses down. But there is much more to this theory. Marx went on to point out that even well-meaning elite individuals will create less obviously vicious but still disempowering stereotypes. Paternalism in all its forms is a classic example. Elites may genuinely “pity” and “sympathize with” the “lower orders,” and want to help them by making them toe the line in various ways. Missionaries have certainly held throughout time that not only the religion but the dress, behavior, and even food of their converts must change. The food and clothing of Victorian England or modern America was certainly nothing like what Jesus knew, but missionaries seemed convinced that it is the proper Christian food and dress, and the “savages” had to adopt it.

 Thus, ordinary people, with more or less good intentions, make their converts feel inferior and worthless, and feel that they can earn worth only by being servile.

The missionary attitude has carried over directly into international aid work, much of which is done or organized by missionaries, and all of which seems influenced by their attitudes. Anthropologists have provided excellent factual accounts of this, without getting into Marxist theory. Tom Dichter’s book on international aid has a title, *Despite Good Intentions* (2003), that says it all. David Ellerman’s *Helping People Help Themselves* (2005) is largely about the failure of the aid agencies to get the elementary principle embodied in his title. A definitive study is Tanya Murray Li’s book *The Will to Improve* (2008), in which she traces the progressive dehumanization and dispossession of an unfortunate group in Indonesia. Project after project came to “help” them or their region, always leaving them worse off and more disempowered. All was done with good intentions, but the elite organizations that invoked all this never felt that they should waste their time listening to the people they were “helping,” or even seeing whether they actually helped them.

Whether one believes the specifics of Marx’ theory or not, it raises some important points. Particularly valuable is the separation of individual belief, social-group culture, and public ideology. These are indeed three different things, and must be analyzed accordingly. More directly relevant to us here is the idea of elite financial interests driving both deliberate and unconscious deceptions that become cultural “knowledge.”

I find Marx’ theory of cultural change arising from individual work experience to be particularly thought-provoking. It is clearly true as far as it goes; working to produce necessities cannot help but be important. But humans are even more social and less rational than Marx realized, and thus inventions that increase the range and scope of sociability can be at least as important as inventions that increase the production of necessary subsistance goods. The telegraph, telephone, radio, TV, computer, and cellphone have changed our lives. They allow long-range business and help the flow of practical information, but they have been far more important through allowing more and wider sociability and cultural transmission. Similarly, many cultural institutions are purely about managing sociability and emotion. These influence both base and superstructure, and require us to make Marxism more complex if we wish to apply it.

Weber

 Marx’ theory this gives us a comprehensive view. It can accommodate genuinely evil people, but it can also explain how well-meaning but “superior” people wind up doing harm.

 The great sociologist Max Weber picked up on this latter idea, and developed it considerably. Max Weber was an analytic individualist and a conflict theoist, and his dysfunctionalism was a small part of his otherwise interactionist thought; he was the most mdoerate of the group considered here.

Weber was even more conscious than Marx of the effects of social systems on people. Weber’s work on bureaucracy (Weber 1946) showed that the result is not pretty. A group of otherwise kind, decent people in a bureaucratic system will wind up acting in ways that led to the Spanish pun *burrocracía* (burro-cracy).

 This is a two-stage process. First, emergent properties of any hierarchic and complicated system include near-paralysis, because of the difficulty of getting everyone to act in coordination. By the time one has organized the personnel (“herded the cats”), the situation has changed, often through some totally unexpected accident. Also, permission has to be granted all the way up the line, and this takes time, especially since some key individual is sure to be out sick or on vacation.

 Second, and more important, such emergents have a direct effect on the poor imperfect human animal. In any bureaucracy, there is every reason to dodge responsibility and “pass the buck.” The sign in many an executive’s office, “the buck stops here,” is usually a hollow mockery. Bureaucrats are famous for their ability to pass the helpless client on to the next level up, to invoke obscure regulations, to maintain no one has the authority to fix a situation caused by that very “nonexistent” authority, and so on. This was noted as long ago as 1500 B.C. in “the dialogue of the eloquent peasant,” an ancient Egyptian text that has never been bettered as a description of how poor farmers get oppressed and abused by bureaucratic systems (Lichtheim 1973:169-183). Bureaucrats learn to be slow, pompous, inscrutable, and arrogant. They become masters of foot-dragging and delaying. (Again, Spanish has a good word for it: *tortuguismo, “*tortoise-ism.”)

 Academic bureaucracies present an interesting case, marginally addressed by Weber. Experience teaches that university bureaucracies take on pathological characteristics over time. There is the obvious malfeasance—some administrators steal money or take bribes—but far more common and thus far more serious is the slow creep of Weberian forces. Visions, dreams, and grand plans keep coming up against the day-to-day reality of student discipline problems, faculty squabbles, floods in the library basement, flagrant noncooperation or open rebellion by departments that feel they are losing out on funding or space, irate alumni protesting against any and every change in their beloved alma mater, and so on and on and on. New laws are always emerging that make more and more work for university lawyers and executives. On top of this, career academic bureaucrats often come to feel that they are in a position of rivalry with the professors, who seem to get all the prestige but are a notoriously cantankerous, unmanageable lot.

All this occurs against a backdrop of endless funding crises, especially in public universities, which are often the state legislatures’ favorite whipping-boys and places to economize. When the administrators try to defend the college by pointing to its business school and its cooperation with industry, the liberal-arts faculty rises up in resistance against such crass, materialistic stuff. Caught between faculty wanting more prerogatives and state legislators wanting more cuts, administrators feel in double jeopardy. Endless pressure to raise funds and cut the budget lead to desperate searches for private and public research dollars—never mind the morality of the research! The library, most vital of all university functions but easiest to cut “just this one time,” suffers more and more, and with it research and education. Meanwhile, administrators find countless reasons not to cut their own budgets.

Exposed to this, academic administrators who do not rapidly burn out must develop a hide like a Pleistocene rhinoceros, and sometimes a behavior to match.

But the worst is yet to come. A system like this, which wears down the responsible and makes hash of dreams, tends to drive out the virtuous. But it is all too appealing to thieves; oversight is exceedingly thin on the ground at the higher levels of universities. It is also appealing to bullies; accountability and recourse barely exist, especially for untenured faculty and others without job security. In my long teaching career I knew some of each kind, and a few—mercifully very few—who were both thieves and bullies. A college rarely survives an administrator of that sort in a high position.

Amazingly, many administrators maintain high ideals and do good work. Some come to depend on those frequent cocktail parties and wine-with-lecture afternoons.

Scott

 Building on Marx and Weber (and on Foucault; see below) James C. Scott (1998) has written on the tendency of governments to impose order simply because order makes life easier for bureaucrats. Scott writes of houses destroyed because they were a few inches out of line with other houses, of roads to nowhere, of vast sums spent by impoverished Third World countries on utterly unnecessary neatening. Obsessive statistics-collection is a part of this. The very word “statistics” means “concerns of the state,” as “artistic” means “related to art.”

 Obviously, states have to have data and order to function. The point is that simplification and compulsive ordering takes on a life of its own. Sometimes it is done deliberately to repress. Often it is done simply because that is what state systems do. Like Weber, Scott does not assume and does not need to assume human evil. In fact, most of his research emphasized the often heroic ability of ordinary people to resist, and to organize grassroots obstructions to the power of the bullying state (Scott 1985, 1990, 2009). One could argue that he falls into both the trap of dysfunctionalism and the trap of functionalism, but actually he has qualified his statements and made a reasonable case. (For what it is worth, I have done research in some of the same areas he has worked, and can vouch for the accuracy of his portrayals.)

Foucault

“In what way are those fundamental experiences of madness, suffering, death, crime, desire, individuality connected, even if we are not aware of it, with knowledge and power?”

Michel Foucault (interview, quoted Jay 2005:396).

Notable among dysfunctionalist theories of knowledge is Foucault’s concept of “power-knowledge,” connected with his ideas on government and order.

Foucault was a disillusioned product of the social revolutions of the 1960s. He saw fascism and capitalism as failures, ending in brutal authoritarianism. But, of course, Marx’ followers proved no better when they took power. Foucault simply saw the Marxists as yet more statists—the proletariat in power being no better than anyone else. He became, and remained, a philosophical anarchist—opposed to all forms of power, whether for ill or ostensibly for good.

If I read Foucault aright, he is much less a believer in emergents and much more prone to think that people are simply evil than are the two previous authors. He absorbed from Nietzsche a belief (mistaken, as we have seen) that humans want power. But Foucault, as an anarchist, thought no human should have significant power over another one, and he saw the Nietzschean power drive as truly and deeply evil. On the other hand, Foucault’s concept of “governmentality” (admitted a late, and minor, part of his work) is very similar to Scott’s, and presumably influenced Scott.

 “Power-knowledge” deals with “knowledge” that perpetuates power, like the belief in divine kingship. Part of this are “regimes of truth”: hegemonic systems of truths, half-truths, and lies, all combined, in systems that are propagated and used by social leaders. Such systems find their most natural home in restrictive situations, especially if the restriction is supposedly for the good of society. Thus Foucault studied prisons, mental hospitals, and clinics, as well as representations of sexuality (see e.g. Foucault 1965, 1970, 1978; Chomsky and Foucault 2006). Foucault pointed out, correctly, that positive notions of, say, medicine and crime control are more widespread, insidious, and dangerous than ideology in the narrow sense (e.g. Chomsky and Foucault 2006:152; see below).

Sex is special because it “is located at the point of intersection of the discipline of the body and the control of the population” (Chomsky and Foucault 2006; see Foucault 1978 for fuller discussion. The Chomsky-Foucault debate forced Foucault to be clearer and more concise than he is in his long books). It has long been recognized in social science that sexuality is also the most intimate and personal of all activities, yet also the one most crucial to society, since it is what lets society go on. It is social dynamite. Thus every society has at its core a major discourse about sexuality (Foucault 1978). Simply consider the books of Leviticus and Deuteronomy, and just about everything on sex written since. Individual experience is inevitably influenced by cultural knowledge and social power. (The interviewer who elicited the quote at the head of this section thought Foucault was separating one’s own experience from one’s own knowledge, but Foucault was not such a fool; he was contrasting individual experience with cultural knowledge.)

Foucault built on German idealist philosophy, especially that of Nietzsche. Developing Kantian ideas far beyond anything Kant would have liked, Nietzsche and Schopenhauer held that the world was constructed by the will. People saw the world as their force of character let them do. They constructed views through struggles for power. Nietzsche famously idolized power, believing that all males have a lust for power over others. (Women, whom he despised and apparently feared, were more equivocally power-hungry in his view.) For Nietzsche, as for other German idealists, the world-out-there vastly underdetermines belief. Reality may not exist at all. If it does, we cannot know it except impressionistically. We form concepts based on power and competition. Feedback from an external material world may exist, but is too minor, and too distorted, to be a shaper of ideas. There was a lighter and more hopeful and realistic side to Nietzsche, but it was largely on this darker side that Foucault drew.

Foucault confined his attention largely to realms where actual science was undeveloped but where the needs of power were naked and obvious. Any society has to deal with illness, crime, madness, and sexuality (so often disruptive). Yet genuine science applied to these realms came late. Scientific medicine that actually embodied truth, rather than speculation, took over actual medical practice only in the 19th century. There was, earlier, a great deal of solid empirical knowledge. The problem was not care but the organization of care *delivery.*  Here the medical establishment, even today, regularly loses the ability to persuade people to do what they “should,” and resorts to various sorts of coercion.

Psychotherapy was not a serious, replicable, double-blind-studied scientific field until the 1950s, and was very shaky in its findings until well into the 1960s or 1970s. Scientific studies of sex came late also. This left the field open to the wildest crank ideas; masturbation led to insanity—in the sex manuals—well into the 1950s. Scientific studies of actual ways to control crime, pragmatically, as opposed to looking at its epidemiology, may not have begun even yet. (The present writer, at least, is underwhelmed with the literature on the subject, and I have read a great deal of it.) Thus it was in these areas that Foucault could most easily find power/knowledge as opposed to proven facts.

A major exception to this focus on dubious science was his foray into more establishment studies in *The Order of Things* (1971). Here he compared economics, linguistics, and biological classification in the 18th century, between the rise of Classicism in the late 1600s and the rise of the modern period in the early 1800s. He showed that there was a fundamental similarity in the ideas of order, ordering, and classification, and these ideas of course underlay the three subject areas he examined. Indeed, they underlay the period’s *episteme,* his term for its general working model of knowledge. (One could call an episteme a cultural model, though it is broader than, say, Kronenfeld’s definition of that term.) Admittedly, the three fields were still prescientific or barely scientific in the 18th century, but they were already far more seriously developed than, say, the “science” of crime control is now. More to the point, Foucault dug into this area explicitly to look at studies that were not about “the Other” but were about us ordinary folk (1971:xxiv).

Broadly, the change was from a Renaissance order that looked at fable, symbol, and resemblance to an attempt to find rational structures that could be seen to be connected. Descartes’ grammar set the stage: a highly rationalist study of sign and symbol, cognition and pattern, that lies behind modern Chomskyan grammars. Economics paid similar attention to the links of price and money, buying and selling, investment and growth. The Physiocrats were at home with their idea (borrowed from the Chinese) that agriculture was the source of true wealth while commerce merely shifted it around. The modern period brought Smithians with a quite different idea.

Zoology had chucked its interest in heraldic signs and mythic legends, thus getting duller but—again—more rational. Order there was now based on simple anatomical resemblance rather than such things as usefulness in symbolizing martial qualities. Linnaeus’ genius was to see that the natural order of plants was best shown by their reproductive structures. (He did not even have Darwin to guide him in this. He was not actually the first to say it, but was the first to work it out thoroughly.) This foreshadowed the real rupture that Cuvier made rather dramatically (Foucault 1971:137-138) in going strictly with internal anatomy when classifying animals. Another foreshadowing of the modern (Darwinian) age was the idea that things grade into each other and mix in nature (see esp. p. 148). But, overall, the Classical period was one of peaceful, static ordering. Linnaeus’ natural categories are significantly close to those of society: Kingdom, class, order (cf. “order of nobility”), family, genus (Latin for “kind,” related to *gens*, “descent group”), and species.

Kant was as important as Cuvier in shattering this old view of nature (p. 162). His insistence on wondering about causation and causal connection, but being skeptical about the results, persuaded people to look more closely at *why* animals sorted the way they did. Indeed, Kant’s whole program of separating immediate experience, practical reason, and pure and transcendental realms was a source of the modern. (Nietzscheans like Foucault avoid anthropology, for reasons too obscure to concern us here, and thus Foucault neglected Kant’s creativity in that field; see e.g. p. 340.) The Classical vision left us with isolated pure forms of knowledge, but “the empirical domains become linked with reflections on subjectivity, the human being, and finitude” (p. 248), which Foucault sees as progress.

One final important thing to note about *The Order of Things* is that Foucault does *not* regard all this as (mere) power/knowledge. Our knowledge of ourselves is not just a mock-up thinly covering the naked face of brute force, as premodern treatment of “madness” was. It was a much more complex and less dissembling attempt to understand, or, failing that, to organize. Giving order to society clearly lay behind it, but it was not merely a cover for that autocratic enterprise.

Foucault saw power-knowledge as in desperate need of being corrected by truth, or at least by critical debunking. He was willing to allow facts to exist, and also standards of human behavior. As he says it: “…if one fails to recognize these points of support of class power, one risks allowing them to continue to exist; and to see this class power reconstitute itself even after an apparent revolutionary process” (Chomsky and Foucault 2006:41). The last is in reference to Foucault’s dubiety about Chomsky’s hope for proletarian revolution, given the proletarian tendency to buy into old discourses, especially innocuous-seeming ones like prison for criminals. “[T]ruth isn’t outside power or lacking in power: contrary to a myth whose history and functions would repay further study, truth isn’t the reward of free spirits, the child of protracted solitude, nor the privilege of those who have succeeded in liberating themselves. Truth is a thing of this world…” (Chomsky and Foucault 2006:168).

The matter has indeed received further study (e.g. Gaukroger 2006), and it confirms Foucault: truth belongs not to the lone-wolf scientist in his secret lab, but to discussions within society. These are inevitably cast with one or both eyes on political and economic debates and realities. Contra Foucault’s frequently implied but never stated opinion, this does *not* mean they are necessarily wrong. Blood does circulate, the earth is round, and water is wet. But even such everyday data have a history, and it can get very interesting indeed. What is “true” depends on what people in society allows, favors, find credible, or find persuasive. The debates over global warming have taught us most of what we need to know about that.

The 1971 Chomsky-Foucault debates, published in 2006, allowed Foucault to be relatively clear on these points. One thing that becomes clear is that he wanted to have it both ways: to say knowledge was entirely constructed and yet to argue from facts. The debates actually started with human nature; Chomsky argued his innate language competence, described above, while Foucault argued against any innate human programs—as opposed to the innate drive for power over others, which he took as axiomatic. This became politically relevant as the debate moved from language to justice; Chomsky was aware of the now-well-established innate human preference for fairness, Foucault was dubious that any such inborn tendency could make much real-world difference (Chomsky and Foucault 2006:55-58). History proves both are right.

Foucault throughout his life savagely critiqued the distortions and dishonest constructions endemic to power-knowledge systems (see e.g. Foucault 1965, 1970, 1978, 1980). He saw real hope only in voluntary associations that could bring people together to act; the state he regarded as irredeemable (Chomsky and Foucault 2006; see especially the appended items at the end of the book).

Foucault was aware, but many of his followers are not, that what you say is independent of why you say it, up to a point. Evil motives don’t change truth or falsehood of statements. Thus showing evil motives does not necessarily invalidate the points at issue. If (say) Newton was sexist, that does not mean that his *Principia Mathematica* was a rape manual (as Sandra Harding allegedly claimed it was), or that the Law of Gravity is biased against women. Looking for evil motives is a good research strategy, but is inadequate. It is separate from the task of evaluating the truth-value of knowledge. “The relationship between rationalization and the excesses of political power is evident. And we should not need to wait for bureaucracy or concentration camps to recognize the existence of such relations. But the problem is what to do with such an evident fact” (Chomsky and Foucault 2006:173). Note the emphasis on *fact* here.

Typically, power-knowledge, the worst of which is propagated by the state, takes over, filling people’s minds with a mix of factoids that are designed to sustain power rather than to inform.

Foucault’s beliefs about the dominance of ideas in society were widely shared in his time, but usually with a positive evaluation rather than a negative one. Foucault’s near-contemporary Talcott Parsons was the most famous of literally thousands of social thinkers who embraced German idealism. Most were, like Parsons, in the service of the powers-that-be, and thus saw the dominance of the ideas of the powerful as a good thing. Parsons was famously an advocate of the United States, its democracy, its foundational ideas (as he saw them), and its culture. His followers, some of whom became the “neo-Conservatives” of later decades, enthusiastically propagated these ideas. Foucault had almost the same philosophy; he simply had the opposite take on power. Foucaultians today have an unfortunate tendency to slide back to the Parsonian position without realizing it.

Without careful attention to Foucault’s uncompromising critique of power, adopting his highly nominalist views can be dangerous. Getting away from production and class, and concerning oneself only with power, traps even the most anarchic in the amoral, competitive, fascistic world of Nietzsche. It was precisely Nietzsche’s focus on power, discourse, and constructed ideology that inspired the Nazis, from Hitler’s anti-Semitism to Goebbels’ Big Lie, and of course Nietzsche also inspired the pseudo-capitalist fascism of Ayn Rand.

In fact, Foucault’s theory is very close to Ayn Rand’s “objectivism.” They begin with the same assumptions, but Rand worked out the logical implications and was prepared to accept them. Both followed Nietzsche in all things, especially in assuming that humans were dominated by a “will to power” and that government should not restrain the human spirit. Foucault seems to have felt that somehow (magically?) the result would not be out-and-out competition by power-hungry strugglers. Rand followed Nietzsche himself is realizing that that is exactly what would happen and in idealizing it. She saw capitalism as the best way to deal with it: the free market would channel aggressive, power-hungry drives into creative economic channels instead of into war. (Adam Smith made the same point, but his take on humans was, basically, that they were mild and good, so the hopeful result was expectable.) Foucault’s logic leads inexorably and inevitably to a fascist or Ayn Randian conclusion: human power lust, plus anarchism, would lead to war or capitalist business competition. Foucault seems to have been in some degree of denial over this, though certain rumors about his personal life make one think the reality was more complex.

Suffice it to say—and this is important—that Foucault’s philosophy is basically right-wing,whatever his politics may have been. Viewing power as *the* social fact renders this entire line of thinking all too manipulable by fascists and sadists.

Much of the problem was Nietzsche’s and Foucault’s loose use of the term “power.” In social and political science, “power” normally means control over other people such that one can and does force them (not just persuade them) to do what one wants. This power to bully and abuse is the power that most people do not really want. Nietzsche and his followers generally used the term this way, but were vague and elusive about it. Sometimes they seem to include persuasion, or even indirect and tentative stacking of the odds.

Foucault, like Scott, was generally careful to emphasize that he was talking about social or governmental power: power emerging from institutions and organizations. Bureaucracy has its own logic (as Marx and Weber showed), and even the nicest and best people, once in a bureaucracy, almost always become corrupted and start pushing people around. They slowly assimilate to the bureaucratic mindset that ordering for ordering’s sake, and ultimately pushing people around just to push them around, is a good thing in itself (see Weber 1946). They also tend to slowly come round to the view that expenses on more and more bureaucratic positions and functions are “necessary,” while expenditures on core functions of the organizations they run are “cuttable.” Anyone who has worked for a big firm or bureau has countless stories. I recently talked to an old friend at my university—an excellent scholar turned administrator who now “realizes” that we can dispense with buying books for the library in order to spare high administrators from any significant cuts in their personal budget lines.

Thus it is hard to keep structural power, bureaucratic inertia, and personal corruption separate. At their best, Scott and Foucault are careful to talk about inevitable processes of governance. But Foucault in particular sometimes wrote as if simply opposing bad people, and this has tended to carry over into “vulgar Foucaultianism” today.

The problem is that personal power can be used for many things. Often it is actually used for good. One can admit that Gandhi and Martin Luther King wanted power, but they wanted it largely from ambition to help. Far more often, as we have seen above, people want “power” only in the sense that they want control over their lives—a worthy goal, and one having nothing to do with Scott’s and Foucault’s better ideas.

Wanting to control one’s life is a totally different thing from wanting to control others. Even wanting wealth may have little to do with wanting control over others, as we know from the cases of misers who hide their money in their mattresses. Wanting to compete and win, also, is not the same as wanting power over others; the athlete who wins the race does not go on to enslave the losers (though this did happen in some ancient civilizations!). Ambition can even play *against* power. An artist or scholar wants to have people love his or her work in an unforced and spontaneous manner. Forcing someone to praise one’s painting does not make one feel successful.

Actually wanting power over others for itself alone is rather rare and, I believe, always pathological. It is a negative-sum game; most such people realize they are hurting themselves and their societies, but they need to hurt other people more. It is a response of anger and petulance, due ultimately to fear of other people. It is the goal of wifebeaters, barroom bullies, and political scoundrels, not of ordinary people. Most depressing are the weak or cowardly individuals who adulate power—the groveling bootlickers so familiar to readers about past empires, or about Hitler’s Germany. We have plenty of them today, and they cause huge social problems. But they are not what Foucault is talking about—and this is unfortunate, because his analysis of power remains seriously incomplete for the lack.

Power can thus be an individual matter, used in positive-sum, zero-sum, or negative-sum games. This is all quite different from the social-structural power Foucault is talking about.

But it was only at his best that Foucault really went beyond these errors, to discuss the very real ways that governments and other abstract entities maintain control over people. It is here that he made his real contributions both to knowledge and to political liberalization.

 Important, especially, was Foucault’s unique stress on power to define knowledge and set the terms of debate on it. Societies, or very often their ruling elites, decide what is “knowledge,” what is “truth,” what is “important,” what is “salient,” what is “valuable.” When elites decide that corporate freedom to pollute the environment is true freedom, but freedom to vote and speak one’s conscience are trivial and dispensable, the motives are clear. Foucault showed that more subtle “power-knowledge” is commoner and probably more pernicious. Elites have not obviously sold these to the masses, and the masses do not see them as clearly maintaining privilege, but these knowledges often act to discipline the subjects.

 For Foucault, then, knowledge begins with social life instead of material production. Social life necessarily involves some personal conflicts. These get constructed into beliefs about control, power, and competition. Elites structure these according to their own programs (as in Marxian theory).

 Foucault has tight historical control on many of his cases. Certainly, the “science” of prisons was and is about asserting power, not about the disinterested pursuit of general knowledge! “Sciences” of sexuality, until very recently, were also quite obviously concerned with social power rather than objective truth. A point ignored by some modern Foucaultians, especially those in anthropology trying to explain culture, is that Foucault was working with new and self-consciously created sciences (or power/knowledge fields) that had a clear origin he could analyze. Traditional, long-standing cultural knowledge, by definition, does not have such a clear origin, and thus inferences about its source must be made with some care. Assuming that it is all about “power” when it is arguably—or even quite clearly—about utility is hardly progress. Cultural irrationalism and naïve social functionalism raise their depressing heads again.

 Alas, Foucault has fallen on evil days in American academia. Many (most?) American readers seem to think he was a naïve attacker of all knowledge, all fact, and all society. Sometimes the world provides us with real straw men—people with positions so incredible they seem self-parodying. One Randy Malamud (2008) has opined that a project to catalogue and classify all forms of life is evil because it asserts too much control and creates too much knowledge, thus divorcing us from direct, spontaneous contact with the world! Malamud goes on to claim—obviously with Foucault in mind—that “we fetishize comprehensive knowledge.” He idealizes a forgotten time when people related directly to animals. Science and the Enlightenment are anathema to him: “Linnaeus’ Latinate names and his Enlightenment hierarchy reflect a particular set of values; imposing classifications and epistemological portals bespeaks control, establishing the vocabulary that privileges some types of interaction with the subject and discourages others” (p. B9; there is a good deal more of this sort of thing).

Malamud reduces Foucault’s detailed and brilliant (if sometimes exaggerated) arguments in *The Order of Things* to gibberish: Linnaeus the Absolute Monarch imposing his rigid control on nature. Malamud is an English professor and evidently knows little (if any) biology. He certainly knows nothing about Linnaeus, a fascinating character, whose issues with control were exercised in quite other ways, and who built deliberately on longstanding folk knowledge (cf. Blunt 1984). Malamud forgets, among other things, that the pre-Enlightenment European world was one of mindless cruelty to animals: hunting without mercy, bull-running, bear-baiting, dogfights, all within an agricultural world where the animals had no consideration at all. Science has, on balance, been liberating.

Fortunately, we do not have to follow “vulgar Marxism” or parlor Foucaultianism. The real value of these theories lies not in the ideas that get into fashionable academic rhetoric, but in the deeper subtleties of analysis.

Marx and Foucault are complementary and even mutually reinforcing. Classes have very different interests, and thus very different beliefs. Finally, particularly valuable is the realization that group hatreds are routinely used by elites as a way of dividing and controlling ordinary people. This occurs constantly. However, findings since Marx’ time make it sadly clear that the ordinary people are quite able to divide themselves and develop hatreds without the help of the elites. The elites simply join ordinary people in hating minorities and dissidents. Thus, elites fall naturally into using them. The passions involved are generally deeper and stronger than class rivalries, and thus—whatever the actual interests of elites or workers—societies are torn apart by ethnic and religious hatreds more often than they are restructured by class conflict. Tensions between haves and have-nots structure all societies and influence all belief systems. State-level societies have class to worry about. But deeper hatreds take their own course.

 Foucault could have argued—but, for the record, did not argue—that religion provides proof that his anarchist position is right: power is the problem. Religious organizations, from Christian churches to Muslim sects to Buddhist monastic orders, typically require poverty and lack of possessions, or at least relative poverty compared to other people of equal power. Yet church politics and rhetoric is notoriously even more vicious and dishonest than secular politics. Contra Marx, it is very often quite divorced from secular power, too, with secular power providing the realistic, tolerant check on religious fanaticism. Nonprofit organizations, hippie communes, and every other structure characterized by voluntary lack of wealth prove the case further. Power indeed corrupts, and absolute power corrupts absolutely; Lord Acton was right. Society is a far more pressing drive than materialism, and thus social power is far more deeply disturbing than wealth.

 On the other hand, material concerns cannot be ignored, and Marx must be right that production of staple goods is a major changer of society. Without that, society would go on indefinitely in an unaltered course. One cannot explain a variable (social change) by a constant (social needs and power games, which have changed little since the cavemen). Foucault’s dismissal of the material as pure social construction does not stand up.

 What matters most, though, is that Marx and Foucault are both right sometimes, and both wrong a lot of the time. Different explanations work for different lies. Denial of global warming, after the science became clear and generally accepted in the early 2000’s, was a pure Marxian case. The giant energy companies kept denial going, by circulating untruths and half-truths. Finally, by 2006, many of the oil companies began to bail out, leaving only one or two to support what had become a large industry of global-warming-denial. Eventually no serious scientist not funded by those companies would maintain the denial.

Many politicians, however, continued to do so, and not just the ones that received major campaign donations from the corporations in question. Conservative commentators had wedded themselves to the issue, maintaining it even without donations and even after leading Republicans such as George W. Bush had long conceded. Thus a conservative ideological point took on a life of its own, continuing as a devout belief even after its economic justification and support had become thin.

 Surveys show the vast majority of Republicans believe that human actions have no effect on global climate, though essentially everyone else agrees that global warming by fossil-fuel burning is settled science. *Nature* (445:693, “Number Crunch” news item, 2006) reports that only 13% of Republican congresspersons believe this (95% of Democratic congresspersons do). About 25% of college-educated Republicans in general believe it.

Racism is both a Marxian and a Foucaultian case. Marx explained it as bosses’ attempts to split the working class. It is indeed, and is often consciously and cynically manipulated for that purpose—as by Democrats in the early 20th century and by Republicans in the late 20th century. But it is far more and far deeper than that. Only its pre-existing strength could make it available as a divisive force. It is more easily and directly explained as the consequence of power-jockeying and status competition between social groups. But even this could not occur without a great deal of sheer hate—much, if not all, of which is displacement and scapegoating. Weak people get angry and are scared to show it toward the strong, so they find minorities to bash.

In the sorry history of racism (Gould 1996) and sexism (Tavris 1992), countless “facts” were delusions and errors elevated to “factual” status by bias-blinded scholars. Foucault’s theory explains this, but needs Marx to finish the job.

 This being said, the importance of elite male power in determining science has been much exaggerated in some of the literature (especially the post-Foucault tradition). Scientists have always been a rare breed, self-selected to be concerned with objective, dispassionate knowledge (even if “useful”). They have to give up any hope of real secular power to pursue this goal. Science is a full-time job. So is getting and holding power.

A few people combined the two (usually badly), but most cannot. Many, from Spinoza to Darwin, were interested in the very opposite of worldly power, and risked not only their power but sometimes their lives. (Spinoza’s life was in danger for his religious views, not his lens-making innovations, but the two were not unrelated in that age. See Damasio 2003.) Moreover, not everyone in those days was the slave of an insensate ideology. Thoreau was not alone in his hermit counter-vision of the good. Certainly, the great plant-lovers and plant explorers of old, from Dioscorides to Rauwolf and Bauhin and onward through Linnaeus and Asa Gray, were steeped in appreciation of nature, not in lust for power.

And even the stereotype of male power is inadequate; many of these sages had female students, and indeed by the end of the 19th century botany was a common female pursuit. Some of the pioneer botanists of the Americas were women, including incredibly intrepid ones like Kate Brandegee, who rode alone through thousands of miles of unexplored, bandit-infested parts of Mexico at the turn of the last century.

We need to re-evaluate the whole field of science-as-power. Governments, especially techno-authoritarian ones like Bismarck’s Prussia and the 20th century dictatorships, most certainly saw “science” and technology as ways to assert control over both nature and people. Scientists usually did not think that way, though more than a few did. This leads to a certain disjunction.

Synthesizing Dysfunctionalisms

 Thus we have explanations based on different assumptions.

 Marxians, especially the pure materialists that theoretical Marxians call “vulgar Marxists,” believe that money is the problem—or, more generally, that people worry about material and economic issues, and that is what shapes society and causes corruption and conflict. Marx is at his best when predicting the behavior of economic enterprises. Neoclassical economists share his assumption that yearning for material wealth causes all, but have a much less sophisticated version of the idea; they simply postulate universal greed, rather than going with Marx’ emphasis on the basic nature of working for subsistence.

Foucault, or at least his everyday followers, assume power over people is the problem, rather than economics. Many of them assume a general lust for bullying is the chief human motive. Foucault himself seems to have thought that power corrupts, and that people would do fine if prevented from having power over others. Either way, the primal cause, to Foucaultians (and the Nietzscheans they stemmed from), is power over others—basically, political power. Foucault is best at explaining political behavior. Certainly, governments and administrative systems typically act to maximize and maintain control, not to maximize or maintain wealth.

The major thesis of the present book is that a desperate desire for social place is the basic human motive; we want wealth only to stay alive and then to get or keep social position. I do not, however, believe that normal humans want oppressive or bullying political power over others. Wanting power is a pathology, most often caused by wanting social place in a pathologically hierarchic society. The more ordinary desire to rise in a hierarchy, so as to help others or simply to get more money or even to have some managerial authority, is not *power* in the Nietzschean-Foucaultian sense.

Obviously, it would be possible to combine all the above into a broad theory, based on sociability but recognizing that people need to eat, need some wealth, and do strive to control the situation—thus creating overcontrolling families and governments.

Marx also started an idea that people would naturally come to believe what was in their class interest, whether they were evil or not. Weber and Scott picked up on this point and greatly developed it; Weber in particular showed how a system would naturally produce habits of thought that would undercut the system itself. Similarly, some neoclassical economists have developed rational-choice models predicting that wanton competition will tear everything apart in the end, yet will seem optimum to the players (e.g. Olson 1965).

These various theories are mutually reinforcing, not mutually exclusive. A bureaucracy afflicted by Weberian structural problems naturally repels the good. It attracts the bad, because they can rip it off. Lord Acton said it long ago: “Power tends to corrupt, and absolute power tends to corrupt absolutely.”

 All these theories put us in the scary position of wondering how much of our daily beliefs are con jobs propagated by evil or short-sighted elites.

Extreme Marxians and Foucaultians suspect that when we say the sky is blue and water is wet, we merely parrot lies propagated by power-mad conspirators. Granted that the reality is far less sinister, we must still wonder what is really true. Worse: we must wonder how many of the undeniable facts we know are subtly contexted and foregrounded or backgrounded to maintain power systems. Knowledge turns out to be a complex accommodation between such imposed “power-knowledge” and the actual needs for usual, factual, grounded knowledge among real-world people who have to do things.

A king’s claim of divine kingship, or a slave-owner’s claim of the natural inferiority of slaves, has an obvious source. Most cultural knowledge does not. It develops through a long and almost always untraceable sequence of dialogues, negotiations, and subtle power plays. What made American sexual morality change from the puritanical 1950s to the roaring 1990s? There was no one person or moment that decided it. And can one really speak of “power” when anyone is free to reject much of the official line? Any given bit of knowledge can be accepted or rejected. Cultural knowledges are always pluralist; there are always alternative formulations.

Conformity and ostracization make people accede in their own repression. Minority individuals too often accept their “inferior” position. Loggers believe the “jobs vs. owls” rhetoric, even though at some level they realize that when there are no forests and no owls there will be no loggers either.

Marx and Foucault were far too intelligent and scholarly to suffer from the naïve belief in “rational choice” that characterizes much American social science, but even they were not immune. One effect of this is to assume deliberate lying when we would now look for heuristics and simple overoptimism. Instead of deliberately deceiving others, elites often deceive themselves. We may now see humans as less coldly dishonest, more warmly delusional.

Medicine

 Even in the area of medicine, where Michel Foucault’s case is strong and well-made (Foucault 1973), assertion of power is a hopelessly inadequate explanation for progress. For one thing, there is a huge contrast between medical innovation and medical care delivery.

Early healing practices were usually closely related to religion, and thus served whatever functions it served, certainly including power/knowledge—as well as providing consolation, hope, and social cohesion. But the earliest medicine evidently consisted of herbal medicine, bonesetting, wound treatment, and varying degrees of psychological support. These are all universal worldwide, and archaeology shows that at least the first two have long been with us. All are empirical and none has any obvious relationship with power. All can be subject to misprocessing. Mistakes in generalizing herbal knowledge, misinference about the supernatural roots of medicine and psychotherapy, and other mistakes seem more connected with human information processing biases rather than with power.

 Moving to specific historical cases, the humoral medical tradition, from Hippocrates and others onward, is clearly as far from Foucault as one could get. It is derived from empirical observation and is a highly empowering, client-centered therapy. It returns power to the ill person. This is one of the main reasons for its worldwide success. This is not to deny that Galen, and presumably many of his followers, was or were interested in maintaining their social position, and even real power. Certainly Galen was very much an ambitious, even driven, man. The point is that the treatment itself is an empowering one, not a way of asserting power. The same seems to be true of most of the therapies of the ancient world.

Many magical therapies, however, as well as medicine-related disciplines like astrology, relied on power/knowledge and authority and did not have any credible empirical support. More extreme was the medieval resort to religion—not just faith-healing, but relics and other physical presences. Holy water is still widely used in folk treatments. Religion led to a widespread medieval tendency to massacre communities of Jews or other minorities when epidemics appeared. This is paralleled by the almost universal practice in small-scale and village-level societies of going after suspected witches—often outsiders in the community—when an epidemic struck. Certainly, history adduces no clearer cases of going with power instead of truth or rationality.

 The Chinese counterpart, the fivefold correspondence system, is not so clearly empowering. It was a product of elite speculation (much of which apparently happened at the Han Dynasty court in the last two centuries B.C.) and always centered among elite doctors. Through history, doctors had much power and authority in Chinese society (see e.g. novels like *The Story of the Stone* and *The Golden Lotus).* However, Chinese medicine also included a great deal of dietary therapy, sexual yoga, meditative practices, self-medication, and so on, which added up to considerable empowerment of patients.

 In more modern times, with the rise of biomedical science, modern anatomy and physiology, immunizations and immunology, the germ theory, anaesthetics, chemical and antibiotic treatments, and indeed almost the whole arsenal of medical treatments are clearly driven by empirical findings rather than by authority and power.

Medical innovation was classically the work of loners (de Kruif 1926). The greatest innovators in 19th-century medicine worked with a few students, and were less than totally appreciated by the medical establishment of the time. Often, in fact, these loners were terribly persecuted for their innovative activities, as Semmelweis was in Hungary. Joseph Lister, Louis Pasteur, and even the great and self-consciously oracular Robert Koch spent time in the wilderness. (Gortvay and Zoltán 1968) and Crawford Long, discoverer of anesthesia, in America. (Dwelling in the obscurantist “Old South,” at a time when black slavery was considered a Biblical command, Long was attacked for thwarting God’s plan to make humans suffer!) By contrast, medical care delivery involves asserting control over patients. At best this is true caring, but usually it means batch-processing them for convenience and economy—regarding their humanity merely as an annoyance. No one who has been through a modern clinic needs a citation for this (but see Foucault 1973).

In the 20th century, Elie Metchnikoff (discoverer of the immune system), Alexander Fleming, Jonas Salk, and other medical leaders were hardly establishment figures. And no one could be farther from power/knowledge than the self-effacing Maurice Hillebrant, who developed many of the modern childhood inoculations, or the public-health crusader James Grant, who saw that they were given to children worldwide. Inoculation rates tripled during his term as head of UNICEF. But, as usual, these men had to fight the establishment to do it. Today, certain vested elites have started a campaign of lies against Hillebrant’s shots. So here we have a case of a quiet and highly empowering establishment view, pushed by governments, being attacked by an antiestablishment campaign that is the rankest and most evil power/knowledge. Foucault has been stood on his head.

 The situation is notoriously different in Foucault’s favorite realms: pychotherapy and sexual medicine. The same is true of much of women’s medicine. One could be convinced of the basic accuracy of Foucault’s views here simply by observing the dangerously overmedicalized birth process in almost any American hospital (Wagner 2006). And, as often, China presents parallels, as in the takeover of a good deal of gynecology by male doctors in the 16th-18th centuries (Furth 1999). Some areas of medicine are much more tempting than others to doctors who feel a need to assert power.

 Above all, medical *care*, as opposed to medical treatment, has remained staunchly a matter of power, control, and aggressively asserted authority. One need not read Foucault or any of the hundreds of other books on the subject to know this; one need only visit any clinic, hospital, or major medical practice. Some countries and some hospitals are worse than others, but medicine remains notorious. Countless studies have shown that such aggressive authoritarianism harms treatment in many ways. Making patients passive actually interferes with their immune systems, to say nothing of its effect on what is significantly termed “compliance.” Disempowered people are not apt to take control of their lives. They may be too discouraged, weakened, or rebellious to take their medications, let alone follow complex regimens.

Much of the appeal of “alternative” therapies in recent decades has been due to this problem; patients seek for clinicians who will treat them with respect, as individuals. On the other hand, many others have so well learned the “sick role” that they will avoid such practitioners and seek out the medical establishment precisely because it presents a face of authority.

 Throughout history, treatments are generally based on pragmatic experience, with varying degrees of contamination by human information processing biases. Care organization is another matter. Medical administration, doctoring, and caregiving in general always involves some disparities in power, authority and control. In modern practice, this has gone beyond all bounds, but it was certainly a well-recognized problem from ancient times onward. Greek plays, Chinese novels, medieval satires, recent diatribes, and sober sociological research all portray the doctor and the clinic as all too prone to substitute pomposity and obscurantist verbiage for caring, sympathetic, effective treatment.

Functional or Dysfunctional?

 Functionalist and dysfunctionalist theories both have a sorry record when applied as guides to actual political practice. The failures of anarchist and Marxist regimes are too well known to need comment. The spectacular crash-and-burn of humanistic psychology in the 1970s and 1980s left it as a useful tool for psychotherapy but a failure as a social force. Religion has a far better record of successes, but its failures and perversions are notable. Nietzscheanism produced Hitler and his gang, and I am quite certain that Foucault’s ideas, actually applied, would produce the same again. His skepticism about power is commendable, but his nihilistic cure would merely make the disease worse; a power vacuum would be filled by dogmatic Foucaultians enforcing their will. (Anyone who doubts this should have been in faculty meetings in the 1990s!)

 It follows that there is a deep and basic flaw in both functionalism and dysfunctionalism. The flaw is assuming that humans are simple. Far from concerning themselves only with calories, or power, or money, they have to balance constantly the varied pressures from their social groups and material needs. Every minute of the day, we are confronted with hundreds of choices. We cannot possibly deal with them by one simple algorithm, or solve them with a single social panacea. We try to simplify, and trap ourselves in our simplifying mechanisms. We try to represent the full complexity of life, and become paralyzed. Buridan’s donkey had only two bales of hay to choose from, but starved to death from inability to decide. At any given time, a human has a thousand bales to choose.

 So simple governments, fascist or communist or anarchist, do not work, and we are back to the Founding Fathers and their hopeful but realistic plan: turn everyone loose to find their own way, and make government a balancing device that keeps anyone or any group from dictating to the rest. Most of us would now add that a modern government must provide minimal affordances (as Amartya Sen calls them): it must keep people alive. But once there is a safety net to guarantee food, health, and safety, the government’s role should be to even out political power and maintain accountability and recourse. This brings us back to Weber and Scott, and their more nuanced views of social functioning.

XI. Conclusion as Application

 “Savoir pour prévoir, prévoir pour pouvoir”

--Auguste Comte (defining sociology)

David Hume wrote: “Were one to go round the world with the intention of giving a good supper to the righteous and a sound drubbing to the wicked, he would frequently be embarrassed in his choice, and would find that the merits of most men [and women] scarcely amount to the value of either.” (p. 34, “Of the Immortality of the Soul,” in *Writings on Religion*, Anthony Flew, ed., pp. 29-38. Chicago and La Salle, IL: Open Court.)

Well, yes, though I know plenty I would feed and a few I would drub. But the Manicheans were right too: good and evil exist and are extremely and totally opposed. The problem is that most of us are hopeless mixes of both, and get them confused enough to weaken both.

 History and prehistory teach that most communities, most of the time, are peaceful. They are torn with minor squabbles and the endless unedifying stroke economy, but people are generally good to each other, and do not even have to force it. On the other hand, war, murder, and feud are always with us, and there are always group enmities. Calling humans “good” or “evil” is thus a matter of perspective.

 The real range in people is how wide is their idea of “their” society, and how defensive they are within that. The wider they define their reference groups, the better they are, other things being equal. The thug has only himself; the Buddhist sage has all living beings. Then comes defensiveness: the thug is defensive against everyone all the time, the Buddhist sage supposedly never is and can thus be pleasant, sociable, and kind to all. The thug takes every word or act as a slight, or at least a potential slight; the ideal Buddhist would be so good and so detached that he or she would never have to worry about slights.

Most people are about halfway between. They hate structural opponents and nonconformists. They hate everyone who appears to be slighting them somehow. They more or less like, or at least tolerate, the rest. Such people are good to people, on the whole, but always watchful for slights or betrayals, and highly defensive toward those they distrust.

Social scientists who stress human aggression and war forget that every war has two sides, and that groups would not survive unless people were more eager to defend and protect than to raid and kill. There are times when even a Buddhist sage must defend the good.

When I was a student, the Golden Age of simplistic and mechanistic explanations of human behavior was rapidly coming to an end, and being replaced by cognitive-emotional theories that were a great deal more complex and accurate. It was a very exciting time to be an undergraduate in biology and, later, anthropology.

Simple Darwinian explanations of human behavior got us quite far, but were inadequate in the end. I sat in on E. O. Wilson’s very first sociobiology seminar, and it was incredibly exciting, but human sociobiology has not fulfilled his hopes. I was also taking psychology courses just as B. F. Skinner’s (as well as Clark Hull’s and Lloyd Morgan’s) mechanistic learning theories were being shown inadequate by the new discoveries in cognitive psychology. At the same time, Talcott Parsons’ theories of sociology—privileging Society, rather simply conceived, over the individual—were being revised, and the old cultural theories of Kroeber and White were giving way to theories of culture that explained it as the result of human thinking, planning, and striving (often against other members of one’s group). By the end of my student career, the old theories that deduced all human action from a few simple rules were basically dead, or at best qualified by theories that recognized human individuals as complex beings with agency, and with varying degrees of power to impose their will on the world.

 The successfully predictive theories of human behavior begin with humans as evolved primates. Darwinian selection has given us certain innate predispositions. Those that govern emotion and information processing—cognition—are the most important, from a social theorist’s point of view.

 Human cognition and human culture evolved for hunting and gathering, specifically in the East African landscape of mountains, high plains, vast lakes, rivers, and dry savannahs. We are adaptable enough to do well everywhere from cities to Arctic ice floes, but we should remember that our particular mix of emotion, reason, heuristics, and mental shortcuts evolved to dodge hyenas and lions while searching for seeds and berries.

Above all, it evolved to deal with sizable and complex social groups, often (if not usually) at war with similar neighboring ones. Our greatest joys and blessings are social, but by far our greatest curse—the true Original Sin—is our knee-jerk reflex to hate the neighboring group when anything goes wrong in our lives.

Predictive theories also begin with individuals, since only individual persons actually think and act. But they recognize that humans are always and necessarily social. Hobbes’ “savages” do not resemble anything that has existed anywhere in the primate order for 50 million years or so. Human persons develop through social interaction, and early learn the cultural rules and knowledge systems of their societies.

Social systems arising from interaction necessarily develop structure: kinship systems, hierarchy and leadership systems, economic structures, healing practices, religions (in some very broad sense, at least), and so on. All these originally develop to satisfy human wants and needs, but then take on a life of their own, as “emergents.”

 Normal human information processing leads to countless mistakes. Most are in a systematic and predictable direction. People tend to attribute everything to deliberate agency until proven otherwise; religions are partly explained by this. People need to simplify this incredibly diverse and confusing world, and thus are prone to fall for any simplifying heuristic that is even remotely credible. This has proved the to be by far the deadliest error-maker in science. Occam’s Razor has slashed many a scientist’s career to ribbons.

 One common reason for mistakes getting into cultures and nesting there is the natural tendency of people to go with the most simple and plausible explanation for a phenomenon, and use it till it is proved wrong. It almost always is, but by that time people have deduced from it a whole range of new “facts,” which take on a life of their own and persist indefinitely. We have observed this in the case of Galenic medicine. From the Four Elements came the Four Humors, and from those came countless explanations for ills and plans for curing them. The deductions were typically wrong. But, on the other hand, people constantly interpreted accurate empirical information in the light of Galenic medicine, and thus incorporated it into the system. Eventually, a huge system existed, full of wrong deductions and accurate but wrongly-explained observations. It was better than nothing, and thus lasted for two thousand years, until something clearly better came along (cf. Kuhn 1962).

 The first and most obvious and human reaction to economic and social differences is to be hopeful and active during periods when things are getting better, passive when things level off, and increasingly angry, reactionary, and disaffected when things get worse. The devil in the details is our assessment of what “better” and “worse” mean in such situations. Long periods of sustained peace and economic progress bring out the best in people, long periods of decline bring out the worst, but the very best and very worst ares often brought out by sudden sharp changes. In the 1930s depression, Americans kept their faith and hope and revolutionized the country; Germans lost hope (partly because of their losses in World War I) and went to Hitler. In the current recession, Americans are losing hope and turning to fascism.

 Knowing this psychological trait of humans is one of the few really effective ways of predicting the future.

Ordinary everyday knowledge is overwhelmingly of the useful kind. We know it because it is true and because we need it to live. It is thus best explained by functionalist theories. Dysfunctionalist theories work best in the political arena. They explain what we think we know about power, about competition, about our enemies.

Most knowledge is useful; it relates to the real world well enough to have value in our constant search for food, clothing, shelter, and above all the sociability which we crave above all other things. Therefore, most knowledge has developed through everyday interaction with people and things. It has not developed through formal logic, philosophical speculation, or divine inspiration. The vast majority of beliefs that we consider to be philosophy and religion develop from more ordinary, unstructured, everyday issues.

Humans are inveterate organizers, and Claude Lévi-Strauss was right to see that we structure everything in sight. He exaggerated how much we do this, but the postmodern tendency to see human thought as highly contingent, disorganized, culture-bound, and ad hoc is an even greater exaggeration in the other direction. If knowledge really were a random collection of culturally given beliefs, or a set of ideas created and propagated solely to maintain the power of an elite, we humans would never be able to find food or avoid predators or cure illness. On the other hand, if our thinking was locked into tight structures, we could not change with the times. In fact, we humans are extremely sensitive processors of information, and that information is derived from constant interaction with people and things. We test our ideas about the world, talk over what we find, test again, talk more, and eventually come up with working knowledge.

This should mean that we know more and more all the time, and on the whole this is true. But knowledge is distorted by closed feedback loops that drive error against clear sight. Elites are not the only ones who deploy shaky knowledge in self-serving ways. All the other ways of going wrong can lead to closed loops also.

People err in predictable ways. First, they must prioritize defense against threat, and they often imagine threats where only the possibility exists. So they are more defensive, resistant, and even aggressive than would be rational. Second, they follow their culture—more exactly, they go with the received wisdom in their reference groups, and usually follow their elders and peers. This makes sense—no one can start learning everything from scratch—but it must be checked by awareness of the limitations of received wisdom. This leads to the two most deadly and costly human mistakes: group hatreds and rigid top-down hierarchies. Third, humans naturally go with the most simple and immediate truths and inferences until these prove inadequate, and then work slowly toward wider and longer-range explanations. This is reasonable, but means that humans constantly over-discount the future and the wide context. They undercut the common good for small personal gains, which would seem like “selfishness” if they were not just as prone to undercut their own future good for trivial immediate pleasures.

Economic calculation may affect all our thinking (as economists insist), but it influences especially our ideas about money and goods, and so the theories based on rational individual choice are best at explaining that realm of culture. Politicians develop ideologies based on power and competition for it, so Weberian and Foucaultian theories do best in that area. Theories of interpersonal emotional interaction (like those in Stets and Turner 2006) do best at explaining love and hate. Darwinian theories seem to find their best use in explaining simple, basic strategies of mating and feeding. Thus, one must come up with a different mix of distorters and influences for every field of knowledge in a society.

 All academics know that any social scientist is apt to believe that her field is the one with the real explanations. Economists believe in the universality of “economic man.” Anthropologists ridicule this, but are apt to think that “culture” can create preposterous levels of difference: people in Culture X are totally indifferent to wealth, or have no concept of mother love. Political scientists properly dismiss such views, but assume people live only to compete for power and position. Biologists assert everything is very heavily conditioned by evolved genetic mechanisms, in spite of the obvious changes in immigrant groups’ behavior within one generation.

The one truth that works perfectly for all cases is that all humans construct their knowledge from interaction—from actual, real-world, real-time dealings with people and things. Hardheaded economic calculus, wild passion, stark fear, social fictions and deceptions, and all manner of other types of influence all enter into the mind, mix and churn, and somehow create phenomenological experience. People share these experiences with each other—to an unknown degree, and by an imperfectly understood mechanism.

Culture is a useful shorthand term for what we learn from our wider society. Cultural knowledge is organized, with many models and systems embedded in a ground matrix of facts, customs, and ideas. But we have a less than perfect understanding of how cultural knowledge diffuses, or why people pick it up, or how they operate among the many complexities of scale, multiculturality, and rapid change.

Epistemology is not an easy discipline. We need to know much more about how we know.

 For the future, tolerance, mutual aid, and valuing diversity are the basic and prime moral teachings. We are all in this together—not only seven billion humans divided into thousands of culturally defined groups, but also billions and billions of other organisms, on many of which we depend. With group hate as our greatest problem, and rejection of or indifference to the environment as a close second, we have to make conscious efforts to appreciate what we have.

References

Abram, David. 1996. The Spell of the Sensuous. New York: Pantheon.

Abu-Lughod, Lila. 1989. Veiled Sentiments: Honor and Poetry in a Bedouin Society. Berkeley: University of California Press.

Ahmad, S. Maqbul, and K. Baipakov. 2000. Geodesy, Geology and Mineralogy; Geography and Cartography; the Silk Route across Central Asia. In *History of Civilizations of Central Asia,* vol. IV, *The Age of Achievement: A.D. 750 to the End of the Fifteenth Century.* Part 2, *The Achievements,* edited by C. E. Bosworth and M. S. Asimov. Paris: UNESCO. Pp. 205-226.

Ahn, Junehui. 2010. The Myth of American Selfhood and Emotion: Raising a Sociocentric Child among Middle-Class Americans. Journal of Anthropological Research 66:378-396.

Alcázar, Baltasar del. 1961 [orig. 16th century]. “Preso de Amores.” In: Ocho Siglos de Poesía en lengua Castellana, Fancisco Montes de Oca, ed. Mexico City: Porrua. P. 167.

Alter, Adam L.; Virginia S. Y. Kwan. 2009. “Cultural Sharing in a Global Village: Evidence for Extracultural Cognition in European Americans.” Journal of Personality and Social Psychology 96:742-760.

Alter, Adam L.; Daniel M. Oppenheimer; Jeffrey C. Zernia. 2010. “Missing the Trees for the Forest: A Construal Level Account of the Illusion of Explanatory Depth.” Journal of Personality and Social Psychology 99:436-451.

Alvergne, Alexandra; Markus Jokela; Virpi Luumaa. 2010. “Personality and Reproductive Success in a High-Fertility Human Population.” Proceedings of the National Academy of Sciences 107:11745-11750.

Anderson, Barbara A.; E. N. Anderson; Tracy Franklin; Aurora Dzib-Xihum de Cen. 2004. “Pathways of Decision Making among Yucatan Mayan Traditional Birth Attendants.” Journal of Midwifery and Women’s Health 49:4:312-319.

Anderson, Benedict. 1991. Imagined Communities. 2nd edn. London: Verso.

Anderson, E. N. 1972. "Some Chinese Methods of Dealing with Crowding." Urban Anthropology 1:2:141-150.

--- 1987. “Why is Humoral Medicine So Popular?" Social Science and Medicine 25:4:331-337.

--- 1988. The Food of China. New Haven: Yale University Press.

--- 1992. “Chinese Fisher Families: Variations on Chinese Themes.” Comparative Family Studies 23:2:231-247.

--- 1996. Ecologies of the Heart. New York: Oxford University Press.

--- 2005. Everyone Eats. New York: New York University Press.

--- ms1. The Morality of Ethnobiology. Ms. in prep.

--- ms 2. Learning from Experience.

--- 2006. Environment and Social Justice: Some Issues. Report to the administration, University of California, Riverside.

--- 2007. Floating World Lost. New Orleans: University Press of the South.

--- 2008. Mayaland Cuisine. Electronic publication, Lulu.com.

Anderson, E. N., and Marja Anderson. 1978. Fishing in Troubled Waters. Taipei: Orient Cultural Service.

Anderson, Perry. 1974. Lineages of the Absolutist State. London: NLB.

Andrade, Manuel J., and Hilaria Maas Collí. 1990. Cuentos Mayas Yucatecos. 2 v. Mérida: Universidad Autónoma de Yucatán.

Ankli, Anita; Otto Saticher; Michyale Heinrich. 1999a. “Medical Ethnobotany of the Yucatec Maya: Healers’ Consensus as a Quantitative Criterion.” Economic Botany 53:144-160.

--- 1999b. “Yucatec Maya Medicinal Plants Versus Nonmedicinal Plants: Indigenous Characterization and Selection.” Human Ecology 27:557-580.

Arellano Rodríguez, J. Alberto; José Salvador Flores Guido; Juan Tun Garrido; María Mercedes Cruz Bojórquez. 2003. Nomenclatura, forma de vida, uso, manejo y distribución de las especies vegetales de la Península de Yucatán. Mérida: Universidad Autónoma de Yucatán. Etnoflora Yucatanense no. 20.

Ariely, Dan. 2009. Predictably Irrational: The Hidden Forces That Shape Our Decisions. Rev. ed. New York: Harper.

Aristotle. 1952. Metaphysics. Tr. Richard Hope. New York: Columbia University Press.

--- 1955. The Ethics of Aristotle. Tr. J. A. K. Thomson. Harmondsworth, Sussex: Penguin.

Arrow, Holly. 2007. “The Sharp End of Altruism.” Science 318:581-582.

Ashton-Jones, Claire; William W. Maddux; Adam D. Galinsky; Tanya L. Chartrand. 2009. Who I Am Depends on How I Feel: The Role of Affect in the Expression of Culture. Psychological Science 20:340-346.

Atran, Scott. 1991. Cognitive Foundations of Natural History. Cambridge: Cambridge University Press

--- 2002. In Gods We Trust. New York: Oxford University Press.

--- 2007. “Religion’s Social and Cognitive Landscape: An Evolutionary Perspective.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 417-453.

--- 2010. Talking to the Enemy: Faith, Brotherhood, and the (Un)Making of Terrorists. New York: HarperCollins.

Azar, Beth. 2007. “All Puffed Up.” Monitor on Psychology, June, 15-16.

--- 2010a. “Revisiting Philosophy with fMRI.” Monitor on Psychology, Nov., pp. 40-43.

--- 2010b. “Your Brain on Culture.” Monitor on Psychology, Nov., 44-47.

Baker, Lee D. 1998. From Savage to Negro: Anthropology and the Construction of Race, 1896-1954. Berkeley: University of California Press.

Balam Pereira, Gilberto. 1992. Cosmogonia y uso actual de las plantas medicinales de Yucatán. Merida: Universidad Autónoma de Yucatán.

Bandura, Albert. 1982. “Self-Efficacy Mechanism in Human Agency.” American Psychologist 37:122-147.

--- 1986. Social Foundations of Thought and Action: A Social Cognitive Theory. Englewood Cliffs, NJ: Prentice-Hall.

Barkow, Jeffrey; Leda Cosmides; John Tooby (eds.). 1992. The Adapted Mind. New York: Oxford University Press.

Barkun, Michael. 2003. A Culture of Conspiracy: Apocalyptic Visions in Contemporary America. Berkeley: University of California Press.

Barlett, Peggy. 1982. Agricultural Choice and Change. New Brunswick, NJ: Rutgers University Press.

Barlett, Peggy (ed.). 1980. Agricultural Decision Making. New York: Academic Press.

Barnett, Homer. 1953. Innovation: The Basis of Cultural Change. New York: McGraw-Hill.

Barthes, Roland. 1983. The Fashion System. Tr. Matthew Ward and Richard Howard. New York: Hill and Wang.

Bartlett, Jean. 1984. The Baha’i Faith, a Case Study in Adult Socialization. Ph.D. thesis, Dept. of Anthropology, University of California, Riverside.

Bartra, Roger. 1994. Savages in the Looking Glass. Ann Arbor: University of Michigan Press.

Basu, Kaushik. 2007. “The Traveler’s Dilemma.” Scientific American, June, 90-95.

Bateson, Gregory. 1972. Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology. Chicago: University of Chicago Press.

Baumeister, Roy F. 1997. Evil: Inside Human Violence and Cruelty. New York: Owl Books.

--- 2005. The Cultural Animal: Human Nature, Meaning, and Social Life. New York: Oxford University Press.

--- 2006. “Violent Pride: Do People Turn Violent Because of Self-Hate, or Self-Love?” Scientific American Mind, Aug.-Sept., 54-59.

Beals, Alan. 1967. Culture in Process. New York: Holt, Rinehart and Winston.

Bean, Lowell John. 1972. Mukat’s People: The Cahuilla Indians of Southern California. Berkeley: University of California Press.

Beck, Ulrich. 1992. Risk Society: Toward a New Modernity. Newbury Park, CA: Sage.

Becker, Gary. 1996. Accounting for Tastes. Cambridge, MA: Harvard University Press.

Behrens, Timothy; Laurence T. Hunt; Mark W. Woolrich; Matthew F. S. Rushworth. 2008. “Associative Learning of Social Value.” Nature 456:245-249.

Bekoff, Marc. 2007. The Emotional Lives of Animals. Novato, CA: New World Library.

Bekoff, Marc, and Jessica Pierce. 2009. Wild Justice: The Moral Lives of Animals. Chicago: University of Chicago Press.

Bellah, Robert. 1957. Tokugawa Religion: The Values of Pre-Industrial Japan. Glencoe, IL: Free Press.

Bellah, Robert; Richard Madsen; William M. Sullivan; Ann Swidler; Steven M. Tipton. 1996. Habits of the Heart: Individualism and Commitment in American Life. Berkeley: University of California Press.

Bellwood, Peter, and Colin Renfrew (eds.). 2002. Examining the Farming/Language Dispersal Hypothesis. Cambridge: McDonald Institute for Archaeological Research.

Bennett, Bradley C. 2007. “Doctrine of Signatures: An Explanation of Medicinal Plant Disocvery or Dissemination of Knowledge?” Economic Botany 61:246-255.

Berger, Peter, and Thomas Luckmann. 1967. The Social Construction of Reality: A Treatise of the Sociology of Knowledge. Garden City, NY: Doubleday.

Berlin, Brent. 1992. Ethnobiological Knowledge. Princeton: Princeton University Press.

Berlin, Brent, and Paul Kay. 1969. Basic Color Terms: Their Universality and Evolution. Berkeley: University of California Press.

Bernal, Martin. 1987. Black Athena: The Afroasiatic Roots of Classical Civilization. New Brunswick, NJ: Rutgers University Press.

Bernhard, Helen; Urs Fischbacher; Ernst Fehr. 2006. “Parochial Altruism in Humans.” Nature 442:912-915.

Birkhead, Tim. 2008. The Wisodm of Birds: An Illustrated History of Ornithology. New York: Bloomsbury.

Bloom, Paul, and Deena Skolnick Weisberg. 2007 “Childhood Origins of Adult Resistance to Science.” Science 316:996-997.

Blaser, Mario. 2009. “The Threat of the Yrmo: The Political Ontology of a Sustainable Hunting Program.” American Anthropologist 111:10-20.

Blavascunas, Eunice. 2008. The Peasant and Communist Past in the Making of an Ecological Region: Podlasie, Poland. Ph.D. dissertation, Dept. of Anthropology, University of California, Santa Cruz.

Bloom, Paul. 2010. “How Do Morals Change?” Nature 464:490.

Blunt, Wilfrid. 1984. The Compleat Naturalist: A Life of Linnaeus. London: Collins.

Boas, Franz. 1995. A Wealth of Thought: Franz Boas on Native American Art. Ed/intro by Aldona Jonaitis. Seattle: University of Washington Press.

Boehm, Christopher. 1999. Equality in the Forest. Cambridge, MA: Harvard University Press.

Bond, Michael (ed.). 1986. The Psychology of the Chinese People. Oxford: Oxford University Press.

Bourdieu, Pierre. 1977. Outline of a Theory of Practice. Cambridge: Cambridge University Press.

--- 1990. The Logic of Practice. Stanford: Stanford University Press.

--- 1991. The Political Ontology of Martin Heidegger. Tr. Peter Collier. Oxford: Polity Press. (French original, 1988.)

--- 1998. The State Nobility: Elite Schools in the Field of Power. Stanford: Stanford University Press.

Bowker, Geoffrey, and Susan Leigh Star. 1999. Sorting Things Out: Classification and Its Consequences. Cambridge, MA: MIT Press.

Bowles, Samuel. 2006. “Group Competition, Reproductive Leveling, and the Evolution of Human Altruism.” Science 314:1569-1572.

--- 2008. “Conflict: Altruism’s Midwife.” Nature 456:326-327.

--- 2009. Did Warfare among Ancestral Hunter-Gatherers Affect the Evolution of Human Social Behaviors?” Science 324:1293-1298.

Boyd, Robert. 2006. “The Puzzle of Human Sociality.” Science 314:1555-1556.

Boyd, Robert, and Peter Richerson. 2005. The Origin and Evolution of Cultures. New York: Oxford University Press.

Boyer, Pascal. 2001. Religion Explained: The Evolutionary Origins of Religious Thought. New York: Basic Books.

Breitenbach, Joana, and Pal Nyiri. 2009. Seeing Culture Everywhere, From Genocide to Consumer Habits. Seattle: University of Washington Press.

Breslow, Sara Jo. 2011. Salmon Habitat Restoration, Farmland Preservation, and Environmental Drama in the Skagit River Valley. Ph.D. dissertation, Dept. of Anthropology, University of Washington.

Brindley, Erica Fox. 2010. Individualism in Early China: Human Agency and the Self in Thought and Politics. Honolulu: University of Hawai’i Press.

Brown, Donald. 1991. Human Universals. Philadelphia: Temple University Press.

Brugger, Julie. 2009. Public Land and American Democratic Imaginaries: A Case Study of Conflict over the Management of Grand Staircase-Escalante National

Monument. Ph.D. dissertation, Dept. of Anthropology, University of Washington.

Bryner, Jeanna. 2009. “Health Care Debate Based on Total Lack of Logic.” Yahoo! News Online.

Buell, Paul; E. N. Anderson; Charles Perry. 2000. A Soup for the Qan. London: Kegan Paul International.

Burger, Jerry M. 2009. “Replicating Milgram: Would People Still Obey Today?” American Psychologist 64:1-11.

Burnett, D. Graham. 2007. Trying Leviathan. Princeton: Princeton University Press.

Burton, Robert. 1932. The Anatomy of Melancholy. New York: E. P. Dutton. Orig. London, E. Cripps, 1651.

Buss, David. 2003. The Evolution of Desire. New York: Basic Books.

--- 2009. “The Great Struggles of Life.” American Psychologist 64:140-148.

Butler, David. 2008. Letter, *Scientific American Mind,* June/July, pp. 4-5.

Byrne, Richard, and Andrew Whiten 1988. Machiavellian Intelligence: Social Expertise and the Evolution of Intelligence in Monkeys, Apes, and Humans. Oxford: Oxford University Press.

Cacioppo, John T.; James H. Fowler; Nicholas A. Christakis. 2009. “Alone in the Crowd: The Structure and Spread of Loneliness in a Large Social Network.” Journal of Personality and Social Psychology 97:977-991.

Calne, Donald. 1999. With Reason: Rationality and Human Behavior. New York: Pantheon.

Camerer, Colin F., and Ernst Fehr. 2006. “When Does ‘Economic Man’ Dominate Social Behavior?” Science 311:47-52.

Cancian, Frank. 1979. The Innovator’s Situation: Upper-Middle-Class Conservatism in Agricultural Communties. Stanford.

Cao Xueqin (vols. 4-5 with Gao E). 1973-1986. The Story of the Stone. Translated by David Hawkes and John Minford. (Chinese original, 18th century.) New York: Penguin.

Caplan, Bryan. 2007. The Myth of the Rational Voter. Princeton: Princeton University Press.

Carpenter, Siri. 2008. “Buried Prejudice.” Scientific American Mind, April-May, 32-39.

Cattaneo, Lauren Bennett, and Aliya R. Chapman. 2010. “The Process of Empowerment: A Model for Use in Research and Practice.” American Psychologist 65:646-659.

Chabris, Christopher, and Daniel Simons. 2010. The Invisible Gorilla and Other Ways Our Intuitions Deceive Us. New York: Crown.

Chamberlain, Alexander F. 1895. The Child and Childhood in Folk-Thought. New York: MacMillan.

Chapman, H. A.; D. A. Kim; J. M. Susskind; A. K. Anderson. 2009. “In Bad Taste: Evidence for the Oral Origins of Moral Disgust.” Science 323:1222-1226.

Cheney, Dorothy, and Robert M. Seyfarth. 2007. Baboon Metaphysics. Chicago: University of Chicago Press.

Chao, Eveline. 2009. Niubi! The Real Chinese You Were Never Taught in School. New York: Plume (Penguin).

Choi, Jung-Kyoo, and Samuel Bowles. 2007. “The Coevolution of Parochial Altruism and War.” Science 318:636-640.

Chomsky, Noam. 1957. Syntactic Structures. Hague: Mouton.

Chomsky, Noam. 1959?. Review of *Verbal Behavior* by B. F. Skinner. Language

Chomsky, Noam, and Michel Foucault. 2006. The Chomsky-Foucault Debate on Human Nature. London: New Press.

Cipolla, Carlo. 1981. Fighting the Plague in Seventeenth-Century Italy. Madison: University of Wisconsin Press.

Cohen, Dov. 2007. “Methods in Cultural Psychology.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 196-236.

Cohen, Geoffrey L.; Julio Garcia; Nancy Apfel; Allison Master. 2006. “Reducing the Racial Achievement Gap: A Social-Psychologicval Intervention.”

Cole, Michael, and Susan Scribner. 1974. Culture and Thought. New York: Wiley.

Collins, Randall. 1986. Weberian Sociological Theory. Cambridge: Cambridge University Press.

Crone, Patricia. 1987. Meccan Trade and the Rise of Islam. Princeton: Princeton University Press.

Cronon, William. 1983. Changes in the Land. New York: Hill and Wang.

Cruikshank, Julie. 1998. The Social Life of Stories. Lincoln: University of Nebraska Press.

Cruikshank, Julie. 2005. Do Glaciers Listen? Local Knowledge, Colonial Encouinters, and Social Imagination. Vancouver: University of British Columbia Press.

Cunliffe, Barry. 2008. Europe Between the Oceans, 9000 BC- AD 1000. New Haven: Yale University Press.

Curry, Oliver. 2006. Review of “The Altruism Equation” by Lee Aslan Dugatkin. Nature 444:683.

Damasio, Antonio. 1994. Descartes’ Error: Emotion, Reason, and the Human Brain. New York: G. P. Putnam’s Sons.

--- 1994b. “Descartes’ Error and the Future of Human Life.” Scientific American, Oct., p. 144.

--- 2000. The Feeling of What Happens: Body and Emotion in the Making of Consciousness.

D’Andrade, Roy. 1995. The Development of Cognitive Anthropology. New York: Cambridge University Press.

--- 2001. Everyday Irrationality: How Pseudo-Scientists, Lunatics, and the Rest of Us Systematically Fail to Think Rationally. Boulder, CO: Westview.

Darlington, Susan M. 1998. The Ordination of a Tree: The Buddhist Ecology Movement in Thailand. Ethnology 37:1:1-16.

Dawes, Robyn. 1994. House of Cards: Psychology and Psychotherapy Built on Myth. New York: Free Press.

Dawkins, Richard. 2006. The God Delusion. Boston: Houghton Mifflin.

De Kruif, Paul. 1926. Microbe Hunters. New York: Harcourt, Brace.

De Landa, Manuel. 2002. Intensive Science and Virtual Philosophy. New York: Continuum Press.

De Raad, Boele; Dick P. H. Barelds; Eveline Levert; Fritz Ostendorf; Boris Mlačić; Lisa Di Blas; Martina Hřebicková; Zsófia Szirmák; Piotr Szarota; Marco Perugini; A. Timothy Church; Marcia S. Katigbak. 2010. “Only Three Factors of Personality Description Sre Fully Replicable Acros Languages: A Comparison of 14 Trait Taxonomies.” Journal of Personality and Social Psychology 98:160-173.

De Waal, Frans. 1996. Good Natured. Cambridge, MA: Harvard University Press.

--- 2005. Our Inner Ape. New York: Riverhead Books (Penguin Group).

Dennett, Daniel. 1991. Consciousness Explained. Boston: Little, Brown & Co.

Dennis, Tanya. 2006. Constructing Problem Children: The Ethnography of an Illness and an Analysis of the Rise of Attention Deficit Hyperactivity Disorder (ADHD) as a Diagnostic Category. Ph.D. thesis, School of Social Sciences and Law, Brunel Univ.

Descartes, René. 1999. Discourse on Method and Related Writings. Tr. Desmond M. Clarke (French orig., 1637). London: Penguin.

Desowitz, Robert. 1991. The Malaria Capers. New York: W. W. Norton.

Dias-Ferreira, Eduardo; João C. Sousa; Irene Melo; Pedro Morgado; Ana R. Mesquita; João J. Cerqueira; Rui M. Costa; Nuno Sousa. 2009. “Chronic Stress Causes Frontostriatal Reorganization and Affects Decision-Making.” Science 325:621-625.

Diener, Ed; Weiting Ng; James Harter; Raksha Arora. 2010. “Wealth and Happiness across the World: Material Prosperity Predicts Life Evaluation, Whereas Psychosocial prosperity Predicts Positive Feeling.” Journal of Personality and Social Psychology 99:52-61.

Dilthey, Wilhelm. 1985. Introduction to the Human Sciences. Ed./tr. Rudolf A. Makkreel and Frithjof Rodi. (German original ca 1880.) Princeton: Princeton University Press.

Dingfelder, Sadie. 2009. “Old Problem, New Tools.” Monitor on Psychology, Oct., 40-41.

Dissanayake, E. 1995. Homo Aestheticus. Seattle: University of Washington Press.

Doidge, Norman. 2007. The Brain That Can Change Itself. New York: Penguin.

Dodge, Kenneth A. 2008. “Framing Public Policy and Prevention of Chronic Violence in American Youths.” American Psychologist 63:573-590.

Dols, Michael. 1992. Majnūn: The Madman in Medieval Islamic Society. Oxford: Oxford University Press.

Douglas, Mary. 1997 [ca. 1960]. “Deciphering a Meal.” *In* Food and Culture: A Reader, ed. By Carole Counihan and Penny van Esterik. New York: Routledge. Pp. 36-54.

Douglas, Mary, and Aaron Wildavsky. 1982. Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers. Berkeley: University of California Press.

Dove, Michael. 2006. “Indigenous People and Environmental Politics.” Annual Review of Anthropology 35:191-208.

Downs, Anthony. 1957. An Economic Theory of Democracy. New York: Harper.

Dreber, Anna; David G. Rand; Drew Fudenberg; Martin A. Nowak. 2008. “Winners Don’t Punish.” Nature 452:348-351.

Dunbar, Robin I. M. 1993. “Coevolution of Neocortical Size, Group Size and Language in Humans.” Behavioral and Brain Sciences 16:681-735.

--- 2004. Grooming, Gossip, and the Evolution of Language. New York: Gardners Books.

Dunbar, Robin I. M., and Susanne Shultz. 2007. “Evolution in the Social Brain.” Science 317:1344-1347.

Dunn, Elizabeth W.; Lara B. Aknin; Michael I. Norton. 2008. “Spending Money on Others Promotes Happiness.” Science 319:1687-1688.

Durkheim, Emile. 1995. Elementary Forms of Religious Life. Tr. Karen Fields. Fr. orig. 1912. New York: Free Press.

Durkheim, Emile, and Marcel Mauss. 1963. Primitive Classification. Tr. Rodney Needham. London: Cohen and West. (French original, 1903.)

Edelman, Scott; Christian S. Crandall; Jennifer Pattershall. 2009. “The Existence Bias.” Journal of Personality and Social Psychology 97:765-775.

Einarsdottir, Jónina. 2005. Tired of Weeping: Mother Love, Child Death, and Poverty in Guinea-Bissau. Madison: Univrsity of Wisconsin Press.

Einarsdottir, Jónina. 2005. Tired of Weeping: Mother Love, Child Death, and Poverty in Guinea-Bissau. Madison: Univrsity of Wisconsin Press.

Ekman, Paul. 1992. “Are There Basic Emotions?” Psychological Review 99:550-553.

Ellen, Roy. 1993. The Cultural Relations of Classification. Cambridge; Cambridge University Press.

Elliott, Andrew, and Daniela Niesta. 2008. “Romantic Red: Red Enhances Men’s Attraction to Women.” Journal of Personality and Social Psychology 95:1150-1164.

Elster, Jon. 1983a. Explaining Technical Change. Cambridge: Cambridge University Press.

--- 1983b. Sour Grapes. Cambridge: Cambridge University Press.

--- 1984. Making Sense of Marx. Cambridge: Cambridge University Press.

--- 1986 (ed.). Karl Marx: A Reader. Cambridge: Cambridge University Press.

--- 1989. Nuts and Bolts for the Social Sciences. Cambridge: Cambridge University Press.

--- 1993. Political Philosophy. Cambridge: Cambridge University Press.

Engels, Frederick. 1966. Anti-Duhring: Herr Eugen Duhring's Revolution in Science. New York: International Publishers. (New printing. Orig. US edn. 1939. Orig. English edn. 1894.)

Epstein, Robert. 2007. “The Truth about Online Dating.” Scientific American Mind, Feb.-Mar., 28-35.

Erikson, Erik. 1950. Childhood and Society. New York: W. W. Norton.

Escobar, Arturo. 1998. “Whose Knowledge, Whose Nature? Biodiversity, Conservation, and the Political Ecology of Social Movements.” Journal of Political Ecology 5:53-82.

--- 1999. “After Nature: Steps to an Antiessentialist Political Ecology.” Current Anthropology 40:1-30.

--- 2008. Territories of Difference: Place, Movements, life, *Redes.* Durham: Duke University Press.

Evans-Pritchard, E. E. 1937. Witchcraft, Oracles and Magic among the Azande. Oxford: Oxford University Press.

Fedick, Scott (ed.). 1996. The Managed Mosaic: Ancient Maya Agriculture and Resource Use. Salt Lake City: University of Utah Press.

Fehr, Ernst; Helen Bernhard; Bettina Rockenbach. 2008. “Egalitarianism in Young Children.” Nature 454:1079-1083.

Feld, Stephen. 1982. Sound and Sentiment. Princeton: Princeton University Press.

Ferreira, Mario B.; Leonel Garcia-Marques; Steven Sherman; Jeffrey W. Sherman. 2006. “Automatic and Controlled Components of Judgment and Decision-Making.” Journal of Personality and Social Psychology 91:797-813.

Fine, Cordelia. 2006. A Mind of Its Own: How Your Brain Distorts and Deceives. W. W. Norton.

Flinn, Mark V. 2009. “Why Words Can Hurt Us: Social relationships, Stress, and Health.” In Treviathan, Wenda; Eric O. Smith; James J. McKenna (eds.). Evolutionary Medicine and Health: New Perspectives. New York: Oxford University Press. Pp. 242-258.

Flynn, James; Paul Slovic; Howard Kunreuther (eds.). 2001. Risk, Media, and Stigma: Understanding Public Challenges to Modern Science and Technology. London: Earthscan.

Foster, John Bellamy. 2000. Marx’ Ecology: Materialism and Nature. New York: Monthly Review Press.

--- 2002. Ecology against Capitalism. New York: Monthly Review Press.

Foucault, Michel. 1965. Madness and Civilization: A History of Insanity in the Age of Reason. Tr. Richard Howard. Fr. orig. 1961. New York: Random House.

--- 1970. The Order of Things: An Archaeology of the Human Sciences. (French original, *Les mots et les choses*, 1966.) New York: Random House.

--- 1973. The Birth of the Clinic: An Archaeology of Medical Perception. New York: Pantheon.

---1977. Discipline and Punish: The Birth of the Prison. Tr. Alan Sheridan. New York: Vintage.

--- 1978. The History of Sexuality. Vol. I: An Introduction. Tr. Robert Hurley; orig. 1976. New York: Random House.

--- 1980. Power/Knowledge: Selected Interviews and Other Writings, 1972-1977. Ed. Colin Gordon. New York: Pantheon.

--- 1997. The Politics of Truth. New York: Semiotext(e).

--- 2007. Security, Territory, Population. New York: Palgrave MacMillan. 384 pp.

Fowler, Catherine. 1992. In the Shadow of Fox Peak: An Ethnography of the Cattail-Eatern Northern Paiute People of Stillwater Marsh. U. S. Dept. of the Interior, Fish and Wildlife Service, Stillwater National Wildlife Refuge, Cultural Resource Series #5.

Frances, Allen. 2010. “It’s Not Too Late to Save ‘Normal.’” Los Angeles Times, column, March 1, p. A19.

Frank, Robert H. 1988. Passions within Reason: The Strategic Role of the Emotions. New York: W. W. Norton.

Frankl, Viktor. 1959. Man’s Search for Meaning: An Introduction to Logotherapy. Boston: Beacon.

--- 1978. The Unheard Cry for Meaning: Psychotherapy and Humanism. New York: Simon & Schuster.

Franks, David D. 2006. ‘The Neuroscience of Emotions.” In *Handbook of the Sociology of Emotions*, Jan E. Stets and Jonathan Turner, eds. New York: Springer. Pp. 38-62.

Freud, Sigmund. 1961. The Future of an Illusion. Garden City, NY: Doubleday.

Friedman, Herbert. 1980. A Bestiary for Saint Jerome: Animal Symbolism in European Religious Art. Washington, DC: Smithsonian Institution.

Fromm, Erich. 1941. Escape from Freedom. New York: Holt, Rinehart, Winston.

Fulghum, Robert. 1991. It Was on Fire When I Lay Down on It. New York: Ivy Books.

Furth, Charlotte. 1999. A Flourishing Yin. Berkeley: University of California Press.

Gage, Thomas. 1958. Thomas Gage’s Travels in the New World. Ed. J. E. S. Thompson. (Orig. full edn. 1648.) Norman, OK: University of Oklahoma Press.

Galen. 1997. Galen: Selected Works. Tr. and ed. by Philip N. Singer. Oxford: Oxford University Press.

--- 2000. Galen on Food and Diet. Tr. and ed. by Mark Grant. London: Routledge.

--- 2003. Galen on the Properties of Foodstuffs. Tr. and ed. by O. Power. Cambridge: Cambridge University Press.

--- 2006. Galen on Diseases and Symptoms. Tr. and ed. by Ian Johnston. Cambridge: Cambridge University Press.

Garrett, Frances. 2007. “Critical Methods in Tibetan Medical Histories.” Journal of Asian Studies 66:363-387.

Garro, Linda. 1988. “Explaining High Blood Pressure: Variation in Knowledge about Illness.” American Ethnologist 15:9-119

Geertz, Clifford. 1957. Agricultural Involution. Berkeley: University of California Press.

Gibbard, Allan. 1992. Wise Choices, Apt Feelings: A Theory of Normative Judgment. New York: Clarendon Press.

Gibbon, Edward. 1995 [1776-1788]. The Decline and Fall of the Roman Empire. London: Penguin.

Gibbs, Rayomd W., Jr. 2006. Embodiment and Cognitive Science. Cambridge: Cambridge University Press.

Giddens, Anthony. 1984. The Constitution of Society. Berkeley: University of California Press.

Gigerenzer, Gerd. 1991. “How to Make Cognitive Illusions Disappear: Beyond ‘Heuristics and Biases.’” European Review of Social Psychology 2:83-115.

Gigerenzer, Gerd. 2007. Gut Feelings: The Intelligence of the Unconscious. New York: Viking.

Gigerenzer, Gerd; Peter M. Todd; and the ABC [Adaptive Behavior and Cognition] Research Group. 1999. Simple Heuristics That Make Us Smart. New York: Oxford University Press.

Gilbert, D. T., and T. D. Wilson. 2007. “Prospection: Experiencing the Future.” Science 317:1351-1359.

Gintis, Herbert. 2000. Game Theory Evolving. Princeton: Princeton University Press.

Gintis, Herbert; Samuel Bowles; Robert Boyd; Ernst Fehr (eds.). 2005. Moral Sentiments and Material Interests: The Foundations of Cooperation in Economic Life.

Cambridge, MA: MIT Press.

Glacken, Clarence J. 1967. Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century. Berkeley: University of California Press.

Gladwin, Christina. 1989. Ethnographic Decision Tree Modeling. Newbury Park, CA: Sage.

Glasser, William. 1981. Stations of the Mind: New Directions for Reality Therapy. New York: Harper & Row.

--- 1985. Control Theory: A New Explanation of How We Control Our Lives. New York: HarperCollins.

Goetz, Jennifer; Ducher Keltner; Emiliana Simon-Thomas. 2010. “Compassion: An Evolutionary Analysis and Empirical Review. Psychological Bulletin 136:351-374.

Goffman, Erving. 1959. The Presentation of the Self in Everyday Life. Garden City, NY: Doubleday.

--- 1967. Interaction Ritual. Chicago: Aldine.

Goldschmidt, Walter. 2004. The Bridge to Humanity: How Affect Hunger Trumps the Selfish Gene. New York: Oxford University Press.

Golson, Jack. 1974. Archaeology and Agricultural History in the New Guinea Highlands. Canberra: Australian National University.

Gombrich, E. H. 1960. Art and Illusion. New York: Pantheon.

--- 1979. The Sense of Order. Ithaca: Cornell University Press.

Gómez-Pompa, Arturo. 1987. “On Maya Silviculture.” Mexican Studies/Estudios Mexicanos 3:1:1-17.

Gómez-Pompa, Arturo; Michael Allen; Scott Fedick; J. J. Jiménez-Osornio (eds.). 2003. The Lowland Maya Area: Three Millennia at the Human-Wildland Interface. New York: Haworth Press.

Gonzalez, Roberto. 2001. Zapotec Science. University of Texas Press, Austin.

Gortvay, Gy, and I. Zoltán. 1968. Semmelweis: His Life and Work. Budapest: Akadémiai Kiadó.

Gossen, Gary H. 1974. Chamulas in the World of the Sun: Time and Space in a Maya Oral Tradition. Prospect Heights, IL: Waveland.

--- 2002. Four Creations: An Epic Story of the Chiapas Mayas. Norman, OK: University of Oklahoma Press.

Gottdiener, Mark. 1997. The Social Production of Urban Space. Austin: University of Texas Press.

Gould, Richard. 1968. Yiwara: Foragers of the Australian Desert. New York: Charles Scribner’s Sons.

Gould, Stephen J. 1996. The Mismeasure of Man. 2nd edn. New York: W. W. Norton.

Goulet, Jean-Guy. 1998. Ways of Knowing. Lincoln: University of Nebraska Press.

Gowers, Timothy, and Michael Nielsen. 2009. “Massively Colalborative Mathematics.” Nature 461:879-881.

Graham, Jesse; Jonathan Haidt; Brian A. Nosek. 2009. “Liberals and Conservatives Rley on Different Sets of Moral Foundations.” Journal of Personality and Social Psychology 96:1029-1046.

Grandin, Temple, and Catherine Johnson. 2005. Animals in Translation: Using the Mysteries of Autism to Decode Animal Behavior. New York: Scribner.

Green, Donald, and Ian Shapiro 1994. Pathologies of Rational Choice Theory. New Haven: Yale University Press.

Greenfield, Patricia. 2004. Weaving Generations Together: Evolving Creativity in the Maya of Chiapas. Santa Fe: School of American Research Press.

Greenfield, Patricia M.; Heidi Keller; Andrew Fuligni; Ashley Maynard. 2003. “Cultural Pathways through Universal Development.” Annual Review of Psychology 54:461-490.

Grinker, Roy Richard. 2008. Unstrange Minds: Remapping the World of Autism. New York: Basic Books.

Gross, John (ed.). 1983. The Oxford Book of Aphorisms. Oxford: Oxford University Press.

Grove, A.T., and Oliver Rackham. 2001. The Nature of the Mediterranean World. New Haven: Yale University Press.

Grünbaum, Adolf. 1984. The Foundations of Psychoanalysis: A Philosophical Critique. Berkeley: University of California Press.

Guilaine, Jean, and Jean Zammit. 2001. The Origins of War: Violence in Prehistory. Oxford: Blackwell.

Gurven, Michael, and Jeffrey Winking. 2008. “Collective Action in Action: Prosocial Behavior in and out of the Laboratory.” American Anthropologist 110:179-190.

Haidt, Jonathan. 2007. “The New Synthesis in Moral Psychology.” Science 36:998-1002.

Hames, Raymond. 2007. “The Ecologically Noble Savage Debate.” Annual Review of Anthropology 36:177-190.

Hammond, Michael. 2006..”Evolutionary Theory and Emotions.” In *Handbook of the Sociology of Emotions*, Jan E. Stets and Jonathan H. Turner, eds. New York: Springer. Pp. 368-385.

Hanks, Lucien. 1972. Rice and Man. Chicago: Aldine.

Hanks, William. 1990. Referential Practice. Chicago: University of Chicago Press.

Harbsmeier, Christoph. 1998. Science and Civilisation in China, Vol. 7, part 1, Language and Logic. Cambridge: Cambridge University Press.

Hardin, Garrett. l968. "The Tragedy of the Commons." Science l62:l243-l248.

--- 1991. “The Tragedy of the *Unmanaged* Commons: Population and the Disguises of Providence.” In: Robert V. Andelson (ed.): Commons without Teragedy. Savage, MD: Barnes and Noble. Pp. 162-185.

Hardin, Russell. 1988. Morality within the Limits of Reason. Chicago: University of Chicago Press.

Harré, Rom (ed.). 1986. The Social Construction of Emotion. Basil Blackwell, Oxford.

Harris, Judith Rich. 1998. The Nurture Assumption: Why Children Turn Out the Way They Do. New York: Free Press.

--- 2006. No Two Alike: The Psychology of Individual Differences. New York: W. W. Norton.

Harris, Marvin. 1968. The Rise of Anthropological Theory. New York: Thomas Y. Crowell.

Harvey, Graham. 2006. Animism: Respecting the Living World. New York: Columbia University Press.

Hastorf, Christine A. 2007. “Cultural Implications of Crop Introductions in Andean Prehistory.” In: *The Emergence of Agriculture,* Tim Denham, ed. New York: Routledge. Pp. 106-133.

Hatfield, Elaine; Richard L. Rapson; Lise D. Martel. 2007. “Passionate Love and Sexual Desire.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 760-779.

Hauser, Marc D. 2006. Moral Minds: How Nature Designed Our Universal Sense of Right and Wrong. New York: Ecco (HarperCollins).

--- 2009. “The Mind.” Scientific American, Sept., pp. 44-51.

Hawkes, Kristen. “Why Hunter-gatherers Work.” Current Anthropology 34:341-61

Hayami, Yujiro, and Vernon Ruttan. 1985. Agricultural Development. 2nd edn. Baltimore: Johns Hopkins University Press.

Heckhausen, Jutta, and Richard Schulz. 1995. “A Life-Span Theory of Control.” Psychological Review 102:284-304.

Heckhausen, Jutta, and Richard Schulz. 1999. “The Primacy of Primary Control Is a Human Universal: A Relpy to Gould’s (1999) Critique of the Life-Span Theory of Control.” Psychological Review 106:605-609.

Hedrick, Kimberly. 2007. Our Way of Life: Identity, Landscape, and Conflict. Ph.D. thesis, Dept. of Anthropology, University of California, Riverside.

Heine, Martin; Laruent Groc; Renato Frischknecht; Jen-Claude Béïque; Brahim Lounis; Gavin Rumbaugh; Richard L. Huganir; Larent Cognet; Daniel Choquet. 2008. “Surface Mobility of Postsynaptic AMPARs Tunes Synaptic Transmission.” Science 320:201-205.

Henrich, Joseph; Robert Boyd; Samuel Bowles; Colin Camerer; Ernst Fehr; Herbert Gintis (eds.). 2004. Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-scale Societies. New York: Oxford University Press.

Henrich, Joseph; Jean Ensminger; Richard McElreath; Abigail Barr; Clark Barrett; Alexander Bolyanatz; Juan Camilo Cardenas; Michael Gurven; Edwins Gwako; Natalie Henrich; Carolyn Lesorogol; Frank Marlowe; David Tracer; John Ziker. 2010. “Markets, Religion, Community Size, and the Evolution of Fairness and Punishment.” Science 327:1480-1484.

Henrich, Joseph; Steven Heine; Ara Norenzayan. 2009. “The Weirdest People in the World?” Brain and Behavior Science, preprint # BBS-D-09-00017.

Henry, P. J. 2009. “Low-status Compensation: A Theory for Understanding the Role of Status in Cultures of Honor.” Journal of Personality and Social Psychology 97:451-466.

Herder, Johann Gottfried. 1993. Against Pure Reason: Writings on Religion, Language, and History. Tr./ed. Marcia Bunge. Eugene, OR: Wipf and Stock.

--- 2002. Philosophical Writings. Translated and edited by Michael N. Forster. Cambridge: Cambridge University Press.

Hernández Xolocotzi, Efraím. 1987. Xolocotzia: Obras de Efraim Hernández Xolocotzi. Universidad Autónoma de Chapingo, Revista de Geografía Agrícola.

Herodotus. 1954. The Histories. Tr. Audrey de Selincourt (Greek orig. ca. 400 BCE). Harmondsworth, Sussex: Penguin.

Herrmann, Benedikt; Christian Thöni; Simon Gächter. 2008. “Antisocial Punishment Across Societies.” Science 319:1362-1367.

Herrmann, Esther; Josep Call; María Victoria Hernández-Lloreda; Brian Hare; Michael Tomasello. 2007. “Humans Have Evolved Specialized Skills of Social Cognition: The Culturtal Intelligence Hypothesis.” Science 317:1360-1366.

Herrnstein, Richard, and Charles Murray. 1994. The Bell Curve. New York: Free Press.

Hill, Jane. 2001. “Proto-Uto-Aztecan: A Community of Cultivators in Central Mexico?” American Anthropologist 103:913-934.

--- 2003. “What Is Lost When Names Are Forgotten?” *In* Nature Knowledge: Ethnoscience, Cognition, and Utility, Glauco Sanga and Gherardo Ortalli, eds. New

Hill, Kim R.; Robert S. Wakler; Miran Božičević; James Eder; Thomas Headland; Barry Hewlett; A. Magdalena Hurtado; Frank Marlowe; Polly Wiessner; Brian Wood. 2011. “Co-Residence Patterns in Hunter-Gatherer Societies Show Unique Human Social Structure.” Science 331:1286-1289. York and London: Berghahn. Pp. 161-184.

Hinde, Robert. 2007. Bending the Rules: Morality in the Modern World from Relationships to Politics and War. Oxford: Oxford University Press.

Hinrichs, T J. 1999. “New Geographies of Chinese Medicine.” Osiris 13:287-325.

Hobbes, Thomas. 1950 [1651]. Leviathan. New York: Dutton.

Hochschild, Arlie. 2003. The Managed Heart: The Commercialization of Feeling. 2nd edn. Berkeley: University of California Press.

Holden, Constance. 2007. “Our Ancestral Brains.” Science 318:25.

--- 2008. “True to Stereotype.” Science 321:1749.

Holland, Dorothy, and Naomi Quinn (eds.). 1987. Cultural Models in Language and Thought. New York: Cambridge University Press.

Holmes, Arthur. 1965. Principles of Physical Geology. 2nd edn. London: Nelson.

Hong, Ying-yi; Ching Wan; Sun No; Chi-yue Chiu. 2007. “Multicultural Identities.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 323-345.

Hood, Bruce. 2009. SuperSense. New York: HarperCollins.

Horberg, E. J.; Dacher Keltner; Christopher Oveis; Adam B. Cohen. 2009. “Disgust and the Moralization of Purity.” Journal of Personality and Social Psychology 97:963-976.

Hrdy, Sarah Blaffer. 1998. Mother Nature. New York: Pantheon.

Hsu, Elisabeth. 1999. The Transmission of Chinese Medicine. Cambridge: Cambridge University Press. Cambridge Studies in Medical Anthropology, 7.

Hsu, Elisabeth (ed.). 2001. Innovation in Chinese Medicine. Cambridge: Cambridge University Press.

Hsu, Francis L. K. 1953. Americans and Chinese: Two Ways of Life. New York: H. Schuman.

Hsu, Ming; Cédric Anen; Steven R. Quartz. 2008. “The Right and the Good: Distributive Justice and Neural Encoding of Equity and Efficiency.” Science 320:1092-1095.

Huard, Pierre, and Maurice Durand. 1954. Connaissance du Viet-Nam. Hanoi: École Française de’Extrème-Orient; Paris: Imprimerie Nationale.

Huff, Darryl. 1991. How to Lie with Statistics. New York: Penguin.

Hume, David. 1969 (1739-1740). A Treatise of Human Nature. New York: Penguin.

Hunn, Eugene. 1991. Nch’i-Wana, The Big River. Seattle: University of Washington Press.

Hunn, Eugene S. 1977. Tzeltal Folk Zoology: The Classification of Discontinuities in Nature. New York: Academic Press.

--- 1982. “The Utilitarian Factor in Folk Biological Classification.” American Anthropologist 84:830-847.

--- 2008. A Zapotec Natural History: Trees, Herbs, and Flowers, Birds, Beasts and Bugs in the Life of San Juan Gbëë. Tucson: University of Arizona Press.

Huntington, Ellsworth. 1945. Mainsprings of Civilization. New York: Wiley.

Huntington, Samuel. 1996. The Clash of Civilizations and the Remaking of World Order. New York: Simon and Schuster.

Huron, David. 2006. Sweet Anticipation: Music and the Psychology of Expectation. Cambridge, MA: MIT Press.

Hvalkof, Sven, and Arturo Escobar. 1998. “Nature, Political Ecology, and Social Practice: Toward an Academic and Political Agenda.” In: Building a New Biocultural Synthesis, ed. by Alan H. Goodman and Thomas L. Leatherman. Ann Arbor; University of Michigan Press. Pp. 425-450.

Ibn Hazm. 1953. The Ring of the Dove. Tr. A. J. Arberry. London: Luzac.

Ingold, Tim. 2000. The Perception of the Environment: Essays in Livelihood, Dwelling and Skill. London: Routledge.

Isaacs, Haskell D. 1990. “Arabic Medical Literature.” In *Religion, Learning and Science in the ‘Abbasid Period,* M. J. L. Young, J. D. Latham, R. B. Serjeant, eds. Cambridge: Cambridge University Press. Pp. 342-363.

Istomin, Kirill V., and Mark J. Dwyer. 2009. “Finding the Way: A Critical Discussion of Anthropological Theories of Human Spatial Orientation with Reference to Reindeer Herders of Northeastern Euorpe and Western Siberia.” Current Anthropology 50:29-50.

Jay, Martin. 2005. Songs of Experience: ModernA merican and European Variations on a Universal Theme. Berkeley: University of California Press.

Jensen, Keith; Josep Call; Michael Tomasello. 2007. “Chimpanzees Are Rational Maximizers in an Ultimatum Game.” Science 318:107-109.

Jilek, Wolfgang. 1981. Indian Healing. Surrey, BC, Canada: Hancock House.

Johannes, R. E. 1981. Words of the Lagoon: Fishing and Marine Lore in the Palau District of Micronesia. Berkeley: University of California Press.

Johannes, R. E., and J. W. MacFarlane. 1991. Traditional Fishing in the Torres Straits Islands. CSIRO.

Jones, Dan. 2007. “The Depths of Disgust.” Nature 447:768-771.

Jost, John T. 2006. “The End of the End of Ideology.” American Psychologist 61:651-670.

Jost, John T.; Jack Glaser; A. W. Kruglanski; Frank Sulloway. 2003. “Political Conservatism as Motivated Social Cognition.” Psychological Bulletin 129:339-375.

Kagan, Jerome. 1998. Galen’s Prophecy. Boulder: Westview. Temperament.

Kagan, Jerome. 2006. An Argument for Mind. New Haven: Yale University Press.

Kagan, Jerome, and Nancy Snidman. 2004. The Long Shadow of Temperament. Cambridge, MA: Harvard University Press.

Kahneman, Daniel, and Gary Klein. 2009. “Conditions for Intuitive Expertise: A Failure to Disagree.” American Psychologist 64:515-526.

Kahneman, D.; Paul Slovic; Amos Tversky. 1982. Judgement under Uncertainty: Heuristics and Biases. Cambridge: Cambridge University Press.

Kamal, Hassan. 1975. Encyclopedia of Islamic Medicine with a Greco-Roman Background. Cairo: General Egyptian Book Corporation.

Kant, Immanuel. 1978. Anthropology from a Pragmatic Point of View. Tr. Victor Lyle Dowdell (German original, 1798). Carbondale: Southern Illinois University Press.

Kant, Immanuel. 2007. Critique of Pure Reason. Tr. Max Müller and Marcus Weigelt. German original 1781 (1st edn.) and 1787 (2nd edn.; the translation uses both). New York: Penguin.

Keirsey, David, and Marilyn Bates. 1978. Please Understand Me: Character and Temperament Types. Del Mar, CA: Prometheus Nemesis Books.

Kellerman, B. 2004. Bad Leadership: What It Is, How It Happens, Why It Matters. Boston: Harvard Business School Press.

Kelly, Raymond. 2000. Warless Societies and the Origin of War. Ann Arbor: University of Michigan.

Kenrick, Douglas; Vladas Griskevicius; Steven L. Neuberg; Mark Schaller. 2010. “Renovating the Pyramid of Needs: Contemporary Extensions Built upon Ancient Foundations.” Perspectives on Psychological Science 5:292-314.

Kenyatta, Jomo. 1962. Facing Mount Kenya: The Tribal Life of the Gikuyu. New York: Vintage.

Kiernan, Ben. 2007. Blood and Soil: A World History of Genocide and Extermination from Sparta to Darfur. New Haven: Yale University Press.

Kinsley, Craig Howard, and Kelly G. Lambert. 2006. “The Maternal Brain.” Scientific American, Jan., pp. 72-79.

Kitayama, Shinobu, and Dov Cohen (eds.). 2007. Handbook of Cultural Psychology. New York: Guilford.

Kitayama, Shinobu; Sean Duffy; Yukiko Uchida. 2007. “Self as Cultural Mode of Being.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 136-174.

Kitayama, Shinobu; Hyekyung Park; A. Timur Sevicer; Mayumi Karasawa; Ayse K. Uskul. 2009. “A Cultural Task Analysis of Implicit Independence: Comparing North America, Western Europe, and East Asia.” Journal of Personality and Social Psychology 97:236-255.

Kitcher, Philip. 1993. The Advancement of Science. New York: Oxford University Press.

Kleinman, Arthur. 1980. Patients and Healers in the Context of Culture. Berkeley: University of California Press.

--- 1988. The Illness Narratives. Cambridge, MA: Harvard University Press.

Kluger, Jeffrey. 2006. “Why We Worry about the Things We Shouldn’t and Ignore the Things We Should.” Time, Dec. 4, 64-71.

Kockelman, Paul. 2007. “Agency: The Relation between Meaning, Power, and Knowledge.” Current Anthropology 48:375-401.

Koechlin, E., and A. Hyafil. 2007. “Anterior Prefrontal Function and the Limits of Human Decision-Making.” Science 318:594-598.

Koenig, Walter D., and Ronald L. Mumme. 1987. Population Ecology of the Cooperatively Breeding Acorn Woodpecker. Princeton., Monographs in Population Biology 24.

Koenigs, Michael; Liane Young; Ralph Adolphs; Daniel Tranel; Fiery Cushman; Marc Hauser; Antonio Damasio. 2007. “Damage to the Prefrontal Coretx Increasess Utilitarian Moral Judgements.” Nature 446:908-911.

Kohler, Wolfgang. 1927. The Mentality of Apes. London: Routledge, Kegan Paul.

Kohn, Eduardo. 2007. “How Dogs Dream: Amazonian Natures and the Politics of Transspecies Engagement.” American Ethnologist 34:3-24.

Kong, Y. C. 1996. Huihui Yaofang. Hong Kong: Chinese University of Hong Kong Press.

Konner, Melvin. 2007. “Evolutionary Foundations of Cultural Psychology.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 77-105.

Kramer, Karen. 2005. Maya Children: Helpers at the Farm. Cambridge, MA: Harvard University Press.

Krech, Shepard, III. 1999. The Ecological Indian: Myth and Reality. New York: Viking.

Kroeber, A. L. 1948. Anthropology. New York: Harcourt, Brace.

Kroeber, A. L., and Clyde Kluckhohn. 1952. Culture: A Critical Review of Concepts and Definitions. Cambridge, MA: Peabody Museum of American Archaeology and Ethnology, Harvard University.

Kronenfeld, David. 1996. Plastic Glasses and Church Fathers. New York: Oxford University Press.

--- 2008a. “Cultural Models.” Intercultural Pragmatics 5:67-74.

--- 2008b. Culture, Society, and Cognition: Collective Goals, Values, Action, and Knowledge. Hague: Mouton.

Kropotkin, Petr. 1904. Mutual Aid, a Factor in Evolution. London: W. Heinemann.

Krotz, Esteban. 1990. “Tecnología mexicana: entre la quimera y la oportunidad perdida?” Revista de la Universidad Autónoma de Yucatán 173:35-42.

Kuhn, Thomas. 1962. The Structure of Scientific Revolutions. Chicago: University of Chicago Press.

Kuper, Adam. 1999. Culture: The Anthropologists’ Account. Cambridge, MA: Harvard University Press.

Laird, Carobeth. 1976. The Chemehuevis. Banning, CA: Malki Museum Press.

--- 1984. Mirror and Pattern. Banning, CA: Malki Museum Press.

Lakoff, George. 1990. Women, Fire, and Dangerous Things: What Categories Reveal about the Mind. Chicago: University of Chicago Press.

--- 2006. Whose Freedom? The Battle over America’s Most Important Idea. New York: Farrar, Straus and Giroux.

Lakoff, George, and Mark Johnson. 1980. Metaphors We Live By. Chicago: University of Chicago Press.

--- --- 1999. Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought. New York: Basic Books.

Lampman, Aaron Michael. 2008. Tzeltal Ethnomycology: Naming, Classification and Use of Mushrooms in the Highlands of Chiapas, Mexico. Ph.D. dissertation, Dept. of Anthropology, University of Georgia.

Langenheim, Jean H. 2003. Plant Resins: Chemistry, Evolution, Ecology, Ethnobotany. Portland, OR: Timber Press.

Lansing, J. Stephen. 1991. Priests and Programmers. Princeton: Princeton University Press.

Latour, Bruno. 1986. Laboratory Life: The Construction of Scientific Facts. Princeton: Princeton University Press.

--- 2004. Politics of Nature: How to Bring the Sciences into Democracy. Tr. Catherine Porter. Cambridge, MA: Harvard University Press.

--- 2005. Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford: Oxford University Press.

Lauer, Matthew, and Shankar Aswani. 2009. “Indigenous Ecological Knowleedge as Situated Practices: Understanding Fishers’ Knowledge in the Western Solomon Islands.” American Anthropologist 111:317-329.

Lazarus, Richard. 1984. “On the Primacy of Cognition.” American Psychologist 39:124-129.

LeBlanc, Stephen, & Katherine E. Register. 2002. Constant Battles: The Myth of the Peaceful, Noble Savage. New York: St. Martin’s Griffin.

LeDoux, Joseph. 1996. The Emotional Brain: The Mysterious Underpinnings of Emotional Life. New York: Simon & Schuster.

--- 2002. Synaptic Self: How Our Brains Become Who We Are. New York: Viking Penguin.

Lehrer, Jonah. 2008. Proust Was a Neuroscientist. New York: Mariner Books.

Lenkersdorf, Carlos. 1996. Los hombres verdaderos. Siglo Veintiuno, Mexico.

--- 1999. Indios somos con orgullo. Mexico: UNAM.

Lerner, Melvin. 1980. Belief in a Just World: A Fundamental Delusion. NY: Plenum.

Leung, Angela K., and Dov Cohen. 2011. “Within- and Between-Culture Variation: Individual Differences and the Cultural Logics of Honor, Face, and Dignity Cultures.” Journal of Personality and Social Psychology 100:507-526.

Levinas, Emmanuel. 1969. Totality and Infinity. Tr. Alphonso Lingis (Fr. orig. 1961). Duquesne University Press, Pittsburgh.

Lévi-Strauss, Claude. 1962. La pensée sauvage. Paris: Plon.

--- 1963. Totemism. Tr. Rodney Needham. Boston: Beacon Press.

Ley, Jacqui, and Pauleen C. Bennett. 2007. “Understanding Personality by Understanding Companion Dogs.” Anthrozoos 20:113-124.

Li, Li-Jun; Tienyuan Guo; Zhiyong Zhang; Deanna Messervey. 2009. “Looking into the Past: Cultural Differences in Perception and Representation of Past Information.” Journal of Personality and Social Psychology 96:761-769.

Lichtheim, Miriam. 1973. Ancient Egyptian Literature. Vol. I: The Old and Middle Kingdoms. Berkeley: University of California Press.

Linton, Ralph. 1937. ‘The One Hundred Per Cent American.” American Mercury

Lipman-Blumen, J. 2006. The Allure of Toxic Leaders: Why We Follow Destructive Bosses and Corrupt Politicians—And How We Can Surivve Them. New York: Oxford University Press.

Little, Daniel. 1994. “Microfoundations of Marxism.” *In* Readings in the Philosophy of Social Science, ed. By Michael Martin and Lee C. McIntyre. Cambridge, MA: MIT Press. Pp. 479-496.

Lively, Kathryn J. 2006. “Emotions in the Workplace.” In *Handbook of the Sociology of Emotions*, Jan E. Stets and Jonathan H. Turner, eds. New York: Springer. Pp. 569-590.

Lloyd, Geoffrey. 2007. Cognitive Variations: Reflections on the Unity and Diversity of the Human Mind. Oxford: Oxford University Press.

Locke, John. 1924 [1690]. Two Treatises on Government. New York: Everyman.

--- 1979 [1697]. An Essay Concerning Human Understanding. Oxford: Oxford University Press.

Loeb, Edwin. 1989. Sumatra. With an additional chapter by Robert Heine-Geldern. Singapore: Oxford University Press.

Louv, Richard. 2005. Last Child in the Woods: Saving Children from Nature-Deficit Disorder. Chapel Hill: Algonquin Books of Chapel Hill.

Lowenstein, George; Weber, Elke U.; Hsee, Christopher K.; Welch, Ned. 2000. “Risk as Feelings.” Psychological Bulletin 127:267-286.

Lowie, Robert. 1937. The History of Ethnological Theory. New York: Rinehart.

Lowie, Robert. 1948. Primitive Religion. 2nd edn. [First edn. 1924.] New York: Liveright.

--- 1959. Ethnologist: A Personal Record. Berkeley: University of California Press.

Lukes, Stephen. 1973. Emile Durkheim: His Life and Work. London: Allen Lane.

Lutz, Catherine. 1988. Unnatural Emotions. University of Chicago Press, Chicago.

Lutz, Catherine. 1995. “Need, Nurturance, and the Emotions on a Pacific Atoll.” In: Joel Marks and Roger T. Ames (eds.): Emotions in Asian Thought. Albany: State University of New York Press. Pp. 235-252.

Lynch, Kevin. 1960. The Image of the City. Cambridge, MA: MIT and Harvard University Press.

Lyubomirsky, Sonja. 2001. “Why Are Some People Happier Than Others? The Role of Cognitive and Motivation Processes in Well-Being.” American Psychologist 56:239-249.

Lyubomirsky, Sonja. 2007. The How of Happiness: A Scientific Approach to Getting the Life You Want. New York: Penguin Press.

Mahajan, Neha; Margaret A. Martinez; Natashya L. Gutierrez; Gil Diesendruck; Mahzarin R. Banaji; Laurie R. Santos. 2011. “The Evolution of Intergroup Bias: Perceptions and Attitudes in Rhesus Macaques.” Journal of Personality and Social Psychology 100:387-404.

Majnep, Ian Saem, and Ralph Bulmer. 1977. Birds of My Kalam Country. Auckland, NZ: University of Auckland Press.

--- 2007. Animals the Ancestors Hunted. Adelaide, S. Australia: Crawford House.

Malamud, Randy. 2008. “Life as We Know It.” Chronicle of Higher Education, July 25, pp. B7-B9.

Malinowski, Bronislaw. 1944. A Scientific Theory of Culture. Oxford: Oxford University Press.

Mallory, J. P. 1989. In Search of the Indo-Europeans: Language, Archaeology, and Myth. London: Thames and Hudson.

Mansbridge, Jane (ed.). 1990. Beyond Self-Interest. New York: Oxford University Press.

Marcus, George E. 2002. The Sentimental Citizen: Emotion in Democratic Politics. University Park, PA: Pennsylvania State University Press.

Marks, Joel, and Roger T. Ames (eds.). 1995. Emotions in Asian Thought: A Dialogue in Comparative Philosophy. Albany: SUNY Press.

Marks, Jonathan. 2001. What It Means to Be 98% Chimpanzee. Berkeley: University of California Press.

Markus, Hazel Rose, and MarYam G. Hamedani. 2010. “Scoicultural Pscyhology: The Dynamic Interdependence among Self Systems and Social Systems.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 3-39.

Marlowe, Frank W. 2006. Hadza Cooperation: Second Party Punishment Yes, Third-Party Punishment No. Paper, American Anthropological Association, annual conference, San Jose, CA.

Marsh, George Perkins. 2003 [1864]. Man and Nature. Ed. David Lowenthal. Seattle: University of Washington Press.

Martin, Michael, and Lee C. McIntyre (eds.). 1994. Readings in the Philosophy of Social Science. Cambridge, MA: MIT Press.

Marx, Karl. 1967. Capital. Ed. Frederick Engels. New York: International Publishers.

--- 1938. Critique of the Gotha Program. New York: International Publishers.

--- l973. Grundrisse. Baltimore: Penguin.

Marzluff, John M., and Russell P. Balda. 1992. The Pinyon Jay: Behavioral Ecology of a Colonial and Cooperative Corvid. London: T. and A. D. Poyser.

Maslow, Abraham. 1970. Motivation and Personality. 2nd ed. New York: Harper and Row.

Mauss, Marcel. 1979. “Body Techniques.” *In* Sociology and Psychology: Essays. Tr. Ben Brewster. London: Routledge and Kegan Paul.

McElroy, Ann, and Townsend, Patricia. 2008. Medical Anthropology. 5th edn. Duxbury: Wadsworth.

McNeill, J. R. 1992. The Mountains of the Mediterranean World. New York: Oxford University Press.

McCrae, Robert R., and Paul T. Costa Jr. 1989. “Reinterpreting the Myers-Briggs Type Indicator from the Perspective of the Five-Factor Model of Personality.” Journal of Personality 57:17-38.

McCrae, Robert R., and Paul T. Costa Jr. 1997. “Personality Trait Structure as a Human Universal.” American Psychologist 52:509-516.

McEvoy, Arthur. 1986 . The Fisherman’s Problem. Berkeley: University of California Press.

Mead, George Herbert. 1964. George Herbert Mead on Social Psychology. Ed. Anselm Strauss. Chicago: University of Chicago Press.

Medina, John. 2008. Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School. Seattle: Pear Press.

Mencius. 1970. Mencius. Tr. D. C. Lau. New York: Penguin.

Mencken, H. L. 1920. “The Divine Afflatus.” In *Prejudices: Second Series*. New York: Alfred A. Knopf. Pp. 155-179.

Merleau-Ponty, Maurice. 1960. La structure du comportement. Paris: Presses Universitaires de France.

--- 1962. The Phenomenology of Perception. Tr. Colin Smith. London: Routledge & Kegan Paul.

 --- 1968. The Visible and the Invisible. Tr. Alphonso Lingis. Fr orit 1964. Evanston, IL: Northwestern University Press.

--- 2003. Nature. Tr Robert Vallier. Fr orig 1995. Northwestern.

Metzger, Duane, and Gerald Williams. 1966. “Some Procedure and Results in the Study of Native Categories: Tzeltal ‘Firewood.’” American Anthropologist 68:389-407.

Mezquita, Batja, and Janxin Leu. 2007. “The Cultural Psychology of Emotion.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 734-759.

Milinski, Manfred, and Bettina Rockenbach. 2007. “Spying on Others Evolves.” Science 317:464-465.

Miller, Greg. 2008. “The Roots of Morality.” S cience 320:734-737.

Miller, Jon D.; Eugenie C. Scott; Shinji Okamoto. 2006. “Public Acceptance of Evolution.” Science 313:765-766.

Mills, C. Wright. 1959. The Sociological Imagination. New York: Grove Press.

Milton, Kay. 2002. Loving Nature. London: Routledge.

Mithen, Steven. 2007. The Singing Neanderthals: The Origins of Music, Language, Mind, and Body. Cambridge, MA: Harvard University Press.

Mobbs, Dean; Predrag Petrovic; Jennifer L. Marchant; Demis Hassabis; Nikolaus Weiskopf; Ben Seymour; Raymond J. Dolan; Christopher D. Frith. 2007. “When Fear Is Near: Threat Imminence Elicits Prefrontal-Periaqueductal Gray Shifts in Humans.” Science 317:1079-1083.

Montagu, Ashley. 1973 [1955]. The Biosocial Nature of Man. Westport, CT: Greenwood.

Montesquieu, Charles-Louis Secondat de. 1949 [1757]. The Spirit of the Laws. New York: Hafner.

Morgan, Lewis Henry. 1871. Systems of Consanguinity and Affinity of the Human Family. Washington: Smithsonian Institution. Smithsonian Contributions to Knowledge 17:2.

Morgan, Lewis Henry. 1985 [1877]. Ancient Society. Tucson: University of Arizona Press.

Mojzish, Andreas, and Stefan Schulz-Hardt. 2010. “Knowing Others’ Preferences Degrades the Quality of Group Decisions.” Journal of Personality and Social Psychology 98:794-808.

Munroe, Robert L., and Ruth H. Munroe. 1975. Cross-cultural Human Development. Monterey, CA: Brooks/Cole.

Murphy, Clare. 2009. “The Human Smell: A Powerful Force?” BBC News Online, Jan. 15.

Murray, Sandra L.; John G. Holmes; Maya Aloni; Rebecca T. Pinkus; Jaye L. Derrick; Sadie Leder. 2009. “Commitment Insurance: Compensating for the Autonomy Costs of Interdependence in Close Relationships.” Journal of Personality and Social Psychology 97:256-278.

Myers, Isabel Briggs, with Peter B. Myers. 1980. Gifts Differing. Palo Alto, CA: Consulting Psychologists Press.

Nabhan, Gary. 1983. Gathering the Desert. University of Arizona Press, Tucson.

Nadasdy, Paul. 2004. Hunters and Bureaucrats. Vancouver: University of British Columbia Press.

Nasir ad-Din Tusi. 1964. The Nasirean Ethics. Tr. G. M. Wickens. Orig. 13th century. London: George Allen & Unwin.

Needham, Joseph, with Lu Gwei-djen. 2000. Science and Civilisation in China. Vol. 6: Biology and Biological Technology. Part VI: Medicine. Ed. by Nathan Sivin. Cambridge: Cambridge University Press.

Nesse, Randolph M., and Phoebe C. Ellsworth. 2009. “Evolution, Emotions, and Emotional Disorders.” American Psychologist 129-139.

Nicolelis, Miguel A. L., and Sidarta Ribeiro. 2006. “Seeking the Neural Code.” Scientific American, Dec., 70-77.

Niedenthal, Paula M. 2007. “Embodying Emotion.” Science 316:1002-1005.

Nigh, Ronald. 2002. “Maya Medicine in the Biological Gaze: Bioprospecting Research as Herbal Fetishism.” Current Anthropology 43:451-477.

Nisbett, Richard E. 2003. The Geography of Thought: How Asians and westerns Think Differently…and Why. New York: Free Press (Simon and Schuster).

Nisbett, Richard, and Lee Ross. 1980. Human Inference: Strategies and Shortcomings of Social Judgment. Englewood Cliffs, NJ: Prentice-Hall.

North, Douglass C. 1990. Institutions, Institutional Change and Economic Performance. Cambridge: Cambridge University Press.

Nowak, Martin A. 2006. “Five Rules for the Evolution of Cooperation.” Science 314:1560-1563.

Nussbaum, Martha. 2001. Upheavals of Thought: The Intelligence of Emotions. New York: Cambridge University Press.

O’Brien, Michael J. 2008. “What’s New? Some Basic Issues in the Study of Cultural Innovation.” Review of Archaeology 28:39-54 (vol. for “2007”, actually published 2008).

Offit, Paul. 2008. Autism’s False Prophets: Bad Science, Risky Medicine, and the Search for a Cure. New York: Columbia University Press.

Olson, Mancur. 1965. A Theory of Collective Action. Cambridge, MA: Harvard University Press.

Opie, Iona, and Peter Opie. 1961. The Lore and Language of Schoolchildren. Oxford: Oxford University Press.

Oreskes, Naomi. 1999. The Rejection of Continental Drift: Theory and Method in American Earth Science. New York: Oxford University Press.

Oreskes, Naomi. 2001. Plate Tectonics: An Insiders’ History of the Modern Theory of the Earth. Boulder, CO: Westview.

Orians, Gordon, and Judith H. Heerwagen. 1992. "Evolved Responses to Landscapes." Barkow, Cosmides and Tooby 1992:555-580.

Osgood, Charles; William May; Murray Miron. 1975. Cross-Cultural Universals of Affective Meaning. Urbana: University of Illinois Press.

Ostrom, Elinor. 1991. Governing the Commons. Bloomington: Indiana University Press.

Ovies, Christopher; E. J. Horberg; Dacher Keltner. 2010. “Compassion, Pride, and Social Intuitions of Self-Other Similarity.” Journal of Personality and Social Psychology 98:618-630.

Oyserman, Daphna; Nicholas Sorensen; Rolf Reber; Sylvia Xiaohua Chen. 2009. “Connecting and Separating Mind-Sets: Culture as Situated Cognition.” Journal of Personality and Social Psychology 97:217-235.

Ozer, Daniel, and Verónica Benet-Martínez. 2006. “Personality and the Prediction of Consequential Outcomes.” Annual Review of Psychology 57:401-421.

Parfit, Derek. 1986. Reasons and Persons. Oxford: Oxford University Press.

Pascal, Blaise. 2005. Pensées. Ed./tr. Roger Ariew. Indianapolis: Hackett.

Patel, Aniruddh D. 2008. Music, Language, and the Brain. New York: Oxford University Press.

Patterson, Thomas. 2001. A Social History of Anthropology in the United States. Oxford and New York: Berg.

Paulus, M. P. 2007. “Decision-Making Dysfunctions in Psychiatry—Altered Homeostatic Processing?” Science 318:602-606.

Pederson, Paul. 2010. “Inclusive Cultural Empathy for Successful Global Leadership.” American Psychologist 65:841-854.

Peterson, Gretchen. 2006. “Cultural Theory and Emotions.” In *Handbook of the Sociology of Emotions*, Jan E. Stets and Jonathan Turner, eds. New York: Springer. Pp. 114-134.

Petrinovitch, Lewis. 1995. Human Evolution, Reproduction, and Morality. NewYork: Plenum.

Pinker, Steven. 1994. The Language Instinct: How the Mind Creates Language. New York: William Morrow.

--- 2003. The Blank Slate. New York: Penguin.

--- 2007. The Stuff of Thought: Language As a Window into Human Nature. New York: Viking.

Plotkin, Mark. 1993. Tales of a Shaman’s Apprentice. New York: Penguin.

Polanyi, Karl. 1957. The Great Transformation: The Political and Economic Origins of Our Time. New York: Rinehart & Co.

Popper, Karl. 2002. The Logic of Scientific Discovery. (German original, 1934.) New York: Routledge.

Potts, Rick. 1996. Humanity's Descent. New York: William Morrow and Co.

Powell, Adam; Stephen Shennan; Mark G. Thomas. 2009. “Late Pleistocene Demography and the Appearance of Modern Human Behavior.” Science 324:1298-1301.

Powell, J. W. 1901. “Sophiology, or the Science of Activities Designed to Give Instruction.” American Anthropologist 3:51-79.

Prather, J. F.; S. Peters; S. Nowicki; R. Mooney. 2008. “Precise Auditory-Vocal Mirroring in Neurons for learned Vocal Communication.” Nature 451:305-310.

Pronin, Emily. 2008. “How We See Ourselves and How We See Others.” Science 320:1177-1180.

Propp, Vladimir. 1968. Morphology of the Folktale. New York: American Folklore Society.

Putnam, Robert. 1993. Making Democracy Work: Civic Traditions in Modern Italy. Princeton: Princeton University Press.

--- 2000. Bowling Alone: The Collapse and Revival of American Community. New York: Simon and Schuster.

Quisumbing, Agnes R.; J. Estudillo; K. Itsuke. 2004. Land and Schooling. Johns Hopkins.

Rabinow, Paul. 2002. French DNA: Trouble in Purgatory. Chicago: University of Chicago Press.

Radcliffe-Brown, A. R. 1957. A Natural Science of Society. New York: Free Press.

Randall, Robert A. 1977. Change and Variation in Samal Fishing: Making Plans to ‘Make a Living’ in the Southern Philippines. Ph.D. thesis, Dept. of Anthropology, University of California, Berkeley.

Randi, James. 1989. The Faith Healers. 2nd edn. New York: Prometheus Books.

Re Cruz, Alicia. 1996. The Two Milpas of Chan Kom. Albany: SUNY Press.

Reedy, Justin. 2006. “Of Famine, Folate and Schizophrenia; Link Studied between Genetic Mutations and Lack of Micronutrients.” Press release, University of Washington, Aug. 17.

Rendell, L.; R. Boyd; D. Cownden; M. Enquist; K. Eriksson; M. W. Feldman; L. Fogarty; S. Ghirlanda; T. Lillicrap; K. N. Laland. 2010. “Why Copy Others? Insights from the Social Learning Strategies Tournament.” Science 328:208-213.

Richerson, Peter, and Robert Boyd. 2005. Not By Genes Alone: How Culture Transformed Human Evolution. Chicago: University of Chicago Press.

Riesman, David; Reuel Denney; Nathan Glazer. 1950. The Lonely Crowd. New Haven: Yale University Press.

Robarchek, Clayton A. 1989. “Primitive War and the Ratomorphic Image of Mankind.” American Anthropologist 91:903-920.

Robarchek, Clayton, and Robarchek, Carole. 1997. Waorani: The Contexts of Violence and War. New York: Harcourt Brace.

Rockenbach, Bettina, and Manfred Milinski. 2006. “The Efficient Interaction of Indirect Reciprocity and Costly Punishment.” Nature 444:718-723.

Rogers, Carl. l96l. On Becoming a Person. Boston: Houghton Mifflin.

Rogers, Everett. 1971. The Communication of Innovations: A Cross-Cultural Approach. Second Edition. New York: Free Press.

Rogoff, Barbara, and Jean Lave (eds.). 1984. Everyday Cognition. Cambridge, MA: Harvard University Press.

Romney, A. K.; Susan Weller; William Batchelder. 1986. “Culture as Consensus: A Theory of Culture and Informant Accuracy.” American Anthropologist 88:313-338.

Rosaldo, Renato. 1989. Culture and Truth: The Remaking of Social Analysis. Boston: Beacon Press.

Rose, Deborah. 2000. Dingo Makes Us Human: Life and Land in an Australian Aboriginal Culture. New York: Cambridge University Press.

Rosenberg, Alexander. 1992. Economics—Mathematical Politics or Science of Diminishing Returns: Chicago: University of Chicago Press.

Roth, Anthony, and Peter Fonagy. 2005. What Works for Whom? A Critical Review of Psychotherapy Research. 2nd edn. New York: Guilford.

Rowland, Beryl. 1978. Birds with Human Souls: A Guide to Bird Symbolism. Knoxville: University of Tennessee Press.

Rozin, Elisabeth. 1983. Ethnic Cuisine: The Flavor-Principle Cookbook. Lexington, MA: Stephen Greene Press.

Rozin, Paul. 2007. “Food and Eating.” In *Handbook of Cultural Psychology,* Shinobu Kitayama and Dov Cohen, eds. New York: Guilford. Pp. 391-416.

Rudebeck, P. H.; M. J. Buckley; M. E. Walton; M. F. S. Rushworth. 2006. “A Role for the Macque Anterior Cinigulate Gyrus in Social Valuation.” Science 313:1310-1312.

Ruddle, Kenneth, and Ray Chesterfield. 1977. Education for Food Produiction in the Orinoco Delta. Berkeley: University of California Press.

Ruddle, Kenneth. 1993. “The Transmission of Traditional Ecological Knowledge.” In Traditional Ecological Knowledge: Concepts and Cases, ed. by J. T. Inglis. Ottawa: Intl. Devel. Research Center and International Program on Traditional Ecological Knowledge. Pp. 17-31.

Rudwick, Martin. 2005. Bursting the Limits of Time. Chicago: University of Chicago Press.

Rule, Nicholas O.; Nalini Ambady; Reginald B. Adams; Hiroki Ozono; Satoshi Nakashima; Sakiko Yoshikawa; Motoki Watabe. 2010. “Polling the Face: Prediction and Consensus Across Cultuers.” Journal of Personality and Social Psychology 98:1-15.

Rusbult, Caryl E.; Madoka Kumashiro; Kaska E. Kubacka; Eli J. Finkel. 2009. “’The Part of Me That you Bring Out’: Ideal Similarity and the Michelangelo Phenomenon.” Journal of Personality and Social Psychology 96:61-82.

Ryōkan. 1996. Great Fool. Tr. and ed. by Ryūkichi Abé and Peter Haskel. Honolulu: University of Hawaii Press.

Sahlins, Marshall. 1976. Culture and Practical Reason. University of Chicago Press, Chicago.

Said, Edward. 1978. Orientalism. New York: Pantheon Books.

Satir, Virginia. 1983. Conjoint Family Therapy. 3rd edn. Palo Alto, CA: Science and Behavior Books.

Schacter, Daniel L., and Donna Rose Addis. 2007. “The Ghosts of Past and Future.” Nature 445:27.

Schank, Roger. 1977. Scripts, Plans, Goals and Understanding: An Inquiry into Human Knowledge Structures. Hillsdale, N.J.: Lawrence Erlbaum.

Schmeichel, Brandon J., and Kathleen Vohs. 2009. “Self-Affirmation and Self-Control: Affirming Core Values Counteracts Ego Depletion.” Journal of Personality and Social Psychology 96:770-782.

Scott, James. 1985. Weapons of the Weak. New Haven: Yale University Press.

--- 1990. Domination and the Arts of Resistance. New Haven: Yale University Press.

--- 1998. Seeing like a State. New Haven: Yale University Press.

--- 2009. The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia. New Haven: Yale University Press.

Seligman, Martin E. P. 1990. Learned Optimism: How to Change Your Mind and Your Life. New York: Alfred A. Knopf.

Seligman, Martin E. P. 2006. “Positive Psychotherapy.” American Psychologist 61:774-788.

Sen, Amartya. 1992. Inequality Reexamined. Harvard University Press.

--- 1999. Development as Freedom. Knopf (Random House).

--- 2009. The Idea of Justice. Cambridge, MA: Harvard University Press.

Serpell, James (ed.). 1995. The Domestic Dog: Its Evolution, Behaviour, and Interactions with People. Cambridge: Cambridge University Press.

Sewell, William H., Jr. 2005. Logics of History: Social Theory and Social Transformation. Chicago: University of Chicago Press.

Sharot, Tali; Alison M. Riccardi; Candace M. Raio; Elizabeth A. Phelps. 2007. “Neural Mechanisms Mediating Optimism Bias.” Nature 450:102-105.

Sharp, Henry. 1987. “Giant Fish, Giant Otters, and Dinosaurs: ‘Apparently Irrational Beliefs’ in a Chipewyan Community.” American Ethnologist 14:226-235.

Sharp, Henry. 2001. Loon: Memory, Meaning and Reality in a Northern Dene Community. Lincoln: University of Nebraska Press.

Shermer, Michael. 2008a. “A New Phrenology?” Scientific America, May, pp. 47-48.

--- 2008b. “Why You Should Be Skeptical of Brain Scans.” Scientific American Mind, Oct.-Nov., 67-71.

--- 2009. Review of “SuperSense” by Bruce M. Hood. Science 324:1392-1393.

Sherzer, Joel. 1987. “A Discourse-Centered Approach to Language and Culture.” American Anthropologist 89:295-309.

Shiva, Vandana. 1997. Biopiracy: The Plunder of Nature and Knowledge. Boston: South End Press.

Shore, Bradd. 1996. Culture in Mind: Cognition, Culture, and the Problem of Meaning. New York: Oxford University Press.

Shweder, Richard. 1991. Thinking Through Cultures: Explorations in Cultural Psychology. Cambridge, MA: Harvard University Press.

Sidgwick, Henry. 1907. The Methods of Ethics. London: MacMillan.

Silk, Joan. 2007. “Social Components of Fitness in Primate Groups.” Science 317:1347-1351.

Sillitoe, Paul. 2010. From Land to Mouth: The Agricultural “Economy” of the Wola of the New Guinea Highlands. New Haven: Yale University Press.

Simon, Herbert. 1957. Models of Man. New York: Wiley.

--- 1995. “Rationality in Political Behavior.” Political Psychology 16:45-61.

Sivin, Nathan. 2000. “Introduction.” *In* Needham, Joseph, with Lu Gwei-djen: Science and Civilisation in China. Vol. 6: Biology and Biological Technology. Part VI: Medicine. Ed. by Nathan Sivin. Cambridge: Cambridge University Press.

Skinner, B. F. 1957. Verbal Behavior. New York: Appleton-Century-Crofts.

--- 1959. Cumulative Record: A Selection of Papers. New York: Appleton-Century-Crofts.

Slovic, Paul. 2000. The Perception of Risk. London: Earthscan.

Sluga, Hans. 1993. Heidegger’s Crisis: Philosophy and Politics in Nazi Germany. Cambridge, MA: Harvard University Press.

Smedley, Audrey. 2007. Race in North America: Origin and Evolution of a Worldview. 3rd edn. Boudler: Westview.

Smith, Adam. 1910 (orig. 1776). The Wealth of Nations. London: J. M. Dent.

Smith, Claire, and Wobst, Martin. 2005. Indigenous Archaeologies: Decolonizing Theory and Practice. New York: Routledge.

Smith, Grafton Elliot (ed.). 1928. The Diffusion Controversy. London: Routledge.

Soares, Christine. “How Your Job Is Killing You.” Scientific American, April, p. 22.

Soranus. 1956. Soranus’ Gynecology. Tr. Owsei Temkin. Baltimore: The Johns Hopkins Press.

Soto, Christopher J.; Oliver P. John; Samuel D. Gosling; Jeff Potter. 2011. “Age Differences in Personality Traits from 10 to 65: Big Five Domains and Facets in a Lage Cross-Sectional Sample. Journal of Personality and Social Psychology 100:330-348.

Stafford, Charles. 1995. The Roads of Chinese Childhood. Cambridge: Cambridge University Press.

Staub, Ervin. 1989. The Roots of Evil. New York: Cambridge University Press.

Steele, Claude M. 2010. Whistling Vivaldi and Other Clues to How Stereotypes Affect Us. New York: W. W. Norton.

Sternberg, Robert J., and Karin Sternberg. 2008. The Nature of Hate. New York: Cambridge University Press.

Sternberg, Robert J., and Karin Weis (eds.). 2006. The New Psychology of Love. New Haven: Yale University Press.

Stets, Jan E. 1988. Domestic Violence and Control. New York: Springer-Verlag.

Stets, Jan E., and Jonathan H. Turner (eds.). 2006. Handbook of the Sociology of Emotions. New York: Springer.

Strauss, Claudia. 2006. “The Imaginary.” Anthropological Theory 6:322-344.

Strauss, Claudia. 2007. “Blaming for Columbine: Conceptions of Agency in the Contemporary United States.” Current Anthropology 48:807-832.

Strauss, Claudia, and Naomi Quinn. 1997. A Cognitive Theory of Cultural Meaning. Cambridge: Cambridge University Press.

Stross, Brian. 1973. “Acquisition of Botanical Terminology by Tzeltal Children.” In Meaning in Mayan Languages, M. S. Edmonson, ed., p. 107-141. Hague: Mouton.

Summers-Effler, Erika. 2006. “Ritual Theory.” In *Handbook of the Sociology of Emotions*, Jan E. Stets and Jonathan H. Turner, eds. New York: Springer. Pp. 134-154.

Sun Simiao. 2007. Recipes Worth a Thousand Gold: Foods. Tr. Sumei Yi. Chinese original, 654 A.D. Electronically distributed on Chimed listserv, July 2007.

Surowiecki, James. 2005. The Wisdom of Crowds. New York: Doubleday.

Sutton, Mark, and E. N. Anderson. 2004. Introduction to Cultural Ecology. Walnut Creek, CA: AltaMira.

Takahashi, Hidehiko; Motoichiro Kato; Masato Matsuura; Dean Mobbs; Tetsuya Suhara; Yoshiro Okubo. 2009. “When Your Gain Is My Pain and Your Pain Is My Gain: Neural Coorelates of Envy and Schadenfreude.” Science 323:937-939.

Tavris, Carol. 1992. The Mismeasure of Woman. New York: Simon and Schuster.

Tavris, Carol, and Elliot Aronson. 2007. Mistakes Were Made, But Not By Me. New York: Harvest Books.

Taylor, Michael. 2006. Rationality and the Ideology of Disconnection. New York: Cambridge University Press.

Taylor, Shelley E. 1989. Positive Illusions: Creative Self-Deception and the Healthy Mind. New York: Basic Books.

Tedlock, Dennis. 1985. Popul Vuh. New York: Simon & Schuster.

Tenenbaum, Joshua B.; Charles Kemp; Thomas L. Griffiths; Noah D. Goodman. 2011. “How to Grow a Mind: Statistics, Structure, and Abstraction.” Science 331:1279-1285.

Terán, Silvia, and Christian Rasmussen. 1993. La milpa entre los Maya. Mérida: Authors.

Terborgh, John. 1999. Requiem for Nature. Princeton University Press, Princeton.

Terborgh, John. 2000. “The Fate of Tropical Forests: A Matter of Stewardship.” Conservation Biology 14:1358-1361.

Thaler, Richard H. 1992. The Winner’s Curse: Paradoxes and Anomalies of Economic Life. Princeton.

Thompson, E. P. 1963. The Making of the English Working Class. New York: Random House.

Thompson, Stith. 1919. European Tales Among the North American Indians: A Study in the Migration of Folk-tales. Colorado Springs, CO: Board of Trustees of Colorado College.

--- 1955-1958. Motif-Index of Folk-Literature. Bloomington: Indiana University Press.

Tiger, Lionel. 1979. Optimism. New York: Simon and Schuster.

Torrance, Robert (ed.). 1998. Encompassing Nature. Washington, DC: Counterpoint.

Trautman, Thomas. 1987. Lewis Henry Morgan and the Invention of Kinship. Berkeley: University of California Press.

Tremlin, Todd. 2006. Minds and Gods: The Cognitive Foundations of Religion. New York: Oxford University Press.

Tricomi, Elizabeth; Antonio Rangel; Colin F. Camerer; John P. O’Doherty. 2010. “Neural Evidence for Inequality-Averse Social Preferences.” Nature 463:1089-1091.

Tryon, Warren W. 2009. “Missing Mechanism Information.” American Psychologist 64:273-274.

Turnbull, Colin. 1972. The Mountain People. New York: Simon and Schuster.

Turner, Jonathan H. 2000. On the Origins of Human Emotions: A Sociological Inquiry into the Evolution of Human Affect. Stanford: Stanford University Press.

Turner, Jonathan H., and Alexandra Maryanski. 1979. Functionalism. New York: Benjamin-Cummings.

Turner, Jonathan H., and Jan Stets. 2005. The Sociology of Emotions. Cambridge: Cambridge University Press.

Turner, Jonathan H., and Jan E. Stets. 2006. “Moral Emotions.” In *Handbook of the Sociology of Emotions*, Jan E. Stets and Jonathan H. Turner, eds. New York: Springer. Pp. 544-566.

Twitchett, Denis. 1970. Financial Administration under the T’ang Dynasty. Cambridge: Cambridge University Press.

Twitchett, Denis (ed.). 1979. Cambridge History of China, Vol. 3: Si and T’ang China, 589-906.

Tybur, Joshua; Debra Lieberman; Vladas Griskevicius. 2009. “Microbes, Mating, and Morality: Individual Differences in Three Functional Domains of Disgust.” Journal of Personality and Social Psychology 97:103-122.

Tylor, Edward. 1871. Primitive Culture, Researches into the Development of Mythology, Philosophy, Religion, Language, Art and Custom. London: John Murray.

Tyran, Jean-Robert. 2007. “Money Illusion and the Market.” Science 317:1042-1043.

Uexküll , Jakob von. 1909. Umwelt und Innenwelt der Tiere.Berlin: Springer.

Uhlhaas, Christoph. 2007. “Is Greed Good?” Scientific American Mind, Aug.-Sept., 60-67.

Unschuld, Paul. 1986. Medicine in China: A History of Pharmaceutics. Berkeley: University of California Press.

--- 2009. What is Medicine? Western and Eastern Approaches to Healing. Berkeley: University of California Press.

Van Vugt, Mark; Robert Hogan; Robert B. Kaiser. 2008. “Leadership, Followership, and Evolution.” American Psychologist 63:182-196.

Vayda, Andrew P. 2008. “Causal Explanations as a Research Goal: A Pragmatic View.” *In* Against the Grain: The Vayda Tradition in Ecological Anthropology, Bradley Walker, Bonnie McCay, Paige West, and Susan Lees, eds. Lanham, MD: AltaMira (division of Rowman and Littlefield). Pp. 317-367.

--- 2009. “Causal Explanation as a Research Goal: Do’s and Don’t’s.” In *Explaining Human Actions and Environmental Changes.* Lanham, MD: AltaMira (division of Rowman & Littlefield). Pp. 1-48.

Vico, Giambattista. 2000. New Science. Tr. David Marsh. New York: Penguin.

Vogt, Evon Z. 1969. Zinacantan: A Maya Community in the Highlands of Chiapas. Cambridge, MA: Harvard University Press.

Vohs, Kathleen D.; Roy Baumeister; George Loewenstein (eds.). 2008. Do Emotions Help or Hurt Decision-Making? A Hedgefoxian Perspective. New York: Russell Sage Foundation.

Vohs, Kathleen D.; Nicole L. Mead; Miranda R. Goode. 2006. “The Psychological Consequences of Money.” Science 313:1154-1156.

Vroom, Victor H., and Arthur G. Jago. 2007. “The Role of the Situation in Leadership.” American Psychologist 62:17-24.

Wack, Mary Frances. 1990. Lovesickness in the Middle Ages: The *Viaticum* and Its Commentaies. Philadelphia: University of Pennsylvania Press.

Wagner, Marsden. 2006. Born in the USA: How a Broken Maternity System Must Be Fixed to Put Women and Children First. Berkeley: University of California Press.

Warner, Lloyd. 1953. American Life: Dream and Reality. Chicago: University of Chicago Press.

Waterman, Alan S. 2007. “On the Importance of distinguishing Hedonia and Eudaimonia When Comtemplating the Hedonic Treadmill.” American Psychologist 62:612-613.

Weber, Max. 1946. From Max Weber. Hans Gerth and C. Wright Mills, tr./ed. New York: Oxford University Press.

Weber, Max. 2001. The Protestant Ethic and the “Spirit” of Capitalism. Tr. [German orig. 1907.] London: Penguin.

Weinstein, Netta, and Richard M. Ryan. 2010. “”When Helping Helps: Autonomous Motivation for Prosocial Behavior and Its Influence on Wel-Being for the Helper and Recipient.” Journal of Personality and Social Psychology 98:222-244.

Wells, Nancy M., and Kristi S. Lekies. 2006. “Nature and the Life Course: Pathways from Childhood Nature Experiences to Adult Environmentalism.” Children, Youth and Environments 16:1-25.

Werner, Emmy. 1989. “Children of the Garden Island.” Scientific American 260:4:106-111.

Werner, Emmy, and Ruth S. Smith. 1982. Vulnerable but Invincible: A Longitudinal Study of Resilient Children and Youth. New York: McGraw-Hill.

West, Rebecca. 1941. Black Lamb and Grey Falcon. London: MacMillan.

Westen, Drew. 2007. The Political Brain: The Role of Emotion in Deciding the Fate of the Nation. New York: PublicAffairs.

White, Leslie A. 1949. The Science of Culture. New York: Grove Press.

--- 1959. The Evolution of Culture. New York: McGraw-Hill.

Whitford, Josh. 2002. “Pragmatism and the Untenable Dualism of Means and Ends: Why Rational Choice Theory Does Not Deserve Paradigmatic Privilege.” Theory and Society 31:325-363.

Wierzbicka, Anna. 1992. Semantics, Culture, and Cognition: Human Concepts in Culture-Specific Configurations. New York: Oxford University Press.

--- 1999. Emotions across Languages and Cultures. Cambridge University Press, Cambridge.

Weisner, Polly. 2009. “Experimental Games and Games of Life among the Ju/’hoan Bushmen.” Current Anthropology 50:133-138.

Wiggins, Jack (ed.). 1996. The Five-Factor Model of Personality: Theoretical Perspectives. Guilford.

Wildschut, Tim; Constantine Sedikides; Clay Routledge; Jamie Arndt; Filippo Cordaro. 2010. “Nostalgia as a Repository of Social Connectedness: The Role of Attachment-Related Avoidance.” Journal of Personality and Social Psychology 98:573-586.

Willey, Liane Holliday. 1999. Pretending to be Normal: Living with Asperger’s Syndrome. London: Jessica Kingley Publishers.

Williams, Roger. 1956. Biochemical Individuality. Austin: University of Texas Press.

Wimsatt, William C. 2007. Re-Engineering Philosophy for Limited Beings: Piecewise Approximations to Reality. Cambridge, MA: Harvard University Press.

Winterhalter, Bruce, and Eric Alden Smith (eds.). l98l. Hunter-Gatherer Foraging Strategies: Ethnographic and Archeological Analyses. Chicago: University of Chicago Press.

Wolf, Max; G. Sander van Doorn; Olof Leimar; Franz J. Weissing. 2007. “Life-history Trade-offs Favour the Evolution of Animal Personalities.” Nature 447:581584.

Wolpert, Lewis. 1993. The Unnatural Nature of Science. Cambridge, MA: Harvard University Press.

Worsley, Peter. 1997. Knowledges: Culture, Counterculture, Subculture. London: Profile Books.

Wyatt, Tristram D. 2009. “Fifty Years of Pheromones.” Nature 457:22-263.

Wylie, Alison. 2004. “Why Standpoint Matters.” In *The Feminist Standpoint Theory Reader: Intellectual and Political Controversies,* Sandra Harding, ed. London: Routledge. Pp. 339-352.

Xunzi. 1999. Xunzi. Tr. John Knoblock. Changsha, Hunan, China: Hunan People’s Publishing House and Foreign Languages Press.

Yang, Tianming, and Michael N. Shadlen. 2007. “Probabilistic Reasoning by Neurons.” Nature 447:1075-1080.

Young, James Clay, and Linda Garro. l994. Medical Choice in a Mexican Village. Boulder, CO: Westview.

Zaccaro, Stephen J. 2007. “Trait-Based Perspectivfes of Leadership.” American Psychologist 62:6-16.

Zajonc, R. B. 1980. “Feeling and Thinking” Preferences Need No Inferences.” American Psychologist 35:151-175.

Zak, Paul J. 2008. “The Neurobiology of Trust.” Scientific American, June, pp. 88-95.

*Zhong Yao Da Zi Dian.* 1979. Shanghai: Science Publishers.

Zitek, Emily M.; Alexander H. Jordan; Benoît Monin; Federick R. Leach. 2010. “Victim Entitlement to Behave Selfishly.” Journal of Personality and Social Psychology 98:245-255.

Zuk, Marlene. 2002. Sexual Selections: What We Can and Can’t Learn about Sex from Animals. Berkeley: University of California Press.