

ABUNDANT NATURE'S LONG-TERM OPENNESS TO HUMANE BIOCULTURAL DESIGNS

by Robert B. Glassman

Abstract. *Not by Genes Alone* excellently explains Peter J. Richerson and Robert Boyd's important ideas about human gene-culture co-evolution to a broader audience but remains short of a larger vision of civilization. Several decades ago Ralph Burhoe had seen that fertile possibility in Richerson and Boyd's work. I suggest getting past present reductionistic customs to a scientific perspective having an integral place for virtue. Subsystem agency is part of this view, as is the driving role of abundance, whose ultimate origins are in the mysterious, quintessentially energetic Big Bang. The free-rider problem may not impede higher social organization as inexorably as Richerson and Boyd believe; "the tragedy" of enervating leakage from "the commons" may often be less influential than an invigorating flow of externalities to the commons. Eukaryotic origins mark the origin of inevitable wider sharing as higher living systems evolve. I use a metaphor of flesh and spirit in drawing a parallel between that turning point and the wide sharing that occurs in civilization. This helps solve the enigma of the demographic transition. Why do so many productive participants in first-world societies severely restrict their selfish-gene reproduction to below replacement birth rate? It is not because culture is maladaptive but because civilization's brain and womb have become partially differentiated in distinct populations. Considerations of social boundaries, myths of sacrifice, and human creativity help in understanding how human social evolution taps potentials present in reality. Human beings' diverse vigorous activities—the organized ones and the inadvertent ones, the wise and the foolish, the good and the bad, the carefully thoughtful and the merely playful—provide the ground of being, or primordial soup, for cultural entities that transcend our intentions. If we have it right for the most part and are fortunate, we will continue to emerge at higher levels.

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In the beginning . . .

Formlessness and void, yet with a Potential hovering . . .

Light emerges—and sound, of a sort—

a “Big Bang”—heat, thermodynamics, . . .

Cosmic energy profuse and dense; some soon

Coalescing into matter; teeming . . .

And that primordial fertile thermodynamic flow has continued for eons.

The sun and earth emerged,

Mountains, valleys, plains, oceans,

Molecules

Coalesced into life; beings that

Swim, crawl, walk, and fly,

Each living thing arising *merely fortuitously* . . .

From amorphousness gradually morphing . . .

By Natural Selection, some settling into being for a long while,

Continuing to diversely radiate new forms, . . .

Coalescing sometimes into groups,

Homogenized populations, and heterogenized to *new levels* of diversity.

Some among all that wrestling with a new Potential Angle

Awakening from a rocky pillow, climbing a ladder,

Becoming rather human, and then reaching further,

Coalescing and fragmenting and coalescing . . .

Sometimes sadly terminating, sometimes happily happening upon forms of greater subtlety and complexity.



Coalescing into civilizations,

The abundant dynamic flows of the primordial Big Bang *still* echoing . . .

Today we are among them.

There are proximate causal particulars; set those aside for a moment.

Much of this unbound Promethean process was bound to occur.

—Robert B. Glassman

ABUNDANCE, FUNDAMENTAL LAWS OF LIFE, AND
CULTURE'S EMERGENCE

The potent ultimate cause of everything human is the tremendous *abundance* that arose “in the beginning.” Indeed, the import of this ultimate cause is that the two fundamental thermodynamic physical laws of nature, concerning conservation and entropy, require in counterpoint two fundamental laws of life-implicating complexity, concerning growth and negentropy: (1) Information is created and spreads, and (2) From abundance interesting organized forms proliferate. These two laws of life do not contradict the better-known and more negativistic physical laws of thermodynamics, but they do supersede them when our main concern is that four-dimensional intermediate scale of existence, spatially between the cosmic and the atomic and temporally between the origin and the possible end of the universe. That intermediate scale has to do with living systems. In this essay I attempt to enlarge the perspective of Peter J. Richerson and Robert Boyd’s deep examination of human social evolution in *Not by Genes Alone* (2005). Their up-close analyses of anthropological phenomena miss the evident inevitability of higher forms’ emerging in the universe—and their doing so “eagerly.”

Scientists should sometimes relax in looking around at good things such as thriving civilization, altruism, honesty, and cooperation. These higher forms are not merely fortuitous by-products of things smaller and more real. It is important to try to analyze complex human phenomena mathematically, as Boyd and Richerson do in greater depth in *The Origin and Evolution of Cultures* (2005), but we are not compelled to doubt the reality of good things until we succeed in fully mathematizing their details.

Indeed, I hypothesize that a key to understanding culture is in one of the things Richerson and Boyd identify as a probable *impediment* to higher culture: the “demographic transition.” This, I suggest, is a necessary aspect of higher culture. In this newer specialization of the social organism, the brain and the womb have become separate “social organs.” Their boundaries of ethnicity, place of origin, social class, and educational opportunity are somewhat less discrete but not less real than the anatomical forms and boundaries that distinguish an individual organism’s organs from each other. Some of us give of ourselves primarily in the role of growers of the culture and others primarily as growers of the population. “Spirit” and “flesh” diverge in human civilization only to a degree, however. Their integration remains vital. This view of the demographic transition, as an adaptation in a higher phase of human evolution, has implications about how individuals must try to live with each other and how cultures ought to coexist in our common world. The new marvels that emerge from abundance are accompanied by new vulnerabilities. Among the illustrative myths are Icarus and the Tower of Babel.

My essay title and opening poem suggest that the socioeconomic affluence that human endeavors often yield may be seen in broadest perspective as continuations of the thermodynamic flows with which the universe originated. The tremendous energy of our sun keeps flowing past and through us toward its far future entropic heat death; in the meantime it supplies the motives for wonderful complex forms. We and the things we create are among them.

Yet biosocial scientists have not felt licensed to accept that higher cultural forms are inevitable. Critical skepticism is a necessary aspect of science, but it must not dominate. As Kazuo Ishiguro implies with apparent dry humor in his cross-cultural detective novel *When We Were Orphans* (2000), there are times when it stops making sense to emulate the image of Sherlock, his eye at his magnifying glass, his face full up against one of the many objects of interest.

OVERCOMING SHORTCOMINGS OF NATURE AND NURTURE AXIOMATIZATIONS

Not by Genes Alone throughout is focused on “selfish-gene” reductionism, inclusive fitness, and the game-theory style of systematization, at the same time trying to break out of and rise above these positivistic-style strictures. Many of us have seen this kind of thing before. For example, at the middle of the twentieth century behaviorism was a neatly structured approach, fertile with testable implications but also logical positivism’s *reductio ad absurdum*. In the United States, behaviorism may have taken deep root also because it provided vivid examples of our dominant nurturist ideology and individualistic ethic of reward for missions accomplished, and because we are a nation of engineers.

During the 1960s and 1970s behaviorism was challenged by developments in neurosciences while also being displaced by cognitive and evolutionary sciences. These latter research areas, like behaviorism, relied primarily on whole-organism observations. At that time, intriguing attempts to apply the logic of evolutionary theory to behavior by creative scientific thinkers Konrad Lorenz (1966; 1970–1971) and his colleague Irenaeus Eibl-Eibesfeldt (1975) elicited controversy. Some criticisms were reasoned, but many were overstated by outraged keepers of the ideology of the blank slate (Glassman 1977; Lorenz 1965).

This early modern phase of wide attention to evolutionary reasoning about behavior reached an interim culmination with the publication of Edward O. Wilson’s comprehensive tome *Sociobiology* (1975). With excellent perspective, Donald T. Campbell (1975a) proffered this momentous book in a historic presidential speech to the annual American Psychological Association (APA) meeting, in Chicago that year. Although this audience was potentially hostile, Campbell, with his great intelligence, warmth,

and ability to explain, was able to convey his position. Campbell's expositions of analogies and implications of biological evolutionary dynamics in psychology were insightful, and some of his work is appreciatively cited by Richerson and Boyd. Campbell's work as a whole amply demonstrated his comfort with quantitative methods, but he had unusually good judgment about when qualitative broader thinking was more appropriate. That judgment was akin to his friend Lorenz's earlier explication of "the value of gestalt perception in scientific inquiry" (Lorenz [1959] 1971; Campbell 1975b). I do not think that Richerson and Boyd have quite right the balance of reductionism and perspectival breadth that Campbell sought.

Fast on the heels of Wilson's *Sociobiology* and Campbell's APA speech, evolutionary logic was narrowed to a finer point with the publication of Richard Dawkins's engaging book *The Selfish Gene* (1976). *Selfish gene* was a satisfying metaphor for ideas in the works among evolutionary scientists that needed wider notice. Selfish-gene reductionism is severe enough, however, to mark it as a sibling of behaviorism. I found behaviorism convincing when I encountered it as a college sophomore during the late 1950s. For someone deeply embedded in a secular world, it restructured ambiguities into logical routes to answers. How to account for the current prevalence of a behavior? At some time in the past it must have been reinforced. In an introductory psychology course, weekly exercises with rats in Skinner boxes alternated with lectures from Fred Keller and William Schoenfeld, whose *Principles of Psychology* (1950) was our behavioristic textbook. This elicited critical thinking about a science of behavior, but the approach eventually seemed to me narrow and presumptuous.

As an alternative, I pursue here some lines of critical thinking that have developed during recent decades among participants in the intellectual programs of the interest groups now centered at the Zygon Center for Religion and Science (ZCRS) in Chicago and that have been emerging from the Center for Advanced Study in Religion and Science (CASIRAS). These directions also have been thoughtfully explored since the mid-1960s in the pages of *Zygon* (for example, Burhoe 1967; 1972); recent emphases are on the relationships borne by sciences and religions in the lives of real people and on the question of how to maintain vital relationships between theorizing and observing (Hefner 1999; 2008a, b).

This last issue is a perennially puzzling one. Rarely have sciences or religions remained fully true to their spirit in the face of social forces tending to conventionalize ideas and routinize investigative styles (Borck 2008; Glassman 2007). This may be why it has proven elusive empirically to show a relationship between moral sensitivity and "religiosity," as in Nick Ross and Elizabeth Shobe's (2008) good attempt to advance observations by M. Hauser and by P. Singer, which they cite. A fuller empirical exploration of religion's connection with moral sense will require more penetrating methodologies that exemplify some of the same sensitivity to nuance

as in excellent literary and art criticism. Such humanistic responsiveness to contingency often is lost in the mass tallying processes of social sciences, even when sophisticated questionnaire and statistical factor analytical methods are used. (The needed sensitivity to nuance and contingency may or may not be purchasable with copious grant monies. It requires the astuteness of the humanist aided by a scientist's familiarity with quantitative technologies.)

I begin here also "from the heart," in the same humanistic reluctance as many others have felt, to accept some of the apparently harsh implications of evolutionary theory. Principles from religions imply a natural inclination toward unselfishness. At the same time, as a scientist I am reluctant to accept either the secular intellectual hypocrisy and ersatz virtue of "political correctness" or the foggy mysticism of raw religious faith. There must be better answers!

A DUALISM IN SPITE OF ITSELF

Richerson and Boyd penetrate to important implications of evolutionary reasoning, but much remains in shadows. *Not by Genes Alone* seems excessively bound up in the economic, cost/benefit framework of the selfish-gene approach. Even as "culture" is repeatedly touted, the essence of culture remains murky. The authors urge integration of the frameworks of thinking about genes and culture but remain basically dualistic.

As I read some of Richerson and Boyd's early statements I wondered, impolitely, whether the authors came from a different planet. In the first paragraph of Chapter 2, "Culture Exists," is the following statement: ". . . culture plays little role in disciplines like economics and psychology. Scholars working in such traditions usually don't deny that culture is real and important, but maintain that worrying about how it works or why it exists is just not part of their job description" (2005, 18).

I beg your pardon? Although Richerson and Boyd begin Chapter 1 by citing the work of two social psychologists, their Chapter 2 opening betrays a lack of awareness of the history and trends of academic psychology. Most psychologists remain strongly committed to the nurture side of the nature-nurture issue. The 1996 book by Richard E. Nisbett and Dov Cohen cited by Richerson and Boyd is apparently an accommodation of the sub-field now often called evolutionary psychology. Following publication of a seminal anthology edited by Jerome Barkow, Leda Cosmides, and John Tooby (1992) laden with compelling empirical evidence, evolutionary psychology was pressed forward effectively during the 1990s by social psychologist David Buss, in papers and engaging talks (1999; 2001).

Notwithstanding much new knowledge about the fundamental interactivity of nature and nurture (Ridley 2003, for example), the culturist orientation and its companion political correctness march on in academia—as

when a few years ago President Lawrence Summers of Harvard University ran afoul of a faculty squadron after publicly speculating about possible innate differences in the distributions of women's and men's interests in science. He was vilified and eventually resigned (Donadio 2005; Golden and Stecklow 2006). I suspect that Richerson and Boyd have made mainly a rhetorical error in trying to compare in a memorable way their own view versus the wider view. Being Renaissance men has its risks. One cannot become sufficiently familiar with *all* of the areas that the problem demands, so doing good work with good problems is inevitably provisional. Sometimes an "oops" happens. I do not think that the evidence justifies Richerson and Boyd's degree of emphasis on the idea that "Little behavioral variation among groups is genetic" (see pp. 39ff.). Yes, to court the alternative is to play with fire and gunpowder, but I believe that alternative is not necessarily a slippery slope to intergroup strife.

Richerson and Boyd use the term *hierarchies* when describing human hypersocial complexity. A shortcoming of this term lies in the suggestion of something monolithic, with sharply bounded things enclosed wholly within other things, much as Russian dolls are. But the human individuals in these postulated hierarchies are standing too still, statues mounted on their base of genes. They are flesh with too little spirit. Processes and things differ mainly in scale. There is too much emphasis on *things* and too little on *processes*.

Nature's divide between things and processes is fuzzy. At the atomic level, matter and energy are equivalent. At the organismal level, the specific molecules in the human body are replaced during a lifetime while the being remains steadily the same. At the societal level, organizations retain continuous identity even as their membership turns over from generation to generation. Thus, thinghood and processhood are matters of temporal scale and spatial scale. A process seen from up close, with its many twists and wiggles, becomes a relatively stable *thing* when it enters into something larger. As I recall, it was Campbell who suggested the term *entitativity* for such a junction of epistemology and ontology (and see Wimsatt 2007, 59).

Natural selection always plays the deciding role. Not everything we try works. Something about reality offers a great deal of freedom but does not ratify all of our thing-constructing enterprises. Indeed, if we also count the internal cognitive search processes we engage in—our "evolutionary epistemology" (Campbell 1956; 1974; Heyes and Hull 2001)—reality approves only a small percentage of our efforts toward creation.

But this must mean that reality has *potentials* existing in a larger field of abstract waste and void. Because the patient "god's eye" of natural selection is everywhere present, what we often take to be invention is also always discovery, a coming together of perception and action probes that reveal a potential of the world. Whether a thinker is more inclined to emphasize

freedom or determinism depends on his or her intuitions about the degree of diversity and contingency in the potentials of reality. Potentials are “ghosts” in the reality machine. If we see a world as having a populous breadth of possibilities, we are emphasizing freedom and the power of learning and of history. This entails regarding the way historical trajectories have played out in the world to date as largely accidental: “Give it a try!” If, however, such a view seems libertine, we lean toward conservatism: “The world is not as permissive as you think, my son; remember to be careful. Natural selection is ‘hungry’; it may delete you!”

I suggest, playfully but not frivolously, that either way of thinking about the potentials of reality implies “ghosts” or “spirits.” This lightly mystical way of speaking about the potentials of reality encourages us to see real, if less literal, meaning in some of the statements of those who are unabashedly mystical in their theism.

HIERARCHIES AND HETEROGENEOUS OVERLAPS

The metaphor of society as comprising a monolithic, Russian-doll enclosure hierarchy is not valid for civilization at its nonauthoritarian, democratic best. Yes, there is a potent dimension of disparity in wealth and other power, but at best it is not all-encompassing. You may be president of our bridge club, and I may defer to you as such, but I am president of our chess club. We both stop at red lights, not only because it is safe and proper but also because we prefer not to have the kind of interaction with Officer Smith that each of us has had before; she’s a friendly cop with whom we enjoy chatting when we meet at chess or bridge club, but when it comes to stop lights she is all business. At best, each of us balances justice and empathy in our respective domains.

Civilization is composed of a profusion of overlapping hierarchies. The Russian-doll metaphor can be sustained only if we replace the imagery of hard boundaries, which monolithically enclose or control downward, with an image of partial transparency and permeability. Democratic civilization comprises Russian *ghost* dolls! Some of them are already well formed, steady, and visible; others barely exist, so far. As the ghosts of reality interact, some achieve partial entitativity. They may multiply and perhaps create something larger. Alternatively, in interacting they may make salient some “smaller” feature. Such emergences become available to other ghosts that are playing across the substrate and may themselves entify and join into something larger. The ghosts compete with one another to achieve existence that is more substantial. They couple and uncouple at various rates, occasionally forming a “coalition” that stabilizes, with feedback loops, in a purposive engagement. Ghosts may “time-share,” like accommodating neighbors, with alternative ghosts that are also striving to reify. Picture a scintillating swirl of presumptive living things, flickering and fading in

and out of existence until an occasional fade-in joins others and builds, hanging robustly onto existence for a time/space scale that may provide part of the fertile substrate for a next-higher level.¹

This imagery, as a heuristic for reality's dynamism, presupposes validity in one of the most important and neglected aspects of the ethology of Lorenz and Eibl-Eibesfeldt: their cogent explanations of spontaneity in the partial autonomy of subsystems. Polemicists often have pointed to Lorenz's (1966) inclusion of human aggressive motivation in this way of thinking. Such taking offense at a speculative example has thrown out the baby with the bathwater (Glassman 1977). Clearly, higher-level motivations—for example, eating for nutrition—depend upon the vigor of a host of lower-level tool activities or tool motivations such as hunting or chewing. Each such “tool” has so much autonomous drive that it can sometimes act *in vacuo*.

It even happens, on some occasions, that the relative status of two drives, as tool and commander, reverses. Such phenomena described by European ethologists have been partially absorbed and adapted into American behaviorist considerations of “activity reinforcers” and “response deprivation theory” (research of D. Premack and of W. Timberlake and J. Allison, cited in Klein 2002). This aspect of cognitive-behavioral system “modularity” is insufficiently recognized, however. In general, our modules are agents. They are not passively “waiting for Godot.”

An alternative metaphor here is the proverbial crowd of monkeys at as many typewriters. Their random key presses, in the fullness of eons, might eventually produce the works of Shakespeare, as would a hypothetical printing press designed to print every possible combination of letters (Gamow 1954, 11–14). But *our* monkeys sometimes actually succeed, within real evolutionary time, because they are ghost monkeys! If the reader will continue to indulge my chimerical imagery, they are monkeys *within* monkeys, and monkeys *overlapping* other monkeys. They are not very intelligent, yet they have enough “local sense” to bridge small valleys of incoherence as they come together into something larger. Life meanders and evolves, unplanned but always playing upon eager, presumptive plan fragments.

SOCIAL DARWINISM IN SPITE OF ITSELF?

It is exciting and risky when such fragments build in new ways. When it happens on an individual human scale we may sometimes presumptuously speak of “the forbidden fruit of knowledge of good and evil” or of “social Darwinism.”

Although camouflaged by politically correct praises of “culture,” social Darwinism is implied in the way Richerson and Boyd bring together contemporary knowledge of biological and social evolution. A failure to enlarge perspective beyond genetic inclusive fitness narrows their integrative

efforts. It is not clear whether their Chapter 5 title, “Culture Is Maladaptive,” is meant humorously; that chapter’s incisive observations do not achieve a higher place of scientifically rooted virtue. The same is so through Chapters 6 and 7, “Culture and Genes Coevolve” and “Nothing about Culture Makes Sense except in the Light of Evolution.”

Richerson and Boyd’s “culture is maladaptive” thesis includes frank discussion of the “demographic transition.” “Reproductive restraint in the richest populations the earth has ever seen is a striking maladaptation” (p. 149). Among their points is one that has received considerable recognition in cognitive psychology, decision theory, and economics (Gigerenzer 2007; Levine and Perlovsky 2008; Thaler and Sunstein 2008): Adaptive behaviors, whether arrived at by nature or nurturance, usually depend upon decision shortcuts, or fast-and-frugal heuristics. No organism reanalyzes all of the data at every encounter with every problem, so we are always making best guesses as we walk through life. But conditions change. I sometimes err merely by trying not to repeat my last mistake in a seemingly similar situation. On a larger scale, of the emergence of civilization, natural selection of innate inclinations and cultural transmission has left behavioral remnants that are no longer adaptive, while we maintain the illusion that they are. One recent suggestion is that declining fertility in modern urban environments results from excessively increased parental investment in individual children attending the decline in concern about childhood mortality (Mace 2008).

Imperfections are everywhere. Richerson and Boyd review additional decision shortcuts and intuition errors. Two examples: (1) Learning from people other than your parents is adaptive—but not always; (2) Religions today may in large part be a maladaptive result of our human tendency to respect status, in its strength and style a relic of the time when human beings lived in small, closed bands.

Notwithstanding Richerson and Boyd’s attempt to draw a contrast, such examples seem analogous to the ideas they group as the old “big-mistake hypothesis.” For example, during the millennia of evolution of primates it was adaptive to have a motivational sweet tooth that encouraged ample eating of fruits. But then humans invented ways to concentrate sweetness, so today our fondness for candy can lead to decayed teeth, obesity, and diabetes. Lorenz’s choice example concerned the maladaptive ways modern humans express aggression. With technologies, economies of destructiveness permit an extent of aggressive motivation that could not have done such great damage in eons past. Richerson and Boyd’s examples of misfiring heuristics seem to me tantamount to the big-mistake idea. Nevertheless, their focal point is incisive: The big unanswered question is whether culture is indeed generally adaptive, as so many have supposed in seeing it as the crux of the striking human difference from other creatures.

THE STANDARD EVOLUTIONARY ARGUMENT: SELF-ORGANIZING
IGNITION OF HUMANITY

At some time in the past, it is thought, human evolution passed what is now often called a tipping point (following Malcolm Gladwell [2000]) of self-sustaining coevolution of genes with culture. Our prehuman ancestors' first modest creations of more expansive social relations and of proto-language recreated the ecology into which they next evolved. Some among these not-yet-people happened to have the best innate aptitudes for these social inventions, and those "pre-folks" were then naturally selected. That newer state of affairs, in turn, recreated an ecology having even more of this sort of opportunity and demand. This point about a self-reinforcing gene-culture coevolutionary dynamic is captured evocatively in the title of Charles Lumsden and E. O. Wilson's 1983 trade book *Promethean Fire*.

This widely proffered argument about a human coevolutionary cascade of natural selection in a positive feedback loop with human creativity has taken a number of alternative forms related to the postulated main driver of human evolution, but all forms logically incline toward the idea that information is liquid. Human ancestors, and then humans, have readily learned from one another. The clinker in this theoretical structure, Richerson and Boyd explain, is the free-rider problem, confirmed by mathematical modeling. Parasites, like imperfections, are everywhere. That is, while everyone benefits from the lessons passed down in culture, those who *contribute*, on average, net less benefit than those who simply *use* others' intellectual property. "Don't I know it!" many will say, echoing Scott Adams (1996), in whose popular *Dilbert* comic strip managers are portrayed as having risen in their organizations well above their level of competence, to the detriment of the engineers.

Take a deep breath; suppress for the moment your Jewish, Christian, Muslim, Hindu, Buddhist, or other sense of charity, and consider another controversial example of parasitism sometimes asserted: Are immigrants parasites upon our common wealth? (Debates about tariffs versus free trade have an analogous form.) Whatever the reasons that human groups form and achieve a degree of insularity from other groups (through ethnicity, nationality, faith affiliations, and other means), at some times and places there has occurred a thriving relaxation of such insularity. For instance, often the rise of civilization has been interpreted as part and parcel of the rise of trade. But were such mitigations of group insularities and instances of opening up merely momentary expedients fleeting past within the larger time scales of history? Does intellectual honesty force virtuous thinkers backward onto the hot coals of belief in a Hobbesian existence? Does knowledge of evolution tear us from vital intuitions about love, charity, and pitfalls of hate and put us on a slippery slope to bigotry? With this danger

looming, can we nevertheless avoid the hypocrisy of cleansing our thoughts in political-correctness detergent?

The way out of this heart-mind quandary requires a new level of evolutionary thinking. In suggesting this new level, I agree that cultures have become a primary focus of natural selection. Genetic and learned sources of information are integrated and coevolving as never before, breeding the larger human “organism.” Richerson and Boyd fail to see this point through sufficiently, however, because they remain locked to the idea of adaptiveness as gene-based inclusive fitness, and that implies an immiscible dualism of genes and culture.

THE DEMOGRAPHIC TRANSITION

As a solution I suggest reviving the organism model of societies, with the revision that civilizations are organisms in which the flesh and the spirit come largely from different populations. That is the inescapable meaning of the demographic transition. The demographic transition is not maladaptive, if natural selection is now primarily operating on something larger than the selfish gene, even though it does and must still act at that level as part of a larger system. This hypothesized larger system is not bound exclusively within the strictures that would admit group selection to legitimate evolutionary reasoning.

Do not mourn large families too loudly on behalf of selfish genes. It was already all over for long-reaching selfishness of the flesh hundreds of millions of years ago, when two very different sorts of creatures meshed into the first eukaryotic cell (Richerson and Boyd 2005, 153). With that, and with sexual reproduction, it became fundamentally pathetic for a hypothetical superintelligent wee beastie to selfishly plan for far ahead with a big hoard. You can't take it with you. Aging and death are inevitable. Cloning is no longer an option. The only way the wee sexual beastie or substantial human being can try to reach into the future is as a partner. That usually means being a full partner, 50-50, with another individual. In each generation two decks of cards are cut and shuffled. To reach the future, each self has to stop lusting after its own navel and peer about hopefully for the friendly belly of an Other of the other sex. Therefore, only some accidentally selected aspects of one's genetic self find their way forward.

The specialization and teaming up that occurs in colonial organisms such as ants and, closer to home, among the cells of large multicellular individuals such as humans replaces one form of competition with a new form, that between integrated systems. This competition, however, can never fulfill an individual organism's egocentric hope of immortality in perpetuation of tangible presence. Tension between selfishness and sharing is built intimately into the structure of life.

Something roughly analogous to the multicellular organism's purely biological quandary of selfness versus partnering is present in a new way at the level of the social organism. Thus, the demographic transition is not a maladaptation but is at the very root of a living culture. It works in much the same way as sexual partnering entails a broad, fruitful mixing of genetic information, preceding the emergence of higher multicellular organisms. The self-limiting of number of offspring on the part of us first-world types is a higher-level adaptive response to the conditions of a civilization that is economically wealthy and rich in diverse, magnetic opportunities. These draw us away from the alternative of seeking joy in a large family.²

The enticing opportunities in an affluent society are no less adaptive than the attractions of sexual encounters in a subsistence culture. Chronic widespread overpopulation of societies in poverty suggests that families become large even when this is not desired. It takes tremendous effort to rear children, but it also takes considerable determination *not* to have them. In a closer-in sense of personal "pursuit of happiness," the repercussions of having children can be quite maladaptive—even if our conception of happiness has transcended the simple hedonism that seems to be suggested by that peculiar word. Recent social-science research reported in the popular press suggests that the rational thinking our high civilization facilitates leads many couples to seek more happiness by remaining childless; the stigma attached to childlessness has diminished (Ali 2008). It may be, on balance, that humans *as individuals* are not well designed to reproduce! Sexual motivation, combined with the conviction that one has been "called" to have children, is strong for some but, in mere individualistic accumulation, may be insufficient to persuade an affluent, successful, integrated group of humans to persist as a self-reproducing entity. Although polls in Western Europe suggest that between two and three children is widely considered to be ideal, the many other opportunities for secular success, with consequent delaying of childbearing, have resulted in an actual average family size of fewer than two children—well under the replacement rate for a population (Duncan and Felkey 2008). Obviously we rational, affluent, planning, self-controlled, first-world citizens do not have everything under control.

Consequently, it may be that in the long run human persistence always requires some echo of primordial thermodynamic Big Bang chaos that is insufficiently mimicked by the sweat and vigor of the sex acts of happily, rationally married couples in an affluent, stable society. It is an unhappy, taboo, politically incorrect thought, but let us, as intellectuals no less courageous than Richerson and Boyd with their "culture is maladaptive" hypothetical, face the possibility that the ethnic strife we see today in Europe (and, indeed, anyplace there are mixed ethnic populations) is just such an echo of primordial chaos, necessary for a culture to pass itself on. Life is not easy.

CONFLICT, DYNAMISMS, AND BOUNDARIES: COMMITMENT TO
FLESH, COMMITMENT TO SPIRIT

Life involves conflict. Love and support of one's own family members must always be a prominent feature of civilization. At the same time, there is something invidious about such love, or kin selection as evolution researchers call it. In a good society the sequestering of kin love is tempered by a wider *agape*. Love diffuses outward as in the biblical "love thy neighbor" (Leviticus 19:18 KJV) and, in the same chapter, "love the stranger in your midst" (19:34). Richerson and Boyd's fundamental worry about the long-term viability of culture is related to the implied vulnerability to an increasing population of parasitic "strangers." But immediately following the Hebrew Bible love command is a clue—in code—to how a civilization may transcend the presumptive selfish-gene-ish fundamental wound in its structural logic: "I am the LORD." Indeed, that same code sequence follows the many other moral commands in Leviticus 19.

There is a lot in that code sequence. Implicitly it recognizes that there is just so much that consciousness can accomplish with its inherently small working-memory capacity (Glassman 1999; 2005; 2009). An individual does not have the intuitive ability to adequately monitor the cumulative fairness of transactions in process around him. Richerson and Boyd comment that "there is little agreement among scientists about how reciprocity works" and "reciprocity can maintain cooperation in small groups, but not in larger ones" (p. 199). They and others continue to seek a logical way for reciprocity to expand into larger social groupings and, with sustained automaticity, to feed back enough to support the sources of giving (Irons 2004).

We die-hard, enlightened secularists may never find a satisfyingly rationalist, Euclidean decoded translation of the code sequence "I am the LORD thy God" (Leviticus 19:2, 10, 25, 31, 34), but going through the exercise of explicating partial meanings should suggest ways in which we may take a sensible, though uncalculated, risk in relegating partial trust in our future to good things outside our individual selves. One partial meaning of the code is "We are members of the same larger organization, after all." It is an assertion of commitment (Frank 1988). In some uses, that assertion is tightly coupled to ample evidence of commitment in shared customs. Because humans grow into such shared customs in a largely irreversible series of imprinting experiences, as well as in overlearning with long repeated practice, William Irons has emphasized that such signals of commitment are "hard-to-fake" (2004, 780). Roman Catholics may not think of lining up in church for communion as a skill, but if I were an outsider pretending to be a devout Catholic, I might well give myself away with awkward nuances.³ The same goes for a Jewish worshiper called up to hold the Torah on the Sabbath, for example, and for Protestants in many ways; it is revealing to hear knowledgeable Protestant friends chuckle warmly

about foibles in worship styles of their own denomination by comparison with one of the others.

As living systems go, there is nothing unusual in the dynamic tension between family love and *agape*. Many of the regulations within an organism's physiology involve opposing subsystems. Mammalian temperature regulation achieves precision via multiple feedback-control "thermostats" in the brain operating simultaneously (Breedlove, Rosenzweig, and Watson 2007). Analogously, one may achieve fine control of small hand movements by simultaneously tensing opposing muscles. Oppositional subsystems may be a mathematically necessary feature of complex internally regulated systems (Binder 2008).

Boundaries, permeability, memes, and the natural evolution of forms all have an impact on the commitments to flesh and to spirit. Organized complexity necessarily entails restricted blending. Richerson and Boyd explain one of the corollaries of that general systems theorem in their account of the controversy over "blending inheritance" versus "particulate inheritance." If genes and chromosomes did not have a strongly particulate quality, the flow of genetic information from generation to generation would lead merely to entropy (pp. 88–91). At the same time, Richerson and Boyd deftly skip past the simplistic analogy of hypothetical, particulate, faithfully replicating, culture-bearing "memes." "We heartily endorse the argument that cultural evolution will proceed according to Darwinian principles, but at the same time we think that cultural evolution may be based on units that are quite unlike genes" (p. 81). Understanding the adaptiveness and progressive evolution of culture does not require genelike discreteness of information units.

The innards of cultures do have to have forms and boundaries, however. Again, it is a matter of scale. There must be relatively stably formed elements, bounded with limited permeability, at a lower level to maintain the possibility of emergence of novel adaptive forms at a higher level. Although cultural institutions may be fully malleable in a variety of ways, each must have sufficient conservative internal persistence to participate in a higher creative process. Unless internal parts of an organized structure have robust continuity, there is little to prevent a loss of identity, entropic erosion into a puddle, and diffusing into the ambience. (See also Wimsatt 2007, on levels.)

Immigration provides a real-life example of the dynamic tension related to permeability. At the risk of being insulting or politically incorrect, let me propose that we consider the many Hispanic immigrants who help to make life better for others of us who live in affluent areas. (This example could be replaced with one that focused, say, on the immigrant American experience of my own Eastern European Jewish grandparents or any other differentiated human group, but vivid memories of recent months are readier at hand.) One recent evening at about 9:30 my wife and I were driving

home from the airport after visiting our adult daughter, son-in-law, and granddaughter. On this rare occasion I was able to talk my tired wife, Harriet—whose tastes are more refined than mine—into stopping to pick up a fast-food dinner. I parked the car and walked into McDonald's. While waiting for our hamburgers and fries, I decided on impulse also to get Harriet, who was resting in the car, a little strawberry sundae. The young Hispanic man waiting on me quickly filled this extra order and was amused when I told him I would just run out to bring this to my wife and then come back for the main order. We shared a smile. Moments later, as I walked back to the building, he leaned out the drive-through window and handed me the order, still smiling. An ordinary food-for-money transaction thus also became a small *human* encounter, briefly bridging the spaces between us of wealth, language, and ethnicity.

I see many Hispanic immigrants these days in such server, garden, and household positions. I enjoy the human side of these business interactions, but am I merely smug? Does virtue demand more active concern about their finances and opportunities? I am glad to be able to afford the services they offer someone at my level in the American middle class. If the services cost much more, I might go back to doing more of my own home maintenance and cooking. I hope that these immigrants and I are engaged in fair interactions. They have better opportunities and earnings in the United States than they would south of the border, and I gain time to write papers on science and religion. I am not above these immigrants in any transcendent sense. One of my children worked in a fast-food restaurant when he was in high school (although that job was not a major part of his working life). I hope I am not kidding myself. Immigrant laborers and I sometimes encounter each other as human beings, but there must also be some envy on their part, and it may have more bite to it than the envy I feel in regarding Americans wealthier than I. I am generally content with the opportunities that envelop my first-world, educated person's life. More of the things the new immigrants wish for are at the lower levels of Abraham Maslow's famous hierarchy of motivation—more pressing concerns related to physiological, safety, and security needs.

OBLIGATORY SEPARATION—A PARADOXICAL SOURCE OF TRUST

Here the matter of cultural barriers becomes more interesting. "Good fences make good neighbors." Trust is automatically increased between two persons who are bound into separate social categories, with regard to any benefit that would require crossing from one category to the other. In general, you can trust the bank teller with access to your account. The rabbi in a synagogue might trust a gentile friend with a secret that could represent a compelling temptation to a fellow Jewish member of the congregation. An officer of a corporation, with his or her MBA certification and skills, may

trust a secretary, who has a different fine set of skills, with a contact list and delicate information. We may hear of shocking violations of such trusts, but in general that danger is mitigated by partnering with someone whose attributes preclude benefiting from opportunities someone in one's own category could easily exploit. Paradoxically, social distance can become a source of trust.

Additionally, there is a horizon to individuals' selfish concerns, even to inclusive selfishness that includes kin. We do generally want our own children and grandchildren to have opportunities we did not have, but we also understand implicitly that there is just so much we can do to influence the future. Inheritance laws appropriately limit the reach of the dead hand. By a willful extension of such considerations, it is fine with me that the future population of America will be made up in larger proportions by members of new ethnic groups such as immigrants from Latin America.

Optimizing one's reach implies that as an affluent American I am doing more to pass along my spirit than my genetic flesh particles. Inevitably, the kinds of benefits you and I offer others, in the things we teach and favors we choose to give, carry something of us with them. In the narrowest sense, such behavior entails something like the hypothetical quasi inheritance that Dawkins colorfully dubbed "the Green Beards effect" (1976, 96). By supporting others who are like me, the genes underlying certain of my behavioral preferences "try" to ensure that there will be more like them in the future. Applying this to the explicit attempt to influence others, by teaching or proselytizing, this is approximately the same principle as in the parable of the sower in Luke 8:4–15 (Glassman 1980; Glassman, Packel, and Brown, 1986). Perhaps *all* of the things we do, not only the explicit attempts to spread influence, carry with them some emanation of our individuality.

The green-beards interpretation of altruism gets us part way past the caveat that nonkin altruism must, by some not-too-indirect route, reciprocate selfish-gene-ishly in inclusive fitness to one's own kin (Sinervo et al. 2006). There seems to be a more genuine altruism in "green beards"; nevertheless, this interpretation of genes and culture remains fundamentally dualistic. A greenbeard's cultural effort, in the end, if it does not directly serve homemade copies of the doer's genes, serves simulacra of them. (In any case, the doer's consciousness may remain innocent in its display of altruism.)

Can we stretch our understandings still farther away from the smallness of "selfishness" as we ordinarily conceive of it? Think of our new American phase of evolution as a human invention that enables an individual to send more of himself into the future than he possibly could in purely selfish-gene-ish ways. Each individual inhabitant of an abundant, first-world society has a fuller chance at immortality of his essence. You have the wealth and the freedom to do things by which you "toss yourself brightly at the

sky.” You sow your seeds and cast your bread on the waters. There is a chance that all of this will somehow come together in others in the future. That coming together will not be a frozen image of you exactly as you are now, but it may be a real and complete representation of you in a more mature, “larger” form.

It is difficult to quantify that hopeful possibility, but by considering the basic mathematics of sexual reproduction we can approximate a quantification of its selfish-gene-ish alternative. A human being has twenty-three types of chromosomes, each of those types paired up in each of his or her cells with a variant of the same type but comprising a different set of alleles. Those pairs are randomly sorted into the haploid complements of sperm or eggs. In this way the pleasurable funny trick that evolution has played on us sexually reproducing creatures ensures that only half of a person’s genes can find their way into each offspring. There are 2^{23} different possible complements of the genome in any of the gametes, sperm or ovum—a big number. Feeling favorably inclined toward one particular such half of a genotypic self is pointless, because there is less than one chance in eight million of its finding its way wholly into any child. (Chromosomal crossing over, jumping genes, and other genetic interactions make the probability even smaller than in that simplifying calculation.) Even a super-Don Giovanni could not pass all of his genome down through the generations.

FULFILLING SELFHOOD THROUGH SACRIFICE

There is a much greater potential payoff to *cultural* fertility. Yet, whether we create financial wealth as a principal in a corporation or contribute knowledge to a cultural institution, we may or may not receive thanks and, in the longer run, we “can’t take it with us” in the flesh. Thus, to be human is to sacrifice. This may be the most significant meaning of the many myths of sacrifice in religious literatures. Do not be overly concerned, now, with the other apparently unintended but pragmatic consequences of sacrificial rituals (for example, the likelihood that compulsively repeated “waste” of goods helps to ensure that human industry routinely creates reserves for unanticipated times of want). The story of Jesus may be the most paradigmatic example of sacrifice. To say the least, in the story of the passion of Jesus, the powers of the world did not thank him! He had already insisted on discarding worldly possessions. The evident universalizing of the sacrificial gift of Christ may go naturally with the greater universality of secular government attending Caesar, in the same historical era.

These suggestions and the ones about the theistic code sequence in Leviticus may be close to Gerd Theissen’s proposal (1984) that Jesus represents the future of cultural evolution (see also Hefner 1999). Indeed, preceding the denouement of the passion, Jesus ratcheted up vulnerability well beyond the Leviticus phase when he preached that one should not stop at

“love thy neighbor” but should also “love thine enemy” (Matthew 5:44 KJV). This is perhaps the most challenging of the many audacious forms of opening up prescribed in the Sermon on the Mount in Matthew 5–7. Taken at face value, it represents an extreme violation of the logic of natural selection as generally understood by evolutionary scientists. The standard of morality in this Sermon, beautiful in its no-holds-barred idealization, also symbolizes the quintessential evolutionary “adaptive valley.” Is there any conceivable way that valley might truly be bridged with the further evolution of humanity (Glassman 2004)?

Philip Hefner’s lucid explanation of what is at stake here includes discussion of Irons’s analysis of whether indirect reciprocity arrangements of any sort can possibly transcend the selfishness of genes acting on their own individual behalf (Hefner 1999; see Irons 2004). Hefner also contrasts fundamentally dualistic aspects of the fruitful biocultural theorizing of Dawkins and of Campbell with the more wholistic reaching of Ralph Burhoe and Theissen. Interestingly, a little after Jesus’ radical demands in the Sermon on the Mount, which seem designed to *really get the attention* of his audience (otherwise largely settled, as all audiences are, within their existing assumptions), he returns to a more modest echo of the Leviticus love command. When an impatient questioner asks what the most important commandment is, he responds that it is to love God and to love one’s neighbor (Matthew 22:36–40).

Hefner’s analysis of the possibilities that human nature might be nurtured toward a viable long-term extension of “solidarity-in-empathy-and-service,” or the Christian love command, deserves further careful study. Is Christianity, as in Jesus’ original intent, the best hypothesis from among all religions to date for how humankind may achieve a viable future? Perhaps. Yet, paradoxically, it might be *unChristian*, in the broadest sense entailing empathy for others, for *Zygon’s* editor to say so with explicit pointedness. As a contentious person with a different faith background, I find that part of me wishes to suggest some as-good-or-better selection from the Hebrew Bible, as unextended by that exceptional Jew, Jesus. I wonder, for example, how to adequately compare “solidarity-in-empathy-and-service” with the frequent urging in Jewish prayers for “lovingkindness.” In any case, Hefner’s synopsis of Theissen’s framing of “The Jesus Proposal” may be viewed as a fascinating *scientific* hypothesis that may succeed better than any other to date in joining facts and values.

Among the important aspects of this scientific hypothesis is a psychology principle, left largely implicit, about the organizing value of what we might call perceptual-style, as compared with motor-style, information processing. That is, lists of imperatives (motor style) are boring; they tend to rigidify and erode in their humanity. A summary image that includes strong narrative elements, however, can be magnetic in incorporating knowledge of the past and organizing suggestions for the future (see also Pennebaker

and Banasik 1997). Admittedly, my brief point here sets aside deeper analysis of the role of images versus “the book” or “the word” in religious evolution and of the myriad studies in the cognitive-psychology literature about factors contributing to the reliability of long-term memory.

Think again, now, about the demographic transition. Some of the offspring of our immigrant laborers will be the leaders of this society in the coming generations. Look at the diverse ethnic origins of the names of corporate CEOs and political elected officials of today and compare them to the greater homogeneity of names in the early twentieth century. The opportunities you create are likely to be taken by someone not in your family. That future selection process draws from a much larger population than you can possibly create by cranking out offspring, even if, in a virtuous alternative to the Don Giovanni basely genetic style of passing yourself on, you try your best as a good father to rear them all well (Glassman 1992). Returning briefly to Caesar and Christ, perhaps there is an analogy in the way the ancient Roman Empire transmitted emperors outside kin lines, later on, to men from the provinces (Durant [1944] 1972).

YOU ARE PROMETHEAN

The fact that you have been a good father to your children while the offspring of many others have risen to the top from chaotic, dangerous, teeming, crowded circumstances implies that there is emerging a greater factor of innateness in the abilities of this subpopulation. Certainly, not all of the gifted ones make it. Their originating circumstances may be just too capricious. A dictator’s thugs jail her parents, and this particular gifted child simply does not make it. Her life’s path of higher opportunities effectively ends. But others do survive and eventually make it somehow to the first world. Some among the survivors are “superchildren,” unusually resilient and resourceful. Others are merely gifted in some way. By participating in the demographic transition, while devoting your energies to the culture, you are redesigning the world’s selection factors and feeding the Promethean fire of human gene-culture coevolution. You play a godly role.

This point in the argument calls for deeper consideration of crucial factors in the origins and maintenance of high civilizations. Among the interesting hypotheses is Arnold Toynbee’s famous *Study of History*. Toynbee sets aside the possibility that mechanistic cause-effect factors might be dominant in favor of a theory of agency: “the cause of the genesis of civilizations must be sought in a pattern of interaction we have called ‘challenge and response’” (Toynbee and Caplan 1972, 111). Although this factor of human encounter is clearly identified, Toynbee asserts that it does not lead to the kinds of predictable outcomes we would expect with more mechanistic cause-effect reasoning. Indeed, such inherent margin of uncertainty is present with all human agency. Human beings cannot be simulated in all

relevant details of our multidimensional “analog” (continuous) complexity even by a multicore digital supercomputer. *We* are our own, living, real-time “simulation.” When encounters occur between civilizations that are contemporaries, among the frequent consequences are stigmatization of victims, “terrible animosities and . . . enormous problems of coexistence.” This problem frequently has been answered by the emergence of higher religions that enable mutual accommodation (Toynbee and Caplan 1972, 379; Burhoe 1986).

Of course, religions are also often involved in moving conflictual encounters to a vaster destructive scale, a tendency that often is mitigated by competing *secular* interactions that exemplify empathy and kindness. The agentic encounters in human living systems are certainly interesting in these ways. Indeed, in Western civilization today it seems that secularism plays a crucial lubricating role. No doubt this is due in large part to the communicative rapidity fostered by electronic technologies and travel technologies, but it would be naïve to assume that analogous factors of communicative spread did not play a similar role one, two, and three thousand years ago, during earlier civilizational encounters. *Plus ça change, plus c’est la même chose*—The more things change, the more they stay the same. Nevertheless, it is also true that history does not repeat itself. Even as things stay the same, they change. So let us proceed with a hopeful vision of what may now be wrought in Western civilization.

THE AMERICAN EXPERIMENT

With apology for my brashness, particularly to readers who live outside the United States, I will name what we are today globally engaged in “The American Experiment.” This is not to deny shortcomings but to suggest positive ferment attending immigration to the United States from many world cultures. The United States is currently the largest hub of a world network of hubs and spokes that carry materials, wealth, and influences centripetally and centrifugally. (About network theory see Higgins 2007; Watts 1999.) In this epoch Americans have been “the chosen people,” sharing knowledge and opportunities with the rest of the world. In the longer run we may or may not be thanked. We Americans see most clearly the benefits of our “missionary” work. Accompanying such power is a responsibility to listen to those outside our nexus and to renew empathy with those who perceive a Trojan horse in American economic and cultural gifts.

Anecdotes are never proof, but the following anecdote is powerful. As this article is undergoing revision, in response to a challenge by the editor, the Olympics are taking place in Beijing. The cover story of the *Chicago Tribune* sports section on August 20, 2008, titled “1 for Old Glory” and graced with a dramatic picture of an American wrestler, says:

Henry Cejudo, the Los Angeles–born son of undocumented Mexican immigrants, celebrates his gold-medal victory Tuesday . . . in men’s freestyle wrestling by embracing an American flag. “I’m living the American Dream,” he said. . . . That flag gave a chance to a kid who paid for wrestling by selling tamales on the street. That kid now held it tight as he dropped to the mat and dissolved in tears. . . . The flag gave his mother a chance to raise six children on menial wages in count-less apartments from Los Angeles to Las Cruces, N.M., to Phoenix. . . . That flag gave a high school education to a kid too poor to celebrate Christmas with presents. . . . When he was 4, his parents separated. . . . With only a single couch in his living room and at least one or two siblings in his bed until he was 17, there wasn’t much. . . . “The United States is the kind of place where you can choose your own path,” he said. “We should never forget that.”

Compare Henry Cejudo’s background to that of your own family. If you are a typical American, recall that you have sometimes tried to impose excessively upon your own children, thereby inadvertently causing family fireworks. You also have sometimes found wonderful fulfillment mentoring younger colleagues at work. Perhaps the workplace ethic of avoiding dual relationships should be applied equally, in converse sense, to the family!

If you are like many upper-middle-class folks today you have only one or two children. You are a member of a group that is thereby operating at below the population-sustaining rate for your demographic (Shorto 2008). If you are a Western European, you may in spite of yourself have experienced occasional sympathy for fellow citizens of your ethnic extraction who are angry about waves of immigration in recent decades. If you are a native American, you are also struggling with this issue, but your xenophobic antipathies may be mitigated by our long cultural heritage of immigration and our mechanisms of assimilation, albeit imperfect.

Interestingly, as part of the “cultural brain” and no longer as much of a “fleshily competing” part of the “cultural womb,” you have replaced the old job of generating population with a new custom of focusing intensely on your one or two children. You buy them good clothes and toys; you vigorously “teach” them the culture, sometimes amusingly with the help of *Baby Mozart* or *Baby Einstein* videotapes or DVDs. When driving, you keep your child in a car seat that is many times more expensive than the one you rode in a couple of decades ago. You may dream that your little girl or boy will turn out like you and carry your baton further, but you also realize that she or he is likely to head in a new direction. Indeed, as your son or daughter matures through the difficult turning points of adolescence, you have avoided an excessive dual relationship within the family by spending a great deal of time and family finances seeking a good college education with teachers and other models who fit your child’s aptitudes and needs. Genes and culture are finding new pathways of divergence and convergence, with your help.

Your loving, extreme efforts in raising your own biological child, powerful first-world individual that you are, do not serve the selfish genes that are proudly riding in your eminent bodily self so much as they compose a

devotional ritual. Bringing up your child is a signal to yourself and others that you cherish the sanctity of the flesh, the ground of being of the larger culture to which you have been contributing. In rearing your children you also are learning what it means to contribute to the creation of a fully functioning human being. You are acquiring empathy with all other parents. As a responsible scion of the first world you are balancing your sacrificial donations to spirit and flesh.

INNATENESS

The externalities you leave along the way as gleanings of the rituals you engage in with your own loved child—the book you read aloud to your daughter and her classmates in preschool, the lessons in carefully tending a fire you taught the Cub Scout pack that included your son—amplify your influence. As you enter this higher level of human evolution, your genes do remain involved. Nurturing's molded waxwings would melt in flying too far from nature. But genes that “care too much” about the “cousins” with which they have recently shared the same cellular nucleus long ago lost the privilege of being the end-all of natural selection. Something bigger is going on.

Dennis Krebs has published an excellent review paper (2008) about the genes-and-culture issue, brief yet broad in its coverage (including a few prescient quotations from Darwin). These writers and those they cite have done everything intellectually possible to elucidate inclusive fitness, the things we know and the areas of uncertainty. Krebs appreciatively cites Richerson's and Boyd's work. Among the important scholarly and semi-popular works cited are those of Herbert Gintis (2007), Robert Frank (1988), and Robert Wright (1994). These people have done everything intellectually possible, but it is not enough.

Among the problematic issues is the weak position we continue to find ourselves in when discussing the interaction of nature and nurture. Our rhetoric remains compromised and lame. Lorenz (1969) was incisive in defining *instinct*, as contrasted with *learning*, in terms of the ultimate sources of information guiding a behavior, but that clarity has been muddied by subsequent decades of politically correct scholastic misinformation campaigns and by a positivist tunnel-vision reductionism. Too often, after ample interdisciplinary review of well-conceived empirical studies, we come back, Sisyphean full circle, to vapid declarations that nature and nurture both participate in most human behaviors. In teaching undergraduates I repeatedly see that the *ways* in which nature and nurture are joined are not easy to grasp.

When something about an idea is puzzling, we sometimes use a heuristic “method of deletion.” We set aside the idea while focusing on smaller ideas that seem undeniable. Then we see whether we can build these, as

components, into a clear version of the larger idea we had set aside. We seek crucial parts and critical interactions. This is reductionism and parsimony in action. In severe attempts at incisive vision, we scrutinize a complex phenomenon as intensely as we can. One of two things then happens. Epistemological reductionism leads to either clarity or loss. At best, complexity gives way to a successful analysis. *Voilà!* We see, axiomatically, how the instance of complexity may well have arisen. We have taken apart our set of Russian dolls, put it back together, and verified that everything is there. But another, less fortunate, possibility comes about when there is inadequate range of variation of our intellectual gaze: The object of interest may disappear. This sort of intellectual perceptual “crash” is like one that has been documented experimentally in visual perception when the normal effects of eye movements are reduced (Arend 1973; Gregory 1997; Pritchard, Heron, and Hebb 1960). It exemplifies a fundamental epistemological phenomenon and perhaps even accounts for the death-of-God concept in the modern era.

MORAL THINKING AND PERSPECTIVE

Some of the most significant aspects of human existence are impossible to pick up with tweezers, but they gradually emerge into view when regarded from different angles and distances, with much active probing over a long stretch of time. Among these aspects are our moral feelings.

Krebs's review article (2008) covers moral sentiments. Wright urged attention to them as well in his book *The Moral Animal* (1994), and Frank's (1988) treatment of “passions within reason” was compelling. Richerson and Boyd cover this issue. Where does the minor-key ringing in your soul come from when you have not helped a friend? Much learning undoubtedly feeds the capacity for such moments, but what *is* that feeling? And what is the origin of all the many other distinct feelings with which you subjectively tune into social contingencies? Krebs points out that neuroscientific imaging research has provided evidence of uniquely dedicated brain systems. However, I think the best evidence of specific brain systems remains in the diverse distinctness of the feelings. This point connects with Karl Peters's (2008) explanation of “empirical theology,” based largely on the psychology of William James. It connects also with Matt Ridley's (2003) bold “nature via nurture” interpretation of evolutionary logic, which includes a good exposition of James's intriguing view ([1890] 1950) that human beings have many more instincts than animals have. Since James, our understanding of human nature has moved both forward and back.

The list of attributes contributing to the evolution of morality includes fear, awe, respect, gratitude, indignation, forgiveness, sympathy, empathy, regret, shame, and others (Krebs 2008, 152, 157). Looking into myself, I discover that a distinct emotional surge accompanies the characteristic be-

havioral tendencies for each of these attributes. My moral behaviors are undoubtedly the result of some developmental combination of nature and nurture, but those underlying feelings, as elicited by particular perceptual circumstances, seem to have had a head start before becoming the subjective intermediates between the particular perceptions and categories of behavior customarily associated with them. Each such feeling must be related to some evolved feature of human selfhood and, correspondingly, to some particularized brain circuitry.

These innate elements of normal human sociality are something like the cells of your body in their organization into higher-level you. At the same time, you do not have quite the separated and secure quality you have been imagining. Each cell of your living body exists in dynamic concert as a single, unitary member of an advanced species of organism; but you also, by the way, provide a ground for being of perhaps ten times as many bacterial cells (Ley et al. 2008; Moalem and Prince 2007; Pennisi 2008). Human society is analogous. Our thriving social coherence provides a ground for being of diverse entified processes that are clearly *other*. These processes, or beings, play upon us, dance across us, and inhabit us as they tap into our perceptions, feelings, and behaviors. Such emergents correlate in widely varying degrees with adaptive (or maladaptive) values to us as individuals and to the groups of which we are members.

Some of our entified socially emergent riders are good for us, but that is not necessarily the *raison d'être* for most of them. They are “sports.” Our lavish social life in an affluent society amounts, as it were, to a rich primordial soup for presumptive entifying processes of varying degrees of complexity. Human events, national events, world events, and so on are the lightning flashes, swirling of wind, and dynamics of heat flows in which these forms of life find origins, tumble, and change. Externalities originate as by-products. So it is initially with every naturally selected attribute of every evolved system. But under the fertile socioeconomic conditions that civilizations create, and especially in affluent first-world societies, the externalities largely break free and live “lives” of their own. We have become the “soil,” or vast Petri dishes, in which cultures are cultured. We are both soup and soil.

Some individual actors are blessed, for a while, to be in environments that are particularly fertile while offering ample exploratory freedom. Examples are the research-and-development departments of thriving companies, liberal arts colleges, and schools of theology well balanced between liberalism and tradition. Faculty members invigorate their teaching and their surrounding culture by doing research and explaining it to other community members. The ethic of academic freedom is vital in this nurturing environment. Students, in their turn, although generally less wise, are also less burdened by venerable ideas. Adolescents like to learn skills and ideas, and they love ideologies. Their energetic challenges are nurtured by both

of two opposite tendencies, as Richerson and Boyd explain: nonconformist “yes-but-ing” and vigorous conformist rallying. Sometimes a student movement becomes a positive contribution. Often undergraduates carry out excellent research.

AFFLUENCE AND THE PAYBACK IMPERATIVE: FLOW TO THE COMMONS

Institutions of higher education can thrive where there is abundance. Research-rich circumstances can be fertile ground for culturing in new directions. The changes in cultures take place largely independently of either the hedonic or genetic inclusive-fitness interests of the human participants. Here is where new cultural entities readily take on their own lives. Nor is the main product of college the opportunity a diploma provides to increase income, so often touted by admissions departments. Most important is that the same abundance from which colleges emerge makes likely beneficial *leakage into the commons*. This is an important qualification of the deep pessimism about “the tragedy of the commons” (Hardin 1968), which Richerson and Boyd see as the main obstacle to believing that a culture may continue to thrive.

Both hedonistic and antihedonistic tendencies were prominent during the late 1960s and early 1970s—in “make love, not war” and more conservative activities (Henninger 2007; Kurlansky 2004). The contemporary environmentalist movement seems mainly antihedonistic. In either case, the sheer social and economic richness of our culture ensures a fertile ground for externalities to achieve almost independent lives of their own, so an individual’s freely disposed altruistic acts may actually achieve genuineness. There can be tremendous synergy in social interaction (Smith [1776] 2003; Wright 2000). We may rarely get something for nothing, but the leverage each of us is granted in a well-functioning society means that often our cups run over.

Whether the idea of true altruism has real meaning is among the most difficult of questions, worth examining again. Garrett Hardin’s (1977; 1982) imperative that altruism must be aimed and focused validly follows evolutionary logic, a fact not always appreciated (Pope 2002). However, in its emphasis it may have reflected Hardin’s age cohort, the same as my parents’, which had experienced the Great Depression in the United States. Indeed, that same sociology of science circumstance may have abetted the strength of the wave of behaviorism in America, with its emphasis on instrumentalism.

Where wealth abounds, there generally are fewer risks in simply giving. Freedom is more easily accepted and granted to others. Creativity can flourish because the basic-survival-need concern is distant. Moreover, because our human ability to think through the economic implications of our cre-

ative actions is limited, there is no point in trying to see through to *all* of the consequences of our actions. As chaos theory tells us, because most natural systems are nonlinear, effects become less and less predictable the farther they get in the sequence of consequences from one of their earlier causes (Gleick 1987). There is an important implication: A *leakage* into the commons may become a *flow* into the commons, as many of us contribute to the things we have chosen to care about and as we have little reason to worry about whether others are doing the same in regard to their own values.

Of course, in a civilization it takes all kinds. Riches provide new opportunities for cheaters, or parasites, who may create new forms of exploitation that then inordinately absorb the common wealth and eventually cause severe want outside the boundaries of their personal domains. This may be the underlying cause of the subprime-lending fad recently indulged in by some officers of financial institutions (Greenspan 2007; Gross 2008).

Without excusing manifestly immoral behavior as “natural,” consider that the fertile conditions for new evolution inevitably drift to a system closer to the edge of what it is designed to handle. The very astuteness that makes us human, able to predict and control much, moves us toward less predictable conditions in the longer run, as we jostle and compete. As humans cherry-pick the clearest opportunities, what remains is a kind of “idea antimatter,” or “idea black hole.” Phenomena arise, by accident and natural selection, that exploit the fertile soil of an abundant human society. This effect may sometimes be not so much mitigated as abetted by human foresight. Borrowing from the vernacular of financial investments, predicted future benefits of knowledge automatically become discounted in a free market of ideas. Subsequent evolution may then be diverted from larger dynamic patterns toward fragmenting, progressively smaller exploitations of the whole. A society becomes decadent and hypocritical and falls apart as corruption and special interests become embedded in that society.

In trying to understand natural factors that would resist such decline, Richerson and Boyd make a noble, reasoned attempt to stand up for the possibility of group selection, but the long-term viability of selection’s acting at the level of larger wholes remains in doubt, they acknowledge. Because models intrinsically simplify complex reality, there is an irreducible arbitrariness in setting parameters. It may be that *no* natural controls can ensure smooth continuity of growth in any complex system for an indefinitely long time. Crashes may be inevitable. Religious mythologies about death and rebirth may contain hints about how subsequently emerging organization often recovers sufficient order “from the ashes” to jump farther ahead than the defunct predecessor. Recent economic studies suggest a strong positive relationship between the occurrence of natural disasters and subsequent economic growth, under certain preexisting conditions (Cuaresma, Hlouskova, and Obersteiner 2008).

FRITTERING

It therefore becomes important to broaden our attention to explore the many things people do, in freedom, that seem distant from or counter to biological adaptedness. These actions result from pervasive living-subsystem autonomy and spontaneity, discussed earlier. We may call them *frittering*. Frittering is related to play, as described by ethologists, particularly in immature mammals (Eibl-Eibesfeldt 1975). It is seen wherever there are people, whether immature or mature, but probably is especially prominent under conditions of affluence.

Frittering invokes cost without evident benefit. Examples hardly seem necessary, but it is worth considering a few examples of how systematically human beings incur such costs. The obvious needs reconsideration.

1. Why do people keep pets? My grandson has a pet beagle. This dog presents a lot of extra work for my son: baths, veterinary bills, keeping a close eye on the dog's curious sniffing and peering as the dinner table is set so that he does not snatch a juicy morsel from grandpa's plate, lots of vocal and tactile loving attention, and more. When I visit, it has become my ritual to take the dog for a long walk. Thus, I join in frittering.

2. Why do people bother to plant flower gardens?

3. Why do we become absorbed in sports, either as recreational participants who tire ourselves and risk injury or as spectators who spend money that might otherwise go toward purchasing food or saving for a rainy day?

4–8. Why, when we might otherwise be eating, drinking, or resting, do we go for a walk, read a novel, watch television, fly to Yellowstone National Park and take a walk where dangerous bears might also be walking, or take a drive and wind up at a mall where we buy something we do not need?

Evolutionary theorists have discussed various paradoxes that human behaviors entail for our axiomatic acceptance of adaptiveness, as the ultimate underpinning of all organismal form and behavior. The political-correctness questions are among these. In an appendix to his interesting book *The Moral Animal* (1994) Wright reviews "FAQs" about evolutionary psychology. For example: Why is there homosexuality? Why does anyone engage in religious behavior? Why do soldiers sometimes *willingly* give their lives for their country?

Plausible hypothesized answers suggest indirect adaptive "payoffs." For example, a celibate priest may have many brothers and sisters; his profession brings prestige to the family. By thus benefiting his nieces and nephews he boosts his inclusive fitness. Other hypothesized answers to adaptive paradox questions emphasize the inherently incomplete evolved status of the world. Evolution operates through trial and error. Is homosexuality an example of an error? Depending on how hypothesized answers to politically incorrect questions are posed, they are more or less offensive to our

intuitive sense of humanity. Does rationality demand such splashes of the cold water of reason on our erstwhile tolerant faces? I have argued that the well-meaning *Not by Genes Alone* sometimes inadvertently finds itself in such a social-Darwinist position.

FREEDOM, HUMILITY, TOLERANCE, AND EBULLIENCE

Let us take such painful issues even closer to heart. *Why* do we say that the Nazis were evil in their extreme eugenics programs? Apparently these programs were modeled in part after eugenical ideas afoot earlier in twentieth-century America! I remember, as a young Jewish boy, seeing photographs in my grandparents' home of their beloved brothers and sisters who had been murdered several years earlier in the Holocaust. Nevertheless, I must confront the apparent eugenical implications of evolutionary logic in this way that I myself can feel. Relatedly, one of "civilized man's eight deadly sins" described by Lorenz (1973)—one of my intellectual, yet flawed, heroes (Kruuk 2003)—is the "genetic decay" to which social welfare programs apparently lead.

What about that? I ask myself, also thinking of the times when medicine has rescued this body that my own genes are riding in. I am not manifestly disabled in a way that would meet federal accessibility standards, but there are stronger, healthier, better-looking human specimens—not to mention people who have better vision. Should I throw my glasses away, in a transport of altruism for the American gene pool? But that would be silly. Can we recruit the good sense in that judgment for an enlarged understanding of evolution that adequately includes human virtue?

My braving political incorrectness forces me to persevere: *Why* do we help others with manifest disabilities? A good partial answer is that the alternative, eugenical programs—if not applied actively,⁴ then passively by declining to help—presuppose that their human designers know a great deal about human quality. Perhaps we recognize implicitly that everyone, with or without "disability," offers a potential contribution. Indeed, many people, including great scientists and artists, who were manifestly disabled in one way wound up contributing excellence in another way.

Such answers remain incomplete, however. A better general answer requires a shift in framework. By doing generous things we express ebullience about life. We are parts of something larger, in which new forms of organization are emerging. As human beings, we are planners par excellence, but with the best things we do, on faith we reach way over our planning horizon in expressing who we really are. Our best human *ises* reach farther than our best *oughts*. We thus contribute to the swirl of social dynamics and artifacts, which are the grounds of the cultural processes reaching for status as entities. Even if not explicitly religious, our best acts comprise devotional rituals, additions to the middle-class custom of rearing

one or two children. Altruistic actions do not generally reward us viscerally with the same emotional concentration as, say, an ice-cream sundae or a sexual encounter, but doing good does tap into us in depth. Expressions of ebullience about life are not necessarily maladaptive under conditions of affluence and may even be broadly adaptive. Although they do tend to expose the doer to the risk of parasitic exploitation, neither the doer nor anyone else benefits if the deeds are not done. Moreover, there are logistical problems if we attempt to mitigate the possibility of exploitation by locally sequestering benefits. Such an anticipatory defensive maneuver is likely to reduce synergy with others.

I believe that this is the sort of thing Burhoe perceived in the writings of Richerson and Boyd about coevolution when, during the late 1970s, he encouraged me to read their work. He strove to put forward an extended conception of symbiosis that applies particularly to the relationships between modern human beings and the best aspects of their religions (see Glassman 1980; 1998). We have mutualistic relations with each other and with fairly autonomous cultural phenomena. Each civilized human being is constantly swimming in a veritable bath of cultural entities that are, at the same time, opportunities. Sometimes our encounters in this “advanced primordial soup” lead to a new linkage. Sometimes that linkage grows into something larger.

MIGHT GOD BE OR BECOME REAL?

Here, religion may enter, although religions are replete with doctrines and rituals that do not make sense from within the Enlightenment viewpoint. Is religion a species of frittering? In our contemporary rationalistic environment, unlike a few centuries ago (Taylor 2007), hypothesized God is quite a strange kind of being, by no means tangible and indeed even in the habit of hiding (Heschel 1955) yet, for many around the world, having more presence than the objects that are before their noses. This faithful grasp may well sometimes *not* be a fundamental cognitive error, emanating from fast-and-frugal adaptive heuristics (Atran and Norenzayan 2004; Gerd Gigerenzer, in Richerson and Boyd 2005, 119–20). My own guess is that religious beliefs are indeed, some of the time, such erroneous garden paths, but the conjectures here about entitativity in our universe of abundance imply validity in a wide variety of cultural creations, perhaps including God (Glassman 2004). Recall also that any *invention* that proves robust must also comprise a discovery of a potential that, in some sense, existed all along.

Of all possible worlds, we may or may not be moving closer to a better one. We attempt to do so while repeatedly trying to transcend past uncertainties and to achieve larger perspectives. That requires tolerance along with skeptical alertness. In an affluent, evolving society we can afford to

display such tolerance. We still must make moral judgments and predictions about positive or negative outcomes. But tolerance of the “other” will sometimes develop in a way that surprises us positively, notwithstanding an earlier skeptical judgment.

NOTES

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1. After writing this I discovered in Karl Peters's new book (2008) his wonderful opening quotation from Nikos Kazantzakis about “the cry” that drives evolution; it seems to be in the same vein but is more evocative.

2. “Happy is the man whose quiver is full” is a quotation my undergraduate student Mario Baldessari sometimes heard from his teachers during his earlier religious education. It seemed to suggest a prolific family life but perhaps can be interpreted in other ways. Investment in children is also accompanied by duress often at higher than anticipated concentration. So it is also with our chasing of hopes in the other beckoning arenas of an affluent culture. Each of us finds his or her place in this trade-off.

3. This example is not wholly imagined. During the mid-1980s I was a Boy Scout leader of a troop whose home was St. Mary's Church in Lake Forest. Among the good camping experiences I enjoyed with the group that included my sons was the annual “Kumbaya” event organized by the Chicago Archdiocese and hosted at a Benedictine Abbey in Wisconsin. I was honored one year to serve as Scoutmaster. During the first such Kumbaya campout, I joined the many Roman Catholic scouts in the troop and a few other fathers for what was my own first experience at a Sunday mass. Trying to be a virtuous participant observer, I barely stopped short of lining up with the others to take communion. Jesus might not have minded, but my Jewish grandparents up in heaven might have joined my young Catholic charges in amusement. (Coincidentally, the historical detective novel I brought with me to read during the evenings that campout weekend was Umberto Eco's wonderfully intellectual wry riff on medieval Catholicism, *The Name of the Rose* [1983].)

4. David Plotz (2005) describes critically, with poignant amusement and empathy, the history of “The Repository for Germinal Choice.” Although less frightening than eugenical propositions that involve euthanasia or sterilization, this attempt to produce exceptional human beings via a Nobel Prize sperm bank emanates from the same Faustian presumptions.

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