

12

OUR GREAT CREATIVE CHALLENGE: RETHINKING HUMAN NATURE— AND RECREATING SOCIETY

RIANE EISLER

It is better to light a candle than curse the darkness.

—Eleanor Roosevelt

Our most urgent creative challenge is building a sustainable future. Not a utopia, not a perfect world. But a world where peace is more than just an interval between wars, where dire poverty, brutal oppression, insensitivity, cruelty, and despair are no longer “just the way things are.”

For millennia, we humans have imagined a world of peace, beauty, and love. Sometimes we have imagined this world in an afterlife. But more and more in the last centuries we have imagined it here on Earth. Now, with terrorism, weapons proliferation, escalating wars and poverty, and human rights abuses, there is a new urgency to realizing our common wish for a sane, humane world.

All over the world, millions of people and thousands of grassroots organizations are using their creativity to help build cultures that are more equitable, sustainable, and peaceful. At the same time, the majority of people still doubt we are capable of leaving behind habits of cruelty, oppression, and violence.

Stories of an innately flawed humanity doomed by its “original sin” or by “evolutionary imperatives” persist. These narratives are obstacles to

creating a better world, as we humans do not work for change that we think is impossible, change that goes against “human nature.”

Clearly cruelty and insensitivity are human possibilities. But, as we see all around us, by the grace of evolution we also have enormous capacities for caring and consciousness. These capacities are integral to human nature—as is our enormous capacity for innovative, creative thought and action. Our enormous capacities for caring, consciousness, and creativity are our most distinctive human traits. And our most important creations are our cultures.

It is our cultural rather than natural environments that today most decisively affect what aspects of our large biological repertoire—our capacities for destructiveness, cruelty, and violence or for creativity, caring, and peace—will be inhibited or expressed. The cultures we create will largely determine whether we continue to kill one another and destroy nature’s life-support systems, or build a humane and sustainable world.

Cultures that encourage “everyday creativity,” which is to say, creativity in all people and in all areas (Richards, 1999) are essential at this critical time. We can choose to be passive. Or we can use our creativity to create cultures that are in synch with today’s requirements for human survival and with the direction of evolution toward ever greater consciousness, caring, and creativity.

I realize that saying there is direction in evolution raises hackles. One objection is that direction implies a divine plan or intelligent design. Yet that is not the case: We do not have any way of knowing what lies behind evolution—and this is so whether we think evolution is directionless or not. Another objection is that to say there is direction implies that our species, as one of the latest to emerge, is the apex of evolution, and thus entitled to lord it over every other life form. This notion goes back to religious stories claiming that since “man” was created in God’s image he is to have “dominion” over all other creatures (Genesis 1:16). I would instead argue that having unprecedented biological capacities means that it is our evolutionary responsibility to use these gifts in positive rather than negative ways—and that this is particularly urgent now that we possess technologies that impact all life on our planet.

Still, speaking of a direction in evolution is today considered a kind of scientific heresy. At best, it is acceptable to say there is evolutionary movement toward greater complexity and variability (e.g., Csikszentmihalyi, 1993). This is true. But, as Darwin himself noted, the movements in evolution go beyond complexity and variability to the emergence of needs, capacities, motivations, and possibilities of a different order than those present in earlier life forms (Loye, 2000, 2004).

If we look at biological evolution from this perspective, we see movement toward learning, consciousness, creativity, planning, and choice. We

see an evolutionary movement toward the caring feelings, motivations, and behaviors we call love. And we see that, while they are not unique to us, these capacities are most highly developed in our species.

This chapter reexamines human nature and human culture from this larger perspective. The first part, *Rethinking Human Nature*, proposes a new perspective on evolution that takes into account the evolution of creativity, consciousness, and love. The second part, *Recreating Society*, then looks at a number of critical questions for our future: What kinds of cultures support or inhibit the expression of our human capacities for caring, consciousness, and creativity? Alternately, what kinds of cultures support our capacities for cruelty, insensitivity, and destructiveness? And what can help us create the conditions for our positive capacities to develop and flourish?

RETHINKING HUMAN NATURE

In 1953, a teenage monkey called Imo attracted worldwide attention. Japanese scientists had been provisioning Imo's troupe of macaque monkeys with yams to lure them out of the dense forest where they lived. The troupe would come to the beach where the yams were placed, brush off the sand, and eat them. Until one day when something unexpected happened. On that day Imo dipped the yams in water and washed the sand off before eating.

Later, when scientists put out wheat grains on the beach, Imo was again creative. She discovered that wheat grains floated and sand grains sank. So she began to separate wheat grains from sand by dropping them in the water (Calvin, 1983; Kawai, 1965).

All this was amazing enough in itself. But perhaps even more amazing was that within a few years almost every monkey in Imo's troupe had chosen to adopt the new behaviors she initiated.

What happened with Imo and her troupe illustrates the movement in evolution toward creative innovations. It also illustrates how in the course of evolution behavior was increasingly transmitted through learning and conscious choice (e.g., Clark, 2002; de Waal, 2001).

This evolutionary movement toward creativity and conscious choice was not isolated. If we look more closely at the history of life on our planet, we see that there has also been evolutionary movement toward ever more extensive caring.

In contrast to most reptiles, birds and mammals care for their young. Some "higher" reptiles do care for their young, crocodiles for example. But most reptiles lay their eggs and leave them to hatch on their own. There are reptiles, such as the rainbow lizard, who eat their offspring instead of

caring for them. If baby rainbow lizards do not run off and hide after they hatch, they risk becoming their parents' lunch.

It is only with the emergence of birds and then mammals—from mice, cats, and chipmunks to dogs, dolphins, and elephants—that we begin to see caring as a major evolutionary force. Both mothers and fathers care for their young in most bird species. Among mammals, the primary caregivers are mothers, although in some mammals, owl monkeys, marmosets, and tamarin monkeys, for example, caring goes beyond maternal to paternal caring (Eisler, 2000, 2007).

Among some species, this caring extends to other members of the group. Among elephants, for example, adults form a protective circle around the young when danger threatens. Empathy and caring by animals can even extend to other species, as illustrated by dolphins and dogs who save human lives (in the case of dogs, sometimes at the cost of their own).

Some mammals, such as elephants and primates, not only need prolonged physical care to survive, but they also seem to need love. Little chimpanzees have been observed to die of grief when their mothers are killed. And when human babies are denied love—like the children in Romanian and Chinese orphanages who just got rote physical attention—they too often die. And if they live, studies show that their brains do not fully develop, with lifelong adverse consequences (Perry, Pollard, Blakly, Baker, & Vigilante, 1995).

So the evolution from reptiles to mammals—and then to humans—brought with it a growing need, and capacity, for caring, as well as for learning, creativity, and conscious choice. This evolutionary movement was not linear. Nor did it mean that older evolutionary dynamics no longer were in play.

Like all other species, humans are still subject to the older laws of nature, including the laws of natural selection. But as Darwin and other major evolutionary theorists (e.g., Dobzhansky, 1968) recognized, human emergence—particularly the emergence of our powerful human brain—brought a new level of processes transcending earlier ones to bear.

A Systems View of Evolution—and Human Nature

Our brain is not the only factor that distinguishes humans from other species. But it is an essential factor. (See also chaps. 8 & 11, this volume, on brain development.) The new structures of the human brain, in interaction with earlier ones, facilitate our empathic caring capabilities, allowing us to overrule more primitive short-sighted purely selfish ones. As Paul MacLean, Karl Pribram, and other brain scientists have shown (e.g., Miller, Galanter, & Pribram, 1986), the capacity for empathy and moral judgment is severely impaired when these new structures are injured.

With the emergence of our prefrontal cortex also came a vastly expanded capability for learning and problem solving. Many species are capable of these abilities, and use learning to modify their behavior. Anyone who has a dog knows this, and laboratory experiments on species ranging from pigeons and rats to cats and monkeys verify the capacity of many life forms for learning. There are other highly intelligent species, such as parrots, elephants, and apes. In some species we clearly see the cultural transmission of learned behavior, as illustrated by what happened after Imo washed her first yam. But with humans, learning, rather than genetic changes became the primary mechanism for both acquiring behaviors and changing them.

Humans learn all through life—both through experience (particularly when we are young) and instruction (from parents and other adults, schools, religious teaching, peer groups, and the mass media). Most important is that what we learn is typically not genetically determined. If what we learn were genetically determined, we would not see such variability of behaviors, beliefs, and customs in different cultures.

Another major evolutionary advancement was a growing capacity for consciousness, or awareness of what is happening within and around us. Damasio (1999) distinguishes between core consciousness (a rudimentary awareness) and extended consciousness (which includes consciousness of oneself in relation to others). Some degree of extended consciousness is found in other primates and a few other mammals. But it is most developed in humans, who are able not only to reflect on themselves but also on their environment, beliefs, and actions. This new level of consciousness is a necessary precursor for language, art, and other forms of symbolic expression and communication. It also makes possible our sense of past, present, and future, and thus our capacity to make long-range plans (Deacon, 1998; O'Manique, 2002).

Extended consciousness is a major factor in another key human capacity: the ability to make conscious choices. On some level, most living species make choices. But in many species these choices are primarily biologically preprogrammed and unconscious. Certainly humans make unconscious choices. But humans, more than any other species we know of, are capable of conscious choice—reflecting on various options and deciding what course to take. And in humans, choices are largely a function of learning.

Our capacities for innovation, planning, and creativity are other developments brought by the human brain. In combination with our erect posture, which freed our hands to craft ever more complex technological inventions, these abilities led to an enormous range of human-made material technologies as well as cultures.

And we do not just innovate and create in response to new environmental stimuli. We actively search and initiate change—and we do this almost from the moment we are born, as anyone who has watched a toddler actively

explore and try to change its environment can attest. Loye (2000) notes scientific evidence that the human brain is active/initiating rather than just passive/responsive. We are able to plan ahead and to act on these plans. This is a crucial point. We are not just reactive, we are proactive. The capacity to imagine the future, plan for it, and work to create it, are key human characteristics.

Karl Pribram (Miller, Galanter, & Pribram, 1986) experimentally confirmed this “future sense orientation” in monkeys. When monkeys were asked to press different bars when they saw circles or stripes, Pribram found that the monkeys’ brain waves registered intention and not just action. But, again, this future sense is most developed in humans.

Our more developed and complex human cortex connects to earlier brain and neural structures to guide behavior through what Pribram calls “feed forward” loops, moving from plans to actions, which affect both cognition and emotion (Miller, Galanter, & Pribram, 1986). When this feed forward connection is severed in lobotomized individuals, they manifest impaired capacity for self-regulation and long-range planning. They also exhibit loss of empathy and the capacity to care.

However, empathy, caring, consciousness, self-regulation, learning, and long-range planning are also often compromised in individuals who have not had brain injuries. As psychologists have long shown, abusive childhoods and even abuse in young adulthood may be equal to brain injury for its impact on a person’s capacity for learning and for having healthy relationships later in life (e.g., Solomon & Siegel, 2003). In other words, empathy, caring, self-regulation, learning, and future planning are, up to a certain age in humans, dramatically affected by lack of love.

This takes us to the importance of caring and love on the human level—not only for survival but also for development—particularly for the full development of our capacities for caring, conscious choice, and creativity.

The Evolution of Love and the Evolution of Human Nature

Love is still generally considered something “soft” or “feminine.” Hence, until recently, love has not been a subject of “hard” science.

Even today, caring in mainstream evolutionary theory is at best mentioned as a strategy that evolved to help pass on an individual’s or related genes. But to fully understand the evolution of love, and its implications for the evolution of our species (and hence, for human nature), we need a new systems view of evolution.

As we have seen, love did not appear on the evolutionary stage full-blown. Indeed, the striving for oneness, for connection with another that we associate with love has ancient evolutionary roots. The impulse of complex molecules to come together led to the first self-maintaining and self-

reproducing cells. Through symbiosis—an original form of partnership now being investigated by many biologists—these functionally simple cells joined to form the more complex bacteria that are the origins of all life. The observation of these behaviors in primordial life is the basis of biologist Margulis's (1981) theory of symbiogenesis and physicist Mae-Wan Ho's (1998) theory that the organism participates in evolution through a network driven more by linking than brutal struggle.

Of course, none of this was due to conscious emotions, much less love. But later in the history of life, this impulse for connection does assume a caring form. We already see some caring behaviors in worker ants, bees, and other social insects who bring food back to their group. But, as we have seen, it is not until the emergence of mammals and birds that we clearly begin to see the behaviors we associate with love.

Like all trends in evolution, the evolutionary movement in the direction of more caring and empathy was not a linear or straight-line movement. But it is a clearly observable progression. And with the appearance of humans, caring took an even greater leap, as without its further evolution, none of us would be here: *Our species would not have emerged.*

Consider how this may have happened. The development of the capacities that make us uniquely human required a much larger, more complex brain as well as a higher ratio of brain-size-to-body-size, both of which relate to intelligence. The average brain-mass-to-body-size ratio of mammals is ten to one hundred times larger than that of reptiles (Sagan, 1977). But the mammalian species with by far the largest brain-mass-to-body-size ratio is our species; it is dramatically larger than that of our closest primate relatives: the bonobos and chimpanzees. While the average chimpanzee brain weight is approximately 450 grams, the average human brain weight for the same body weight is approximately 1300 grams (Quartz & Sejnowski, 1997). This larger brain required a larger head. But the larger head cannot fit through the human birth canal. So the human brain continues to develop after birth—particularly during the first years, but also for many years after. During this time, unable to fend for themselves, human babies and children require extended caring to survive. This in turn requires that adults be motivated for caring through neurochemical rewards of pleasure (Quartz & Sejnowski, 1997).

Not only that but also rote physical care is not sufficient for children to fully develop their capacities. Indeed, children denied “positive bonds of affective attachment” may not even survive (Bradley, 2004, p. 105). So caring had to evolve further into the emotions and behaviors we call love.

In short, the emergence of our species would not have been possible without the emergence of caring and then love. This does not mean that the emergence of caring and love was the cause of the appearance of humanity on the evolutionary stage. But it was one of the prerequisites for our emergence

in a synergistic evolutionary movement toward a new level of dynamics. The evolution of caring, culminating in love, was a prerequisite for our species' unique capacity for intelligence, symbolic thinking, learning, communication, consciousness, caring, planning, choice, and creativity.

At a 2001 meeting of the General Evolution Research Group (GERG), there was therefore a significant push for attention to the evolution of love, along with recognition of its past minimization. It was pointed out that in *The Descent of Man*, Darwin himself wrote of love 95 times, yet this has been generally ignored (see chap. 7, this volume).

But there is more. Once love came on the evolutionary stage, it developed its own dynamics, bringing new needs and motivations that surpassed earlier ones.

Love as a New Evolutionary Dynamic

The origins of our caring-rewarding neurochemistry can, of course, be explained in terms of gene transmission. Among others, neuroscientist Lucy Brown, anthropologist Helen Fisher, and psychologist Arthur Aron believe that the neural circuitry for adult male/female attachment evolved to motivate individuals to sustain affiliative connections long enough to complete species-specific parental duties (Fisher, 1994).

But romantic love and love for offspring are only two aspects of love. Once the capacity for loving appeared on the evolutionary scene, love became a motivation in many different kinds of relationships other than those connected with reproduction. As Brown put it, love seems to be a motivational drive in itself, not unlike the drive for food, sleep, and sex (L. Brown, personal communication, March 4, 2003).

Certainly our capacity to love and empathize is most often expressed with our own children and other family and community members. These are the people with whom we have bonded through ties of blood or friendship. But some people are extremely unloving to their own children—contradicting the claim that caring behaviors can be predicted by the degree to which we are genetically related (Dawkins, 1976). On the other hand, people who adopt children, including children of another race or country, often love and care for them well. And thousands of service organizations all over the globe are working to extend this empathic caring to humanity in general—even to people traditionally considered enemies.

These caring emotions and behaviors have no reproductive connection whatsoever. They can only be explained as a function of new motivational dynamics that arose in the course of evolution in addition to natural selection and sexual selection.

The striving for self-preservation and reproduction certainly plays an important part in human needs and motivations. But it cannot explain

much that makes us uniquely human. It does not explain that we can care for total strangers—people utterly unknown and foreign to us, such as children hurt or orphaned by faraway wars. It cannot explain love for other species, as well as the idea at the core of the contemporary ecological movement—that all life is interconnected. Nor can it account for why our human yearning for a loving connection sometimes manifests itself in faith in a loving deity and in the belief that God is love (Eisler, 1995, 2007). This spiritual extension of love also transcends reductionist explanations of all human behaviors as ultimately motivated by a competitive struggle between genes.

All these are extensions of the evolutionary movement toward caring connection—and they are integral to human nature. Indeed, one could posit that they are even more so than our capacities for violence and insensitivity, as they are uniquely human. (See chap. 7, this volume, on love and Darwin's theory of evolution.)

As neuroscientists Quartz and Sejnowski (1997) note, recent brain studies support the conclusion that parent–child bonds, the pair bonds of romantic love, and the social bonds of friendship and caring may all have a common root, activating neurochemicals that make us feel good, some even perhaps resembling reward circuits for addictive behaviors (Keverne, Martensz, & Tuite, 1989; Young, Lim, Gingrich, & Insel, 2001). Love triggers neurochemical messages of well-being and pleasure—making us feel good both when we are loved and when we love others—be it a child, a lover, a parent, a friend, or a pet.

But loving bonds do more than that. As psychology, and more recently neuroscience, demonstrate, they are necessary for the full development of those capacities that are at the core of our humanity. In other words, love in our species is a new dynamic that must be taken into account not only for an understanding of human evolution but also for an understanding of how we can fully develop our unique human potentials.

Love and Human Development

Reductionist evolutionary theories ignore that loving bonds are necessary for the full development of those capacities that are at the core of our humanity. Children who grow up in a loving and stimulating environment are able to develop their cognitive and emotional capacities much better than those who do not (e.g., Solomon & Siegel, 2003).

Even rats develop better if they are given loving care. A research team from McGill University reported that pups of attentive mothers who spent more time licking and nursing their young performed much better on tests for spatial learning and memory than pups whose mothers were less attentive. The favorable mental effects were obvious at a young age and endured

through life. The study also found that affectionate care enhanced the rats' neural activity (Liu et al., 1997).

In a rat daycare component, the McGill study showed that the ill effects of lack of affection could be overcome by outside help. Pups born to low-care mothers and raised by high-care mothers were indistinguishable mentally from pups born to high-care mothers. They fared better in mazes, swam better, and had more synapses or neural connections in their brains than their less-loved classmates.

The difference in the physical and behavioral development of these animals was not a genetic one. It was due to experience—specifically, to the experience of affectionate caring or lack of caring (Liu et al., 1997). Researchers observed that even in nonhuman mammals loving care sets off a chain of biochemical and physical reactions that stimulate brain and memory development.

Liu et al. (1997) pointed out that these findings have important implications for children's development. They reinforce findings that children from emotionally and intellectually deprived homes benefit greatly from high-quality infant care programs. Lots of loving stimulates brain development, as does high-quality daycare. Beyond this, children who forge ahead, thrive, and become creative contributors often show enriched early environments or experiences, along with support and freedom to explore (Runco & Richards, 1997).

These kinds of findings also have important implications for evolutionary theory. They show that evolutionary theory must take into account the biologically rooted human need for caring, particularly during the early years, in any explanation of human development and human behavior, and what happens when it is both adequate and inadequate. Where limited emotional functioning becomes habitual, it influences the neurochemical development of the brain, and with this, as I will discuss later in *Recreating Society*, the kinds of traits and behaviors that become habitual.

The consequences of severe childhood abuse and effects on development have been well documented (Solomon & Siegel, 2003). In one tragic example during the 1980s, the Romanian dictator Nicolai Ceausescu prohibited family planning. He even required women to undergo monthly gynecological examinations to prove they were not avoiding pregnancy. As a result, thousands of children were abandoned by parents who could not, or would not, raise them. Many of these children ended up in orphanages staffed by overworked, underpaid attendants who had little time or inclination to give them emotional comfort and caring. Frequently these children died. And many of the survivors suffered lifelong developmental damage. This included survivors who were later adopted by compassionate families. Measures of frontal-occipital circumference (a measure of head size that in

young children is a reasonable measure of brain size) were abnormally low in many of these orphans.

Other factors contributed to this tragedy, such as lack of proper nutrition and lack of stimulation of any kind; it was not just the absence of love. But, as neuroscientist Perry (2002) writes, “when early life neglect is characterized by decreased sensory input (e.g., relative poverty of words, touch and social interactions) there will be a similar effect on human brain growth as in other mammalian species” (pp. 92–93).

It takes years of skilled intervention and care to try to reverse some of this damage, plus massive investment of public resources (which are not often allocated to these ends), and intervention is not successful in every case. Ziegler (2002), a pioneering psychologist who developed such a residential care program, emphasized that the key to these efforts is love. So here again we see that the emergence of caring and then love was not only a prerequisite for the emergence of a human brain that supports our great capacity for learning, planning, consciousness, and creativity. Caring and love play a major role in the extent to which these human characteristics are developed and expressed or are stunted and distorted. Therefore, to support our fullest human development, we must create cultures that support our great human capacity for caring and love.

Biology and Culture

The common argument about whether biology or culture shapes human behavior ignores what we know today. This is that human behavior—indeed, the development of the brain itself—is shaped by the interaction of biology and culture.

Which genetic potentials are or are not expressed is heavily influenced by our experiences. And our experiences, as detailed later in *Recreating Society*, are in turn heavily influenced by the kinds of cultures we grow up in.

I again want to note that the theory I am proposing is different from theories that attribute human traits, even cultures, to evolutionary imperatives programmed into our brains millennia ago. It is also different from the popular theory that all human behavior is motivated by “selfish genes” ruthlessly seeking to replicate themselves, or related genes (Dawkins, 1976).

As I have been developing, human motivations go beyond those of surviving and passing on genes. Clearly when Albert Schweitzer and Mother Teresa devoted their lives to caring for people on the other side of the world, or when Nelson Mandela reached out to the Whites who jailed him and oppressed his fellow Black Africans, their motivation went beyond

helping people who share their genes. Behind their actions was our unique human capacity for loving, which, as we have seen, is reinforced by rewards of pleasure from neurochemicals in our brains.

Like love, creativity is also intrinsically motivated and self-reinforcing, with people in the throes of creativity—of writing, painting, or just thinking in innovative ways—often report feeling excitement, and well-being that spurs them on (Csikszentmihalyi, 1990; Deci & Ryan, 1975). Like love, it is tied to self-actualization, and is an important motivation in its own right.

Many human motivations—such as love, curiosity and explorativeness, search for meaning, striving for excellence and the realization of one’s creative potentials—may or may not be helpful for surviving and passing on genes. The daring of explorers driven by curiosity has often led to their untimely demise. The motivation to excel can be so stressful that it adversely affects health and even survival; high achievers often have high blood pressure, heart attacks, and strokes.

In other words, and this is not a contradiction of the theory of natural selection, some human behavior is based on other motivations in addition to survival and reproduction. That human motivations extend way beyond survival and reproductive fitness has been demonstrated by psychologists (Deci & Ryan, 1975; Maslow, 1971). For example, Abraham Maslow’s (1968, 1971) needs hierarchy begins with physiological needs, next followed by needs for safety and security. When these are met, social needs come next, including love and belongingness, followed by needs for esteem and recognition of contributions. All these are considered basic “deficiency needs.” But once met, one can move on to “being” or growth needs, and most notably, self-actualization.

Maslow’s model is largely consistent with my position, although I see the human need for love as even more basic, intertwined not only with survival but also with human development. But Maslow (1968, 1971) also saw love as a prerequisite to the truest emergence of creativity, which he showed is high in self-actualizing individuals. And like other psychologists, he recognized that whether we develop our capacities for caring, creativity, and altruism (which he also frequently found in “self-actualizers”) largely depends on our life experiences.

In the next part of this chapter, we will see how these experiences are heavily shaped by the kinds of cultures or subcultures we grow up in. For now, I want to point out how conventional evolutionary theories themselves reflect a particular cultural perspective. They reflect, and reinforce, the cultural ranking of “hard” stereotypically masculine traits and behaviors such as conquest and domination, over “soft” stereotypically feminine ones such as love and empathy. And their battles between evolutionary opponents are basically a replay of old stories where “heroic” warriors slay their enemies before they can mate with the waiting princess.

In reality, of course, both men and women have the capacity for “soft” caring behaviors. For example, there is abundant evidence (Montuori, Combs, & Richards, 2004) that highly creative people tend to be relatively “androgynous.” That is, they combine what are more stereotypically seen as female or male traits. They can be both assertive (male stereotype) and sensitive (female stereotype), whatever is needed.

Indeed, what is considered appropriate for men and women varies from culture to culture. In Africa, for instance, women are expected to carry heavy loads of fuel and water for miles, in sharp contrast with the Victorian ideal of weak, helpless “femininity.” Similarly, the ideal for “masculinity” ranges all the way from the Hopi view that men should be peaceful and nonaggressive to the “macho” ideal that equates being a “real man” with violence and domination.

The norm for childcare also varies enormously from culture to culture. It ranges from habitual violence and strict controls, such as the swaddling that immobilizes infants and the beatings epitomized by adages such as “spare the rod and spoil the child,” to the nonviolent, gentle, and responsive methods recommended by child development studies today. To understand human behavior, we have to look at what kinds of cultures people grow up in. We have to understand the interaction of biology and culture.

So, to answer the crucial question of whether our needs for love, meaning, and realization of our potentials are met, and whether our capacity for creating and loving is expressed or inhibited, we come to still another level of dynamics. We move from biological to cultural evolution.

RECREATING SOCIETY

Just as we need a new conceptual framework for understanding biological evolution, we need a new conceptual framework to better understand the interaction between biology and culture.

Cultures consist of a society’s inclusive beliefs, values, customs, and institutional infrastructure, from the family, education, and religion, to politics, economics, science, and technology. But conventional cultural categories such as Eastern/Western, religious/secular, rightist/leftist, technologically developed/undeveloped, and capitalist/communist do not fully describe cultures.

As a start, we need new categories that describe what kinds of human capacities, and what kinds of relations, a particular kind of culture supports. This is a critical question, particularly in our time when the direction of human culture is the most important factor in shaping our future and that of generations to come.

A New Conceptual Framework for Society

As Robert Ornstein (1990) writes in *The Psychology of Consciousness*, every society's language provides categories that mold consciousness, and these categories play a major role in how we view the world—and how we live in it. For example, as long as people believed that monarchies were the only possibility, no other systems could be imagined.

Categories such as democracy, capitalism, socialism, and communism expanded the scope of our thinking. But none of these or other conventional social categories describe the totality of a culture.

Religious/secular and Eastern/Western only describe ideological and geographic differences. Right/left and liberal/conservative only describe political orientations. Industrial, preindustrial, and postindustrial describe levels of technological development. Capitalism and communism describe different economic systems. Democratic/authoritarian describes political systems in which there are, or are not, elections.

We need holistic categories that describe what configuration of beliefs and institutions—from the family, education, and religion, to politics and economics—support the expression of our capacities for caring, creativity, and consciousness, as well as relations based on mutual respect, accountability, and caring.

As I studied human societies cross-culturally and historically with this basic question in mind, I developed a new system of social classification. One distinguishing feature of this system is that it pays special attention to the primary human relations: the formative childhood relations and the relations between the male and female halves of humanity that, as we saw earlier in *Rethinking Human Nature*, are essential for human survival and development.

Using a multidisciplinary approach, I saw two basic social configurations. Since there were no names to describe them, I called them the *partnership model* and the *domination model*.

The partnership and domination models take into account the whole of a culture. They describe the core configuration of two contrasting ways of structuring institutions, beliefs, and relations that underlie cultures that are in other respects very different.

The Partnership Model and the Domination Model

Hitler's Germany (a technologically advanced, Western, rightist society), Stalin's USSR (a secular leftist society), Khomeini's Iran (an Eastern religious society), and Idi Amin's Uganda (a tribalist society) were some of the most brutally violent and repressive societies of the 20th century. There are obvious differences between them. But they all share the core configura-

tion of the domination model. They are all characterized by top-down rankings in the family and state or tribe maintained through physical, psychological, and economic control; the rigid ranking of the male half of humanity over the female half; and a high degree of culturally accepted abuse and violence—from child- and wife-beating to chronic warfare.

The partnership model has a different core configuration: a democratic and egalitarian structure in both the family and the state or tribe; equal partnership between women and men; and a low degree of built-in violence because it is not needed to maintain rigid rankings of domination. Cultures with this configuration can be tribal, such as the Teduray of the Philippines and the Mouso of China, agrarian, such as the Minagkabau of Sumatra, or industrial and postindustrial, like Sweden, Norway, and Finland. These are not ideal societies. But their beliefs and institutions support respect for human rights in families and the family of nations.

Nordic nations are democratic cultures where there are not huge gaps between haves and have-nots and a generally high living standard for all. They encourage gender equity in families and society. They pioneered the first peace studies programs, have laws prohibiting physical punishment of children, and have a strong men's movement disentangling "masculinity" from domination and violence.

Here women play important leadership roles and constitute approximately 40 percent of legislatures. As the status of women is higher, stereotypically feminine traits and activities such as nurturance, nonviolence, and caregiving are considered appropriate for men as well as women. These traits and activities are supported by fiscal policies such as funding for universal health care, elder care, child care allowances, and paid parental leave. The Nordic nations are leaders in environmental protection. And these nations are regularly at the top of the United Nations national quality of life charts—way ahead of nations that still orient closely to the domination model.

The tension between the domination and the partnership models reveals hidden patterns in our past and present. This tension goes way back into prehistory, shaping the course of cultural evolution and the possibilities for our future.

Based on data indicating that human cultural organization did not follow a single linear course, as assumed by many conventional accounts, the cultural transformation theory I introduced in *The Chalice and The Blade* (Eisler, 1987) proposes that from the beginning, cultures took a variety of paths—some orienting primarily to the domination model and others orienting more to the partnership model. This multilinear theory of cultural evolution (Eisler, 2004) is more congruent with a basic tenet of Darwinian and neo-Darwinian thinking: Behavior will adapt to a given environment within the limits of the organism's flexibility.

For most species, adaptation is largely unconscious, and unconscious motivations also shape human behaviors, and hence human cultures. But to the extent that our behaviors are conscious and intentional, adaptation can be influenced by our human creativity. Moreover, we humans are not just reactive. We can also be proactive. So for us, adaptation to different environments is not the whole story. We also have the capacity for conscious choice.

Certainly environmental factors seem to be implicated in the different cultures of our two closest primate relatives: the bonobos and the common chimpanzee. Until recent human incursions, the bonobos' forest habitat provided an abundant food supply. This more hospitable environment undoubtedly contributed to the fact that the bonobos' social organization is much more partnership-oriented than that of the chimpanzees: It is less rigidly hierarchical; it is not male-dominated; and it has a low degree of violence.

Likewise, archeological and mythical data suggest that partnership-oriented cultures developed in the more hospitable areas of the globe where the earliest agrarian cultures emerged. These data also suggest that dominator-oriented cultures developed in the more arid, inhospitable areas where nomadic herding cultures emerged (Eisler, 1987, 1995; Gimbutas, 1982; Mellaart, 1967; Min, 1995; Platon, 1966).

That domination or partnership cultures are likely to arise in different environments is further supported by cross-cultural data. To investigate the origins of male dominance, Sanday (1981) examined data from 156 societies distributed relatively equally among the six major world regions, spanning the period between 1750 BCE and the late 1960s. She found that societies in more fertile areas were more likely to be sexually egalitarian, whereas societies in less hospitable environments were more likely to be male-dominated. She also found that "sexually equal societies are less likely to be faced with periods of famine than sexually unequal societies" and that warfare was another source of stress found in male-dominant societies. That is, dominator-oriented cultures are more likely to be found in environments where the necessities of life are hard to come by, whereas more partnership-oriented cultures are more likely to be seen where life is not so harsh.

However, none of this is to say that the natural environment is the sole determining factor for the kind of culture we live in. As particular family structures, religions, education, art, law, economics, politics, and other institutional forms develop, they together become contributing elements of the human environment. As this occurs, a whole new set of dynamics comes into play.

Once cultural patterns become established, they acquire a life of their own. Cultures, like other living systems, seek to retain their basic patterns. In looking at cultural evolution, we therefore have to take into account

principles of systems self-organization that maintain particular cultural patterns (Eisler, 2004).

Nonetheless, even the most entrenched systemic patterns can be altered during periods of disequilibrium. We therefore also have to take into account principles of discontinuity when systems disequilibrium makes possible foundational change (Gould, 1980; Prigogine & Stengers, 1984).

In *The Chalice and The Blade* (Eisler, 1987) and other publications (Eisler, 1995, 2000, 2004), I detail evidence indicating that during a chaotic time in prehistory a shift from a partnership to a dominator direction in the more fertile areas of the globe radically altered the course of civilization (e.g., Childe, 1958; Gimbutas, 1982; Min, 1995; Nash, 1978; Platon, 1966).

I also detail evidence showing over recorded history a periodic movement toward the partnership model countered by fierce resistance and periodic regressions. And I present evidence that in our time of mounting systems disequilibrium, the momentum toward partnership has been accelerating—offering the possibility of another fundamental cultural shift: this time from domination to partnership.

If we look at the past 300 years from this perspective, we see one organized social movement after another that challenges the entrenched traditions of domination. In the 18th century, the “rights of man” movement challenged the “divinely ordained right” of kings to rule over their “subjects.” In the 19th century, the feminist movement challenged the “divinely ordained right” of men to rule over the women and children in the “castles” of their homes. In the 20th century, the civil rights, women’s rights, indigenous rights, peace, and environmental movements continued and broadened the challenge to entrenched traditions of domination.

All these movements were driven by deep human needs and motivations for caring and equity. Yet they were (and are) also fiercely resisted. And their gains have periodically been pushed back by regressions to the domination model.

To better understand this resistance and regression, I moved my research into new areas. As I discuss next, this includes a new analysis of how the interaction of culture and biology affects the human brain.

Changing Society and the Brain

I am now proposing that to prevent regressions and accelerate the shift to more equitable, peaceful, and sustainable world cultures, we have to look at how the experiences characteristic of dominator or partnership cultural environments interact with our brains. Specifically, I am proposing that to better understand and effectively change chronic violence, injustice, and oppression, we have to move beyond the idea that these are inevitable results of our evolutionary heritage and look at how the differences between

the partnership model and the domination model not only influence beliefs and behaviors but also impact nothing less than the neurochemistry of our brains.

The human brain is remarkably flexible in youth and even in adulthood—so much so that it has been called a work in process. This flexibility allows us to learn and innovate but also has its drawbacks. If we grow up in dominator cultural environments, we tend to develop a brain neurochemistry that is adaptive to these environments.

Indeed, in rigid dominator settings people do not usually survive long if they fail to obey orders from above. They will be burned at the stake, stoned to death, shot, or at best imprisoned. Under such conditions, harsh parenting styles can be said to be adaptive, as they teach children to submit to those in control. But this adaptation requires that the human capacity for empathy and caring be dampened in certain respects, even suppressed, because it would interfere with these stressful styles of parenting. This is not to say parents who do this do not love their children, but their love becomes conflated with coercion, as is appropriate in social systems where relations are ultimately backed up by fear and force.

Scientists have found that traumatic or chronic stress is associated with high levels of the hormone cortisol and the neurotransmitter norepinephrine. Scientists have also found that these chemicals are in turn associated with problems of impulse regulation and propensity to violence. Conversely, free circulation of the neurotransmitters dopamine and serotonin, the hormones oxytocin and vasopressin, and other substances involved in bonding and empathy, is associated with the less stressful, nonviolent, caring experiences. These would be more characteristic of the partnership model (Eisler & Levine, 2002). Though there may be individual variations to any pattern, the key point is that there are central tendencies produced by different socialization processes.

Babies are born with a need for empathic love, validation, and stimulation. Yet to maintain a dominator culture, children have to be taught to conform as needed to top-down control. Patterns of childrearing are carried over into peer groups where even children not exposed to dominator parenting are socialized for dominator relations. And if mass socialization—religious or secular—presents these kinds of relations as normal, moral, and even fun, as many films, TV, and video games do, these patterns are further reinforced.

Such socialization can get in the way of meeting our most basic emotional needs, including love and caring, and also in the way of the inherent flexibility of the human brain, and potential for innovation, and risk taking. Montuori, Combs, and Richards (2004) identified “openness to experience” (rather than suppression or repression) and five other “core creative traits” which make awareness, questioning, and innovation more likely in an indi-

vidual and, also, when possessed by groups of individuals, can further the ground-up evolution of healthy creative systems. These are independence of judgment, tolerance for ambiguity, from polarization to complex thinking, androgyny, and complexity of outlook. Each of these would be vastly more at home in a partnership than dominator cultural context. In fact, they could be a great threat to the stability of the latter.

Dominator and Partnership Cultural Environments

Because the socialization required to impose and maintain relations of domination and submission is chronically stressful, people may develop neural and biochemical patterns that trigger fight-or-flight and/or dissociation responses that are not appropriate for the circumstances (e.g., Kaufman et al., 2004; Solomon & Siegel, 2003). When these patterns develop, they can constrict our capacity for independent thought and action, and lead to more abuse and conflict.

Economic conditions characteristic of dominator systems also contribute to chronic stress. Those on bottom are the most affected, but even those on top are affected by the domination system's self-perpetuating patterns of economic scarcity due to misdistribution of resources, lack of funding for health and education, diversion of resources into weaponry, and destruction of resources through environmental despoilation, war, and other forms of violence, all of which is stressful and creates a general sense of insecurity and fear (Eisler, 2007).

Studies also show that hierarchies of domination in themselves are a source of stress. This was dramatically shown by the "Whitehall Studies" of Marmot and his colleagues (Marmot, Rose, Shipley, & Hamilton, 1978) of the British civil service. Results showed that physical health, mental health, and even life spans, correlated significantly with an individual's position in the civil service hierarchy: Those higher up in the hierarchy were healthier and lived longer than those further down. These people were not poor. Yet these relatively well-off civil servants suffered disproportionately from stress-related problems—problems that the Whitehall study found derived from the domination hierarchy itself. And, as the Whitehall studies show, sooner or later this stress can lead to heart attacks, diabetes, depression, alcoholism, respiratory illness, or cancer.

By contrast, people in partnership-oriented companies, where workers have more autonomy and power to make decisions, report less stress and more job satisfaction. A more caring ethos manifests itself in supportive employee benefits—from good health care plans and parental leave to profit sharing and time off to engage in community service. This contributes to good health and longevity, and more highly motivated workers (Eisler, 2002, 2007). The brain effects would support greater flexibility, creativity, ability

to work in teams, and other capacities that make for greater productivity and satisfaction. (Also see chap. 10, this volume, on new societal organization and interconnection.)

The socioeconomic gradient too is far less steep in partnership-oriented cultures. Even in the more partnership-oriented Nordic nations such as Sweden, Norway, and Finland there are statistical differences in health between higher and lower socioeconomic levels. But the average lifespan is 80 years. That these longer life spans are not due to genetics is shown by the fact that in the mid 19th century both adult and child death rates in these nations were very high. Nor are environmental conditions in these nations particularly conducive to health. The longer Nordic life spans are the more remarkable because of these nations' location in cold northern areas where winter days have long hours of darkness, known to lead to depression, health problems, and suicide. Yet despite this, the more caring policies of these nations generated a highly competent and educated workforce and social conditions that help people live longer. Not only that, the Nordic nations of Finland, Norway, Sweden, Denmark, and Iceland regularly rank at the top not only of the United Nations Quality of Life Indexes but also of the World Economic Forum's Global Competitiveness ratings (Trivers, 1975; World Economic Forum, 2005).

Of course, partnership-oriented cultures are not stress-free. And even in the strictest dominator cultural environments, some people maintain a countering independence and choose to relate in partnership ways. But to the extent that a significant part of the population is affected, negative patterns can be perpetuated from generation to generation.

On the basis of what we are learning from neuroscience, we can predict that many people living in dominator environments may develop habitual neurochemical patterns of fight-or-flight or dissociation to adapt to the constant stress inherent in rigid rankings backed up by fear and force. We can also predict that most people accustomed to accept human rights violations in their day-to-day relations are not likely to create institutions where human rights are respected. Nor are they likely to build the "culture of peace" envisioned by the United Nations, where children will be safe, loved, and supported in the full development of their human potentials.

Thus dominator environments tend to keep humanity stuck at a less advanced level of evolution, driven by deficiency rather than growth and actualization needs, interfering with the full development of qualities that make us fully human including, consciousness, creativity, empathy, and love.

Using Our Creativity to Change the World

Like a vast engine of many parts, personal and cultural change are interactive processes. As we make changes in our personal attitudes, behav-

iors, and relationships, we empower ourselves as well as others to work for cultural change. If we make more room in our lives, and the lives of others, and in our immediate environments, for core creative traits such as independence of judgment, openness, tolerance for ambiguity, androgyny and valuing of complexity, it will affect all around us. It will help to free people. If we are more conscious and aware, we can sense the potential for “bifurcation,” for when things can go one way or the other, personally and culturally, during periods of disequilibrium (Loye, 2004; Montuori, Combs, & Richards, 2004). And if we recognize the pivotal importance of empathy and caring in supporting our capacities for consciousness, creativity, and love, all this can build on itself.

Many people today are making great changes in the way they think and live, leaving behind traditions of domination and moving toward partnership (Eisler, 2004). But social policies have lagged way behind these changes in most world regions. Indeed, countering the powerful modern grassroots movement toward partnership, the last decades of the 20th century and the first decade of the 21st have been times of regression to the domination model.

And there are areas of blindness. While regressions to domination always include a return to an authoritarian, male-dominated, punitive family, sadly, many groups working for democracy and equality still view “women’s rights” and “children’s rights” as secondary, rather than as an integral part of the picture. Hence, we have lacked the solid foundations on which a better world can rest. The partnership and domination models provide important information for constructing more solid foundations. Unlike earlier social categories, this system of classification recognizes the central importance in molding attitudes and behaviors of the primary human relations.

It is in the formative childhood relations and the relations between the male and female halves of humanity that people first learn respect for human rights or acceptance of human rights violations as normal, inevitable, even moral. These relations also teach important lessons about violence. When children experience violence, or observe violence against their mothers, they learn it is acceptable to use force to impose one’s will on others. If children grow up in families where females serve and males are served—and, as is the case in many world regions, where females get less food and healthcare—they learn to accept economic injustice in all spheres of life. Not only that, but we know from neuroscience that the brain’s neural pathways are largely laid after birth—and that early experiences are key to whether neural patterns of flight-or-flight that perpetuate both intimate and international violence become habitual.

Many directions for potential change are detailed in Eisler (1995, 2004). One lever for fundamental change is stopping entrenched traditions

of intimate violence—the violence against women and children that is the most prevalent human rights violation in the world, with yearly casualties far higher than the much more publicized violence from accidents, wars, and terrorism. This is why I cofounded the Spiritual Alliance to Stop Intimate Violence (SAIV—Web site: <http://www.saiv.net>), an international initiative of the Center for Partnership Studies to bring a strong—tragically still missing—moral voice to end violence against women and children. This critical assistance to women and children also helps to free males from dominator stereotypes of strength, denial of feelings, and constriction within their own gendered domain.

Another critical lever is changing the economic rules of the game to give visibility and value to the most foundational human work: the work of caring and caregiving still stereotypically considered “women’s work.” We need economic inventions that truly value this work; from measures of productivity that, unlike GNP, include the enormous economic contribution of the life-supporting activities performed in families, to economic inventions such as paid parental leave and social pensions for caregivers which give real support to this socially and economically essential work. Only if caring is given more value and visibility can we realistically expect the more caring policies so urgently needed in our world today.

Other levers for change include education for partnership rather than dominator parenting, mass media that model caring and sensitivity rather than violence and insensitivity, and curricula for schools and universities that point to the key importance in the evolution of human nature of traits, motivations, and behaviors such as empathy and caring, stereotypically viewed as “soft” or feminine—whether they reside in women or men.

We humans are the most creative life forms on our planet—amazing beings who can change not only our environments but also ourselves. With a clearer understanding of who we are, what we can be, and what is needed for a more sustainable, equitable, and peaceful global culture, we can use our enormous creativity to construct foundations for truly civilized cultures. As cocreators of our future, we can build cultures in synch with the direction of evolution toward the consciousness, caring, and creativity that are the true hallmarks of being human.

REFERENCES

- Bradley, R. T. (2004). Love, power, brain, mind, and agency. In D. Loye (Ed.), *The great adventure: Toward a fully human theory of evolution* (pp. 99–150). Albany, NY: SUNY Press.
- Calvin, W. H. (1983). *The throwing Madonna: Essays on the brain*. New York: McGraw-Hill.

- Childe, V. G. (1958). *The dawn of European civilization*. New York: Knopf.
- Clark, M. E. (2002). *In search of human nature*. New York: Routledge.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: HarperCollins.
- Csikszentmihalyi, M. (1993). *The evolving self*. New York: HarperCollins.
- Damasio, A. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. New York: Harcourt.
- Dawkins, R. (1976). *The selfish gene*. New York: Oxford University Press.
- Deacon, T. W. (1998). *The symbolic species: The co-evolution of language and the brain*. New York: Norton.
- Deci, E., & Ryan, R. (1975). *Intrinsic motivation and self-determination in human behavior*. Cambridge, MA: Perseus.
- de Waal, F. (2001). *The ape and the sushi master*. New York: Basic Books.
- Dobzhansky, T. (1968). Evolution VI: Evolution and behavior. In D. L. Sills (Ed.), *International encyclopedia of the social sciences* (Vol. 5, pp. 234–238). New York: Macmillan & Free Press.
- Eisler, R. (1987). *The chalice and the blade*. New York: Harper & Row.
- Eisler, R. (1995). *Sacred pleasure*. San Francisco: Harper Collins.
- Eisler, R. (2000). *Tomorrow's children: A blueprint for partnership education in the 21st century*. Boulder, CO: Westview Press.
- Eisler, R. (2002). *The power of partnership: Seven relationships that will change your life*. Novato, CA: New World Library.
- Eisler, R. (2004). A multilinear theory of cultural evolution. In D. Loye (Ed.), *The great adventure: Toward a fully human theory of evolution* (pp. 67–98). Albany, NY: SUNY Press.
- Eisler, R. (2007). *The real wealth of nations: Creating a caring economics*. San Francisco: Berrett-Koehler.
- Eisler, R., & Levine, D. S. (2002). Nurture, nature, and caring: We are not prisoners of our genes. *Brain and Mind*, 3(1), 9–52.
- Fisher, H. E. (1994). *Anatomy of love: The natural history of monogamy, adultery, and divorce*. New York: Ballantine.
- Gimbutas, M. (1982). *The goddesses and gods of old Europe*. Berkeley: University of California Press.
- Gould, S. J. (1980). *The panda's thumb*. New York: Norton.
- Ho, M. W. (1998). Organism and psyche in a participatory universe. In D. Loye (Ed.), *The evolutionary outrider: The impact of the human agent on evolution: Essays in honour of Ervin Laszlo* (pp. 49–65). Westport, CT: Praeger Publishers.
- Kaufman, J., Yang, B.-Z., Douglas-Palumberi, H., Houshyar, S., Lipschitz, D., Krystal, J. H., et al. (2004). Social supports and serotonin transporter gene moderate depression in maltreated children. *Proceedings of the National Academy of Sciences*, 101, 17316–17321.

- Kawai, M. (1965). Newly-acquired pre-cultural behavior of the natural troop of Japanese monkeys on Koshima Islet. *Primates*, 6, 1–30.
- Keverne, E. B., Martensz, N., & Tuite, B. (1989). Beta-endorphin concentrations in CSF monkeys are influenced by grooming relationships. *Psychoneuroendocrinology*, 14, 155–161.
- Liu, D., Diorio, J., Tannenbaum, B., Caldji, C., Francis, D., Freedman, A., et al. (1997, September 12). Maternal care, hippocampal glucocorticoid receptors, and hypothalamic-pituitary-adrenal responses to stress. *Science*, 277, 1659–1662.
- Loye, D. (2000). *Darwin's lost theory of love*. New York: iUniverse.com.
- Loye, D. (Ed.). (2004). *The great adventure: Toward a fully human theory of evolution*. Albany, NY: SUNY Press.
- Loye, D. (2004). What should it look like: Foundations and guidelines for building the fully human theory of evolution. In D. Loye (Ed.), *The great adventure: Toward a fully human theory of evolution* (pp. 252–268). Albany, NY: SUNY Press.
- Margulis, L. (1981). *Symbiosis in cell evolution: Life and its environment on the early earth*. San Francisco: W. H. Freeman.
- Marmot, M. G., Rose, G., Shipley, M., & Hamilton, P. J. (1978). Employment grade and coronary heart disease in British civil servants. *Journal of Epidemiological Community Health*, 3, 244–249.
- Maslow, A. (1968). *Toward a psychology of being*. New York: Van Nostrand.
- Maslow, A. (1971). *The farther reaches of human nature*. New York: Viking.
- Mellaart, J. (1967). *Çatal Hüyük*. New York: McGraw-Hill.
- Miller, G. A., Galanter, E., & Pribram, K. H. (1986). *Plans and the structure of behavior*. New York: Adams Bannister Cox.
- Min, J. (Ed.). (1995). *The chalice and the blade in Chinese culture*. Beijing: China Social Sciences Publishing House.
- Montuori, A., Combs, A., & Richards, R. (2004). Creativity, consciousness, and the direction for human development. In D. Loye (Ed.), *The great adventure: Toward a fully human theory of evolution* (pp. 197–236). Albany, NY: SUNY Press.
- Nash, J. (1978). The Aztecs and the ideology of male dominance, *Signs*, 4, 349–362.
- O'Manique, J. (2002). *The origins of justice: The evolution of morality, human rights, and law*. Philadelphia: University of Pennsylvania Press.
- Ornstein, R. (1990). *The psychology of consciousness*. New York: Penguin.
- Perry, B. D. (2002). Childhood experience and the expression of genetic potential: What childhood neglect tells us about nature and nurture. *Brain and Mind*, 3(1), 79–100.
- Perry, B. D., Pollard, R. A., Blakley, T. A., Baker, W. L., & Vigilante, D. (1995). Childhood trauma, the neurobiology of adaptation, and “use-dependent” devel-

- opment of the brain: How “states” become “traits.” *Infant Mental Health Journal*, 16, 271–291.
- Platon, N. (1966). *Crete*. Geneva, Switzerland: Nagel Publishers.
- Prigogine, I., & Stengers, I. (1984). *Order out of chaos*. New York: Bantam Books.
- Quartz, S., & Sejnowski, T. J. (1997). The neural basis of cognitive development: A constructivist manifesto. *Behavioral and Brain Sciences*, 20, 527–596.
- Richards, R. (1999). Everyday creativity. In M. A. Runco & S. R. Pritzker (Eds.), *Encyclopedia of creativity* (Vol. 1, pp. 683–687). San Diego, CA: Academic Press.
- Runco, M. A., & Richards, R. (Eds.). (1997). *Eminent creativity, everyday creativity, and health*. Stamford, CT: Ablex Publishing.
- Sagan, C. (1977). *The dragons of Eden: Speculations on the evolution of human intelligence*. New York: Ballantine Books.
- Sanday, P. R. (1981). *Female power and male dominance: On the origins of sexual inequality*. Cambridge, England: Cambridge University Press.
- Solomon, M. F., & Siegel, D. J. (2003). *Healing trauma: Attachment, mind, body, and brain*. New York: Norton.
- Trivers, R. (1975). *United Nations human development reports*. New York: Oxford University Press.
- World Economic Forum. (2005). *The global competitiveness rankings*. Retrieved March 15, 2007, from <http://www.weforum.org/site/homepublic.nsf/Content/NORDIC+COUNTRIES+LEAD+THE+WAY+IN+THE+WORLD+ECONOMIC+FORUM%E2%80%99S+2004+COMPETITIVENESS+RANKINGS>
- Young, L., Lim, M. M., Gingrich, B., & Insel, T. R. (2001). Cellular mechanisms of social attachment. *Hormones and Behavior*, 40, 133–138.
- Ziegler, D. (2002). *Traumatic experience and the brain*. Phoenix, AZ: Acacia.