

# UNDERSTANDING AND RESPONDING TO HUMAN EVIL: A MULTICAUSAL APPROACH

by *Karl E. Peters*

*Abstract.* One task of religion is delivering human beings from evil within and between themselves. Defining *good* as well-being or functioning well, *evil* as impaired functioning, and *doing evil* as impairing the functioning of others, this essay explores how religions in consort with other social institutions might understand and respond to evil in light of contemporary scientific knowledge. To understand evil I use a multicausal approach that includes both biological and sociocultural environmental causes. I illustrate the use of this approach by analyzing how we might understand and respond to human rage and violence.

*Keywords:* anger; brain; evil; evolution; good; Melvin Konner; limbic system; Andrew Newberg; rage; Sacred center; violence; well-being

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“Lead us not into temptation, but deliver us from evil.”

—The Lord’s Prayer (Matthew 6:13 KJV)

Religions do many things. In teaching introductory courses in world religions I have learned that the various religions of the world provide rituals to meet physical, psychological, and social needs. They develop mythical and rational belief systems that provide meaning for living. They socialize people with moral codes to enable culturally defined ways of right living. They provide counsel, guidance, and healing to deal with death and despair. In and through all of these, religions bring adherents into relationship with what is understood to be Sacred or Ultimate as the source of existence and human well-being.

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Through their rituals, belief systems, moral codes, and ways of counseling, religions also offer human beings ways of deliverance from evil, especially the evil within themselves and between one another. Such deliverance involves understanding the nature of evil and its sources and developing ideas and practices that enable effective responses to evil. In this essay I explore how we might understand and respond to evil in light of some contemporary scientific knowledge and suggest that it is appropriate to yoke this scientific knowledge with the positive values, goals, and practices of religion and other social institutions in responding to evil. In particular, I develop a multicausal understanding of the origins of human evil behavior and of how we might respond to the evil that we do. I exemplify this approach in relation to one kind of evil, rage and violence, in the hope that it will suggest an approach to many other forms of evil.

This essay is a companion piece to the preceding essay by Marjorie Hall Davis, who explores the internal psychological manifestation of evil experienced by her clients in relation to societal systems—yoking together behavioral science with spirituality. I add to her understanding some ideas about the causes of evil from human biology and evolutionary theory. Together, we explore the manifestation of evil and how we can respond to evil in interrelated psycho-social-biological systems.

#### A MULTICAUSAL APPROACH

An event in my life in the early 1970s introduced me to a multicausal approach to understanding human beings. One afternoon a student visited my office at Rollins College. The Viet Nam war was ending, the civil rights movement had made some significant gains, and many of us were aware of something called the counterculture movement. This young man was a transfer student, an incoming sophomore, and I was his advisor. I asked him what he wanted to study.

His reply: "I want to study myself."

"Oh, boy!" I thought. "Here we go, one of these—the 'me' generation!" But I didn't say that. Instead, I asked, "Well, what do you want to study when you study yourself?"

He replied, "I want to study chemistry, because I'm made of up chemicals. I want to study biology, because I'm a mammal. I want to study sociology, because I am a social person. I want to study literature, because of the great insights it can give into human beings." And he went on—justifying our entire liberal arts curriculum—all on the basis of wanting to study himself.

In many ways I am like this student. I have tried to understand myself and my relationships with others with the help of the various sciences and the humanities. I have come to the conclusion that all of these are helpful because I am a complex and multifaceted creature. Because I am multifaceted, my actions and the feelings I experience have many causes. I experi-

ence myself as having many parts that usually work together but that sometimes come into conflict with one another.<sup>1</sup>

This multifaceted approach to understanding human behavior is exemplified in Table 1 (see following page), which I have constructed based on the thought of Nikko Tinbergen and the questions asked by Melvin Konner to analyze human feelings and behaviors of rage, fear, joy, lust, love, grief, and gluttony. It recognizes that both biological and environmental factors contribute to what we do, and it arranges them as immediate, intermediate, and long-term causes (Konner 2002, 183).

There are some important things that the table and my following analysis do not do in significant detail. One is to map the mutually interactive influences between environmental causes and causes within the organism (such as causes 5, 6, and 7 in the table). Early brain development in children is the result of the interactions between genes and experience. “Genes determine when specific brain circuits are formed and experiences shape their formation. This developmental process is fueled by a self-initiated, inborn drive toward competence that depends on appropriate sensory input (e.g. through hearing and vision) and stable, responsive relationships to build healthy brain architecture.” This process of brain development occurs as an ordered sequence, with circuits that process basic information being wired earlier, which in turn become the basis for building “higher-level” circuits that process more complex information. A child’s adaptation to new information at “higher levels is more difficult if lower-level circuits were not wired properly.” “Both brain architecture and developing skills are built ‘from bottom up,’ with simple circuits and skills providing the scaffolding for more advanced circuits and skills over time” (“A Science-Based Framework for Early Childhood Policy” 2007, 8). So, in early human development, environmental and organic causes are interconnected.

A second thing that is missing is work on biological development. I just referred to this in the earliest phases of a child’s life. Another period of human development is also significant for our purposes. During the past ten years, we have gained a richer scientific picture of the maturation of the adolescent brain, especially the prefrontal cortex (see Blakemore 2008). This area of the brain helps regulate emotions and affects self-control. It handles reasoning and other executive functions. In a time-lapse movie that collapses fifteen years from age five to twenty into a few seconds, Nitin Gogtay and others show that “gray matter wanes in a back to front wave as the brain matures and neural connections are pruned. Areas performing more basic functions mature earlier; areas for higher-order functions (emotion, self-control) mature later. The pre-frontal cortex . . . is among the last to mature” (Gogtay et al. 2004). The late maturing of the prefrontal cortex has implications for how teenagers and young adults are considered to be responsible for their actions, as discussed below. The point here is that tracking the interconnections between environment and biology in

TABLE 1.  
Multiple Causes of Behavior

	Environment	Organism
1	Immediate/ Short Term	What events in the environment <b>trigger</b> the behavior, releasing stimuli that may be learned or unlearned?
2	Immediate/ Short Term	What are the immediate <b>physiological causes</b> , the <b>neural circuits</b> and <b>neurotransmitters</b> , that produce behavioral output?
3	Immediate/ Short Term	How have <b>slower-acting physiological events</b> , such as <b>hormone levels</b> or <b>disease processes</b> , set the tone of the neural circuits?
4	Intermediate	What <b>routine outside events</b> , such as <b>reinforcement, modeling, or stress</b> , though not the immediate precipitating factors, may have altered the organism's response tendencies?
5	Intermediate	Were remote environmental causes at play, such as the special effects of <b>experience, nutrition, or insults [traumas]</b> during <b>sensitive periods in early life</b> , including life before birth?
6	Intermediate	What <b>events of embryonic development</b> and their <b>postnatal equivalents</b> have shaped the relevant circuits and their hormonal context?
7	Remote/ Ultimate	What <b>genes</b> directed the wiring up of the circuits and coded the precursors, enzymes, and receptors for the needed hormones and neurotransmitters?
8	Remote/ Ultimate	What <b>adaptive function</b> does the behavior serve? Or, what processes of <b>natural selection</b> favored it in the natural environment? In effect, what <b>caused the gene code</b> ?
9	Remote Ultimate	What is the animal's <b>broad heritage</b> ? The wings of flies come from thorax; of birds, from forelimbs; of bats from fingers, and of human beings, from airplane factories. Each species solves the problem differently as <b>phylogenetic history</b> constrains the <b>response to the same adaptive challenge</b> .

the course of human development, and thus considering the linkages between the various causes, would make a multicausal approach more sophisticated. Doing this in detail is beyond my ability, so, for the most part, I apply this multicausal approach by treating each cause by itself.

Human beings are evolved, complex creatures who are capable of doing both good and evil. The multicausal approach is equally helpful in understanding how we come to do good or evil. To apply it, however, we must first have an idea of what we mean by the terms *good* and *evil*.

#### WORKING DEFINITIONS OF *GOOD* AND *EVIL*

We can understand *good* in terms of a state of well-being, and we can think of well-being as the functioning of the various parts of an organism in concert under self-leadership, able to adapt to ever-changing circumstances. If our various parts are functioning well together, we are in a state of health and can respond effectively, even in creative ways, to events that disrupt and disorder our lives. This same understanding of good can be applied to relationships with others, to society as a whole, and to humans in relation to the ecosystems of planet Earth.

In contrast, *evil* is a state of impaired functioning, being out of balance, and to do evil is to impair the functioning of others—physically by killing or maiming, psychologically by abusing or silencing, socially by unjustly discriminating against, and so on. Examples of impaired functioning are a person in unresolved inner conflict, so that he or she is a “divided self” (James 1997, 143–59), or in an internal state of bondage, such as the bondage to lust experienced by Augustine (Augustine 1979, bks. 7 and 8). Evil also can be a perversion of a system, so that some parts of the system are incapacitated. In relationships, impaired functioning can be understood as alienation—persons alienated from one another. This can be extended to our relationships with other species and with the earth itself.

This understanding of good and evil implies a model of health and unhealth or dis-ease, in contrast to the model that is often used, that of warfare. In the warfare model evil must be isolated, contained, or eliminated. This is a dualistic view in which good must triumph over evil. Davis alludes to something analogous in her use of Walter Wink’s idea of “the Domination System” (Wink 1998, 37–62). In contrast, in the health model, the parts of ourselves that lead us to do evil are not destroyed. As Davis illustrates in her work with a client, when we are in our core selves, our parts can be engaged and then transformed or redeemed so that they can positively contribute to a return to functioning well (Davis 2008, 673–75). This applies to societies as well as individuals—and even to ecosystems and to the planet as a whole.

One concern that arises with the health model of good and evil is that it often appears that individuals are functioning very well as they harm

others. Hit men, serial killers, abusers of children, and stalkers can appear to be working very effectively to accomplish evil ends, to impair the well-being of others. One can question whether such people are really healthy, of course, but, regardless of how this question is answered, the idea that good is well-being and evil the impairment of well-being cannot as a definition apply only to individuals. It also must encompass the well-being of other persons, of interpersonal relationships, and of a society.

In the view of good and evil I am developing, other individuals and society as a whole must be protected from harm done by well-functioning individuals and groups. This provides a reason for religions to develop codes of moral behavior and for societies to develop laws and customs that define what is good and bad behavior. Further, through child rearing, education, law enforcement, and religious practice, humans are socialized to act in ways that are supportive not only of their own individual well-being but also that of others and of the social organism. Beyond this, religions and the wider societies sometimes extend morality, law, and custom to relations with nonhuman organisms and to the ecosystems in which humans live. So the health model of good and evil applies to individuals who live in interdependent relationships with other individuals and with wider societal and natural systems.

Thus, I suggest that humans do evil when they impair the functioning of themselves, of other humans, of relations between them, of society, of other creatures, of ecosystems, and of the planet as a whole.<sup>2</sup> For example, gang violence in cities can impair the well-functioning of neighborhoods. Civil war can tear apart the structures of a society. Warfare can impair the functioning-well of other species and of the planet. With its explosive and chemical weapons, warfare uses up natural resources, pollutes the environment, and contributes to the increase of greenhouse gases and, thereby, to global climate change. So, even though street gangs and the parties at war may themselves function relatively well, they do evil to the more extensive social, political, and environmental systems of which they are a part.

#### RAGE AND VIOLENCE

In light of this understanding of good and evil, and using a multicausal approach, let us look at human behavior that impairs or destroys someone else's ability to function well. To focus our analysis I analyze the roots of the emotional behavior of rage. I also look briefly at fear, because, in humans as complex systems, fear often is related to rage. Rage and fear are some of the human emotions for which Konner seeks multiple causes in his book *The Tangled Wing* (2002). For the most part, I follow Konner's analysis.<sup>3</sup> I have chosen Konner's work because of its comprehensiveness. He pulls together much of the scientific work up to 2001. As I summarize some of this work, I want to make three caveats. First, this summary needs

to be updated, which I have done at a few points but not extensively. Second, my summary is only a selection of the rich array of scientific studies that Konner presents. Third, I am not a scientist. Even though I am as careful as I can be in presenting the results of scientific work, I am aware of my limits in doing this. Nevertheless, I believe that it is important for a theologian to work with contemporary results from the sciences. In the past theologians often have worked with the best knowledge of their times about the world and human beings. I believe that theologians should also do this today, as carefully as we can.

The human anger that can be called rage, which sometimes leads to violent behavior that harms others, has always fascinated me. There are numerous instances in which good, decent people exhibit out-of-control anger. I have experienced such instances in myself. I used to get angry—very angry—often at those I loved most. I remember my childhood temper tantrums, losing control of my emotions and verbally blowing up at members of my family. My grandmother had an explanation: “Well, he’s a redhead!” These angry moments did not occur very often, but they remained a part of my life, and until I was well into midlife I occasionally had outbursts of out-of-control anger at others. I still occasionally find myself with angry thoughts and an urge to let others have it with a sharp tongue and cutting language.

Accounts appear regularly in the newspapers about a relationship between persons who once loved each other turning sour, and a rejected lover turning violent, even to the point of killing the person he or she once loved. Sometimes murderous violence erupts when attempts to initiate a love relationship are frustrated. Konner relates two instances of such violence that took a life. These examples are from different cultures in the late 1970s.

One July evening in White Plains, New York, Richard James Herrin, a twenty-three year old Yale senior, went to the bedroom of Bonnie Jean Garland, a classmate and sometime girlfriend, and, with a claw hammer, bludgeoned her to death in her sleep. He fled, driving upstate to Coxsackie, where he surrendered himself to a priest and confessed his crime. He told the arresting officer that he had planned to kill the young woman and then commit suicide. The precipitating cause was romantic rejection; Garland had broken up with him. (Konner 2002, 175)

On a fall day just over a year later, while Richard James Herrin awaited trial, Wang Yungtai—a twenty-four-year-old warehouse worker at the Materials Recuperation Company in Beijing—sought out Hu Huichin, a fellow worker he had wanted as his girlfriend. Near the lockers at the factory, Wang struck Hu seven or eight times on the head with a hammer. She survived the assault—just barely, after months of intensive care and with permanent brain damage. Wang Yungtai left the scene of his crime on foot, after swallowing a substantial amount of mercury, which he had prepared for his suicide. He became temporarily ill [but recovered and stood trial]. . . . The precipitating cause was romantic rejection; Hu Huichin had refused to become his girlfriend, after he had asked her several times, with all respect, in writing. (Konner 2002, 176)

After describing more of the subsequent events, the trials, and the sentences of these two men, Konner reflects on the range of emotions that appear to be involved in such cases:

The young man experiences lust; he has had or wants to have sexual intimacy with the woman. But the lust mingles with a much more respectful feeling, which, without the easy wisdom of hindsight, we would call love: a longing to be close to, stay with, and care for the one desired; a longing we suppose, to possess. There is often a deep joy in the hope of a shared life.

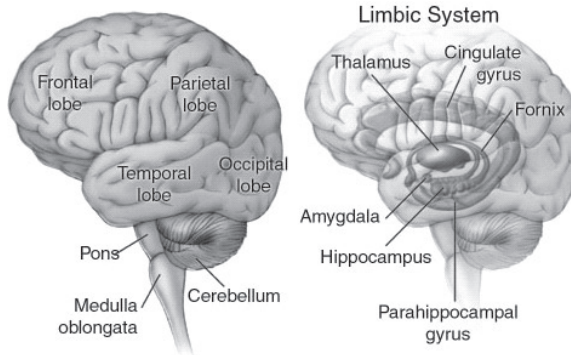
But when the woman's affections do not mirror the man's, he experiences frustration, of course, and fear—of loss, loneliness, humiliation—that sometimes may be close to terror. From his frustration and fear comes rage, an impulse to take revenge, to destroy the obstacle and punish the object of fear. In extreme cases the anger produces homicidal violence. And mixed with fear and rage, supplanting them in the end, is grief, a mourning for the losses—of love, companionship, pride, sexual release, home, and, after the crime, the loss of the beloved. Because of the range of emotions, such cases compel our interest more than most homicides. Conflict is more intriguing than unalloyed evil, and we sympathize because we have, however slightly, shared such conflict; its echoes remain in us, and they touch every chord in the human spirit. (Konner 2002, 177–78)

What factors lie behind such feelings and behaviors that impair the well-being or destroy the lives of others? Because we are complex human beings, it is not surprising that we need to explore a multiplicity of causes. Following the table derived from Konner and Tinbergen, let us look at some causes of the rage that can kill in cases like those of Herrin and Wang and that give rise to less extreme forms of anger and violent behavior in many of the rest of us. I refer to each cause with the number in the left column of the table.

1. *A Triggering Event.* The first immediate cause, the triggering event, is environmental: rejection by a woman, romantic rejection. Why Bonnie Jean Garland and Hu Huichin rejected these men we do not know. But we can hypothesize that rejection triggers in the men a series of internal events involving interactions of neural circuits, neurotransmitters, and hormones. These interactions have been shaped by events in the life of the person from the womb to the present. Ultimately they are rooted in the biological evolution of our species.

Let us examine these more closely. Please use the following brain diagrams for orientation in a general sense as I refer to circuits in what follows. The first shows some of the areas to which I refer in this essay—the limbic system with the amygdala. I also refer to the relationships between the frontal lobe, especially the prefrontal cortex, and the limbic system. Near the end of the essay, when I present work by Andrew Newberg on breathing, meditation, and brain functioning, I also refer to the parietal lobe.

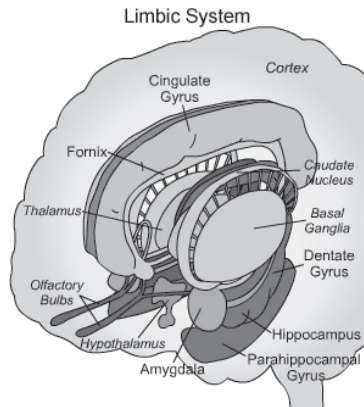




**Fig. 1.** Anatomy of the Brain. The image on the left is the outside of the brain, viewed from the side, showing the major lobes—frontal, parietal, temporal, and occipital—and the brain stem structures—pons, medulla oblongata, and cerebellum. The image on the right is a side view showing the location of the limbic system inside the brain. The limbic system consists of a number of structures including the fornix, hippocampus, cingulate gyrus, amygdala, the parahippocampal gyrus, and parts of the thalamus. The hippocampus is one of the first areas affected by Alzheimer's disease. As the disease progresses, damage extends throughout the lobes ([http://www.ahaf.org/alzdis/about/Anatomy Brain.htm](http://www.ahaf.org/alzdis/about/Anatomy%20Brain.htm)).

The diagram to the right shows more detail of the limbic system. We will be discussing the hypothalamus and the amygdala as well as other systems. Each of these areas is complex. Different neural circuits and their neurotransmitters are related to different behaviors.

*2. Neural Circuits and Transmitters.* What might have happened in the brains of Herrin and Wang? The immediate physiological causes of human emotions and emotionally motivated behavior are centered in the limbic system of the brain and in its connections to the frontal lobes of the neocortex. Because we share the limbic system with other mammals, it is possible for studies of animal brains (mice, rats, and monkeys, for example) to shed light on



**Fig. 2.** The Limbic System. From the HOPES Brain Tutorial, Stanford University, <http://www.stanford.edu/group/hopes/basics/brainut/lab5.html>.

human behavior. However, as a result of human evolution, our highly developed neocortex gives us a capacity for language, for thinking about things, and for worrying in our minds about future outcomes and about what has happened in the past. It is the neocortex that creates the mental activity of words, words, and more words inside our head. As the neocortex evolved, there was a rewiring of circuits connecting it to regions of the limbic system. This connection makes it possible for the ideas and images of culture to affect our emotions and emotional behavior in ways that encourage doing good but also in ways that encourage doing harm. Because of this, our behavior is grounded in both biology and culture.

In the limbic system, there are neural circuits that involve the hypothalamus and suggest a hypothalamic model of aggression (Konner 2002, 184). The hypothalamus integrates input from other limbic system structures such as the amygdala and the septal area, producing a balance either for or against violence. Neural activity in part of the amygdala stimulates rage, while activity in the septal area inhibits it. Also, weak neural activity in the frontal lobe reduces inhibition. Viet Nam veterans with lower frontal-lobe damage are more likely than others to have outbursts of rage (usually verbal) with family, friends, and colleagues (Konner 2002, 185).

Brain circuits use neurotransmitters to send signals from one neuron to the next across the synapses between neurons. The amount of a particular neurotransmitter may enhance or diminish emotional behavior such as aggression. One neurotransmitter, norepinephrine, enhances aggression; another, serotonin, helps control it. Normally norepinephrine is balanced by serotonin. However, too much norepinephrine or too little serotonin contributes to the kind of impulsive aggression that leads to rage, abuse, and murder.

Impulsive aggression stands in contrast to the more controlled aggression, or assertiveness, of those who achieve dominance in social systems such as businesses, schools, churches, and political organizations. In such systems, those with low serotonin, who act with impulsive, explosive anger, are usually at the bottom of a hierarchy. Increased levels of serotonin helps males and females exercise controlled aggression (assertiveness) so that they can win disputes and achieve dominant status. Most of us recognize the differences between effective persons who exercise leadership and rise to the top in an organization and others who are impulsive and express out-of-control anger. The latter usually remain on the margins.

I have noted that one of the things missing from my multicausal analysis is the development of the brain. Briefly I want to mention that findings in the past decade regarding the maturation of the prefrontal cortex in adolescents are important for our purposes, especially for how we hold young people accountable for violent crimes they commit. According to a report by Mary Beckman in *Science* (2004), a number of scientific studies show that the frontal lobe begins a growth push around age 16 or 17 and

maxes out at age 20, although Jay Giedd suggests that 25 is the “age at which brain maturation peaks” (Beckman 2004, 596). What happens is that there is a prior growth of gray matter in the brain, probably beginning before puberty, and then, with the brain’s final maturation, a decline of gray matter as connections are trimmed, or perhaps coated with myelin that provides insulation and allows for faster signal transmission. The delayed maturation of the prefrontal cortex, along with other reasons, is significant enough that in 2005 the Supreme Court decided 5 to 4 that the death penalty for people under 18 constitutes cruel and unusual punishment. Justice Kennedy, writing for the majority (Kennedy, Breyer, Ginsburg, Souter, and Stevens), stated: “When a juvenile offender commits a heinous crime, the State can exact forfeiture of some of the most basic liberties, but the State cannot extinguish his life and his potential to attain a mature understanding of his own humanity” (Roper vs. Simmons 2005, 4). Both Herrin and Wang are older, but they still may not have had a completely developed frontal lobe and hence mature emotional self-control.<sup>4</sup>

3. *Hormones.* Besides the immediate physiological causes in brain circuitry, there are slower-acting physiological causes, the hormones. In flight-fight situations, adrenaline and cortisol are released. More important for the cases of Herrin and Wang, however, is probably the hormone testosterone. In adolescent boys, testosterone increases tenfold (Adams, Montemayor, and Gullota 1996). Studies of four thousand army veterans show that higher levels of testosterone predict antisocial behavior. Also, differences in testosterone can result from fighting and winning or losing. A study of the Harvard wrestling team revealed that “all men competing showed a rise of testosterone during the match, but the winners had a significantly larger rise than the loser and those who fought to a draw had levels exactly in between” (Konner 2002, 189). So testosterone can be both a cause and a result of fighting. One can postulate a positive-feedback process that increases this hormone and escalates aggressive behavior.

Different hormones are involved in defensive and offensive aggression. Defensive aggression is “partly motivated by fear and is associated with high right frontal lobe activity and high baseline cortisol level.” Offensive aggression is more impulsive and is “tied to low serotonin activity, high testosterone, and *lower* baseline cortisol” (Konner 2002, 189).

4. *Routine Events that Shape an Organism’s Response Tendencies.* Several kinds of routine outside events can alter the response tendencies of a variety of organisms. In many situations pain, irritation, frustration, and fear can increase aggression in humans and other animals. For example, “When two male rats are placed on an electrified grid and shocked, their classic response is to attack each other” (Konner 2002, 194). Operant conditioning—the regular reward of naturally occurring behaviors—can also affect

aggressiveness. German Shepherd attack dogs can be shaped through operant conditioning to attack some individuals and not others. Some become police dogs. And the kill rates of American soldiers can be raised in much the same way, according to Colonel David Grossman, in his book *On Killing* (1995).

Training can desensitize people to violent aggression. Konner writes,

Grossman is convinced that the same desensitization process he took American soldiers through—repeatedly exposing them to violence until they no longer reacted with normal repulsion—is being carried out less systematically with all our children, through violent television and especially video games. In his view, clicking thousands of times during childhood to produce a “kill” on a screen must make it easier for a young person to kill for real. (Konner 2002, 194)

Others, such as Jeffrey Goldstein in *Why We Watch: The Attractions of Violent Entertainment* (1998), have shown that

violent images attract us because we already have aggressive tendencies and fantasies and feel a need to work them through. Like the Bible, Homer’s epics, Shakespeare’s plays, and many ancient texts outside the Western tradition, media are violent because life is. They may make life more violent, but they are not a fundamental cause of life’s violence. (Konner 2002, 195)<sup>5</sup>

5. *Remote environmental causes.* Turning to more remote environmental causes, especially those during sensitive periods in early life, we discover that strong, prolonged stress in the absence of adult support “disrupts the architecture and chemistry of the developing brain” in early childhood. There are three types of stress, each leading to a different outcome. “Positive stress,” which is short-lived, helps a child develop increasing mastery and self-control when it occurs in the context of stable and supportive relationships. “Tolerable stress,” the result of death, divorce, or natural disaster, is not permanently damaging if there are supportive parents and other adults. “Toxic stress” is “associated with strong and prolonged activation of the body’s stress response in the absence of the buffering protection of adult support.” If it occurs continuously, “toxic stress in early childhood can result in a lifetime of greater susceptibility to physical illness (such as cardiovascular disease, hypertension, obesity, diabetes, and stroke) as well as mental health problems (such as depression, anxiety disorders, and substance abuse).” Toxic stressors “include recurrent child abuse or neglect, severe maternal depression, parental substance abuse, or family violence” (“A Science Based Framework for Early Childhood Policy” 2007, 9).

Toxic stress, as one of many causes, helps us understand the results of a study by Jonathan Pincus, who evaluated thirty-one murderers. He found that frontal lobe damage combined with a psychiatric disorder with paranoid symptoms and a history of child abuse made for a very high chance of violent behavior (Konner 2002, 186).

## FEAR

We are in the middle of exploring various causes of anger, and we have reached a point where it will be helpful to say a few things about the fear that often underlies murderous anger. Remember, when Konner reflected on the two murders, he wrote that when the men's hopes were dashed by rejection they experienced frustration and fear—of loss, loneliness, and humiliation. (I would add feelings of worthlessness, of not being good enough.) Out of this frustration and fear can come rage, an impulse to take revenge, destroy the obstacle, or punish the object of fear. Fear-related anger may lead to homicidal or suicidal violence (see Davis 2008).

In the opening lines of his chapter on “Fear,” Konner writes:

We have dropped into the bowels of the beast, where the snarl curls, poised to provocation. Lust thwarted, love rejected, thirst unslaked, hunger lingering, the frustration that chokes the gorge at practically any motive blocked, the example of creatures one admires, pain at the hands of those one hates, or simply being brutalized through a long, slow course of growth—any of these motivating stages can trigger the violence that turns a good life into a nightmare. But there is one cause above all: fear. (Konner 2002, 204)

Konner analyzes the multiple causes of fear in the same way that he analyzes the causes of anger. Over a couple of chapters he also considers the relationships between fear and grief and between parental love and child rearing. For our purposes, I highlight two causes. The first is from early child development (cause no. 5), and the second is natural selection (cause no. 8).

In early child development, a primary fear is that of separation. Like other emotions, fear is located in the circuits of the limbic system and the right lobe of the frontal cortex. An interesting fact is that before four months of age, when infants see a strange face, they are not fearful, but by about eight months, they are. What has happened is the development of myelin, a sheath of fatty tissue, around the neurons of the brain—including those in the limbic system. This results in more rapid transmission of signals through the neurons. The circuits in the limbic system associated with fear and other emotions get “fired up,” as it were. The separation of a human child from its mother in the first few months of life requires the infant to adjust, but it does not usually cause serious problems if subsequent care is good. “In vivid contrast, infants eight to ten months old might respond to the loss with a long behavioral depression resistant to even the best substitute care” (Konner 2002, 341).

John Bowlby has spent four decades studying the response of children to separation. Along with John Robertson, he studied infants and children who had to undergo prolonged hospitalization that involved separation from parents. They found that the loss experienced by the children could be broken down into four stages. (Admittedly, these are an oversimplification of the data.) The first stage is resistance, active searching for the lost

mother, hostility toward others—even rage—and fear. The second is grief: dejection, quiet whimpering, and an immunity to pleasure. The third is emotionless adaptation. The fourth is recovery. As a result of the work of Bowlby and Robertson, hospitals have initiated “rooming in” for parents.

If we put this into evolutionary perspective (cause no. 8), we can see how a child’s fear at becoming separated from parents is adaptive. It keeps the child close to those on whom its survival depends. In early human history, fearful and angry crying in response to separation called the parents back. This was supported by the parent’s own anxiety about the loss of a child. When I suddenly miss one of my young granddaughters because she has toddled into the next room, I initially feel fear. I remember the first time my wife and I stayed with Amelia and Nora for the evening while their parents went out to the theater. Although we had visited them and looked after them several times, this was the first time we had spent an entire evening with them and put them to bed. We played with them, gave them their baths, did their usual bedtime ritual of reading books they had selected, and then put them to bed. We all had a good time, but every once in a while during the evening I could see the anxiety in Amelia’s eyes, and she would ask, “Mommy? Daddy?” We would assure her that they would be back. At bedtime, Amelia sat in my lap, and I read her the three books she had chosen. In another room, Marj did the same with Nora. After we had finished reading, Amelia crawled into bed and pulled the covers up. Suddenly, the tears started to flow. “Mommmmy! Mommmmy!” I softly tried to calm her, and she quieted down. But instead of leaving her, as her parents usually did after saying good night, I stayed with her, rocking in a chair. She seemed to go to sleep, but suddenly she lifted her head and looked out at me. I calmed her again. Finally she went to sleep.

The fear of loss is an evolved emotion that protects us from possible harm when we are very young. It is adaptive from an evolutionary perspective. This capacity for fear remains with us throughout our lives. It comes into play when we lose a loved one through death, or when we are rejected by someone to whom we are attracted. But not everyone who experiences the loss of love responds with rage, violence, and murder the way Herrin and Wang did. We have been reviewing some causes of anger that may help us comprehend their extreme responses as well as the out-of-control anger we all may feel from time to time. Let us continue that analysis.

#### MORE ON THE CAUSES OF ANGER

6. *Embryonic Events.* What embryonic events shape the relevant circuits of the brain and their hormonal activity? For our analysis, perhaps the most important is the “androgenization of the brain”—a change in the brain made by male sex hormones before birth. It is well established that “the basic mammalian body plan is female, and it stays that way unless

diverted by male hormones.” In the 1970s, evidence began accumulating that for males the fetal brain is masculinized, causing a greater number of connections between cells in parts of the hypothalamus as a result of testosterone, for example. This suggests that “preadolescent gender differences in aggressiveness” are as biological in origin as postadolescent differences (Konner 2002, 107).

*7. Role of the Genes.* If one asks about the role of genes in the wiring of brain circuits and in coding the precursors, enzymes, and receptors for the needed hormones and neurotransmitters, at the time Konner was writing the human genome project was just beginning to come up with answers. As of 2001, gene technologists had “already honed in on fifteen genes on two chromosomes that affect male aggression in mice, and additional ones for female aggression as well” (Konner 2002, 191). For example, “the X chromosome holds a gene for an androgen receptor. In wild mice the receptor combines with androgens and the resulting molecule turns on certain other genes in certain brain cells. But engineered mutations block the combination of androgen and receptor, producing peaceful male mice” (2002, 191).

*8. Natural Selection.* When one begins to consider the remote or ultimate cause of aggression, namely whether aggression has an adaptive function, one interesting question is: Why did evolution create slow-acting hormones like testosterone? Why not just rely on faster-acting electrochemical circuits in the brain? One answer is that testosterone helps males reproduce. “Many animals breed only at favored times of the year and a seasonal rise in testosterone at those times serves two functions: it makes the male more likely to court and copulate, and it makes him more formidable in any courtship conflict, whether with another male or with the female herself” (2002, 190).

A very unpleasant manifestation of courtship conflict is what males can do to infants from a prior relationship. In some species, competitive infanticide serves individual reproductive success. Sarah Blaffer Hrdy first observed this with langur monkeys in India. When new males drove old males out of the troop and took over as resident males, within a few days they killed all of the infants under six months old and reimpregnated the infants’ mothers soon thereafter. This and other patterns of competitive infanticide appear in chimpanzees, lions, wild dogs, and many other species (2002, 197–98). It may also occur in humans. Evolutionary psychologists Martin Daly and Margo Wilson used Darwinian theory to generate and test a hypothesis about what seems to be the human version of competitive infanticide. Using data from real crime statistics from the United States, Canada, and England, Konner says that they hypothesized that “children in a household with their mother and an unrelated male would be at greater risk for abuse than those living with their mother and genetic father. . . .

Not only was the hypothesis confirmed but the difference was vast. . . . A child living with a stepparent is about 10 to 100 times more likely to be killed than one living with genetic parents only.” Konner comments on the Daly-Wilson study: “This exceptionally strong finding applies to all three countries and is independent of socioeconomic status. It is one of the most illuminating findings in the history of child-abuse research” (Konner 2002, 200). We also should remember that early child abuse without caring adults is a toxic stressor that negatively affects brain development and often contributes to a lifetime of physical and mental health problems.

*9. Phylogenetic History.* Finally, looking at the broad heritage regarding violence, the phylogenetic history in response to adaptive challenges, we can ask: What does the archaeological evidence say? Although the record is equivocal for prehuman species, the evidence assembled by Lawrence Keeley for humans “leaves no doubt that homicidal violence was part of life from the time our own species emerged. With the Neolithic revolution and the spread of agriculture, evidence of warfare becomes decisive. Indeed the whole of human history since the hunting-gathering era can be largely understood as a process of relentless, expansionist tribal warfare” (Konner 2002, 201).

Let us conclude our brief and partial multicausal analysis of the roots of anger and violence. By combining both genetic and biological causes with several levels of environmental or cultural causes during human development we can better comprehend, if not fully explain, why someone can murder the one he loves if that love is rejected. The same testosterone that contributes to human reproductive success can, in instances of frustration, contribute to murderous rage. Likewise, circuits in the limbic system and their neurotransmitters can be released or dampened, contributing to aggression. And male violence, probably selected for reproductive success, seems to be the rule rather than the exception in the human experience. Further, men who have experienced abuse and who have been desensitized to violence through military training or video games are more likely to resort to violence in response to the frustration and fear of losing someone with whom they are infatuated.

Of course, not all men respond this way. Also, we have many more emotions besides anger and fear and many more behaviors besides violence and aggression. Konner’s book *The Tangled Wing* also has chapters on the multiple causes of the emotions of love and joy and their related behaviors in both men and women. However, when people do commit evil acts, which diminish the well-being, the functioning well of others—and murder is the ultimate act that does this—we can begin to comprehend better how it can happen with a multicausal approach. Konner sums up:

So there are powerful genetic effects on aggression and powerful environment effects as well. It would trivialize the violent acts of Richard James Herrin and



Wang Yungtai—and even more the tragedy of their victims—to presume to explain what they did. Still, we must try to discern some influences. Both were men and such crimes are overwhelmingly committed by men—partly, at least, for genetic and hormonal reasons. Both were well bred in the moral sense, but both also grew up in societies that traditionally glorified violence, including male violence against women. Both were exposed to one of ordinary life's more stressful frustrations, that of romantic rejection, and both were young enough to be unfamiliar with this stress. Of course, all of these factors are at times present in millions of individuals who do not commit homicide and so do not help very much in explain these cases. Such factors are not excuses, but they make these acts more comprehensible than the random shooting of motorists on a highway. (2002, 196–97)<sup>6</sup>

### RESPONDING TO VIOLENCE

How can we respond to anger and violence? How can we help deliver human beings from the evil that is within and between us?

If we can take a multicausal approach to understanding evil, we can take a multicausal approach to responding to evil. As I said at the beginning, religions are complex phenomena that do many things. It is useful, then, to think of religions as being involved in a complex response to the many causes presented here. Religious practitioners might see themselves as enabling deliverance from evil in consort with practitioners in other institutions such as medicine, law, politics, and education. In ancient cultures, and in some societies today, religion is part of an integrated cultural system rather than a separate institution. In contrast, in modern Western civilization religious institutions usually function separately from those of education, medicine, economics, law, and politics.

In light of our analysis we might think about yoking religious practice with the practices of other institutions.<sup>7</sup> Let us sketch a yoking approach to responding to violence in light of our multicausal understanding of the roots of anger and violence. In a general way I follow the table on external and internal causes of violence from bottom to top.

If we look at roots of violence in natural selection and our phylogenetic history, the first thing is to recognize that, no matter what we do, human beings will retain the capacity for violence. This capacity is a part of our evolutionary heritage. But so are capacities for empathy and for love. It is these latter capacities that encourage us to try to do something to control the anger that harms ourselves and others. Empathy and love have evolved in part through kin selection. This may provide a way of focusing a societal response to anger and violence, beginning in the home. Konner cites a wide-ranging, cross-cultural study by anthropologists John and Beatrice Whiting, who “discovered that when husband-wife intimacy is high, organized group conflicts occur less. Cultures where husbands and wives eat together, sleep together, and share child care are among the least violent, while those that have organized themselves around constant or at least

intermittent warfare tend to segregate men away from women and children” (Konner 2002, 202). So part of the religious response to violence may be to yoke religious values of love and peace with family life and with childrearing from infancy to adulthood. As we have seen, early child brain development occurs best in a supportive environment within and beyond family.

Some state governments in the United States are beginning to focus on the earliest ages of the child—before preschool—as a result of scientific findings being published by the Center on the Developing Child at Harvard University. In January 2008 these findings were reported by the director of this Center, Jack P. Shonkoff, to an Early Childhood summit called by Governor M. Jodi Rell of Connecticut. Rell said, “Every child gets one chance at their first 1,000 days, We don’t want to squander that.” “The summit came as many states, including Connecticut, work to expand and remake early childhood programs, spurred in part by research that links a child’s earliest experiences to key brain developments. Studies have shown that focusing on the most disadvantaged children as early as possible can lead to significant savings in special education, welfare and prison costs” (Becker 2008). Religious institutions might ask how they can join in to contribute to healthy child development in the earliest years.

Yoking values of love and peace with social institutions may be extended beyond the family to organizational structures in the wider society, especially to leadership in education, economics, and politics—institutions that help shape the routine events of our lives. That women, intimacy, and child rearing may have a good effect on males leads to an interesting suggestion for engaging and transforming social structures of domination that often promote violence. The suggestion is that social structures of power may be changed if women play a greater role in various aspects of society. Near the end of his book Konner writes:

Women and men differ, for biological reasons attributable to genes, in their tendency to violence. One measure to reduce worldwide violence would therefore be to replace men with women in positions of political and diplomatic power, in a strategic effort to dampen irrational sources of violent conflict. This would have to do more than just put a woman at the top of an almost all-male hierarchy, which does little to change the inherent violent tendencies of the system. Women would have to enter the system at all levels, even perhaps predominate. Social and political systems with such pervasive representation of women would be buffered against irrational mobilization for war. (Konner 2002, 476–77)

Supporting leadership by women in the many parts of our social system may be one way of engaging and transforming the social structures of power when they have become evil. And women can be joined by men who are more empathic and egalitarian in their own social orientations.

Much of what a society can do is to model ways of behaving for new generations growing up. However, society also must set boundaries for

behavior and have effective ways of responding when people cross those boundaries. Parents do this for their children, teaching them customs and morals for harmonious living with others. So do educators in schools, the media, and religious institutions. Legislators pass laws, and police enforce them. All of these institutions help shape the lives of people as they grow up—for good or evil. Sometimes social institutions—even religions—can promote violence and be discriminatory and unjust. A part of delivering people from evil is engaging institutions that are shaping evil behavior and transforming them to guide human beings toward well-being and positive relationships with one another (see Davis 2008).

Especially important is providing appropriate environments for guiding human development during the teen years when the frontal cortex is undergoing development. Because this region of the brain is related to areas in the limbic system that contribute to human anger and violence, religions and other social institutions might work together to steer teen-age thoughts, emotions, and actions away from violence, including that of warfare, and toward peaceful, cooperative living.

If we look at the more immediate causes of violence in the human endocrine and nervous systems, we may recognize that religious practice can be yoked with the healing professions of medicine and psychotherapy. For some individuals, excessive, out-of-control violence may signify an emotional disorder that can be treated medically and with counseling. Religious leaders, representing age-old traditions of healing, may see themselves referring people to other healing professions, in a practical yoking of religion and science. Further, some religious practices, such as yoga and meditation, are now seen as therapeutic and are being studied as ways to affect hormones and neurotransmitters in promoting individual human well-being and helping to control anger and violence.

I engage in religious practices to moderate myself when I get frustrated and angry, when I experience fear and anger that lead me into inner turmoil and tempt me to speak in ways that hurt others. My practice involves centering, deep breathing, being in the present moment, and sometimes meditating on a sound. The understanding that underlies my practice is that I can enter into a state I call my “Sacred center” (Peters 2002, 92–101). Davis, following the Internal Family Systems model of Richard C. Schwartz, refers to this in her essay as “being in Self” (Davis 2008; cf. Schwartz 2001, 37–41). Others call it being in Buddha nature, the mind of Christ, or the Hindu *atman*. I experience this state as being within a calm center that is attentive to all my feelings and inclinations as well as to my external environment. It is like Buddhist mindfulness. Schwartz suggests that when we are in such a state we are calm, compassionate, caring, curious, clear, connected, courageous, and creative (2001, 47–65). Many in Western religions, when they are in this state, sense that they are in the presence of God.

Because I believe that whatever state I experience is correlated with some circuits of my brain, their neurotransmitters, and hormones, I wonder how my brain and body might be involved. Within the last several years there have been neurological imaging studies of persons in mystical or contemplative states, or in states of relaxation and meditation (see Ellison 2006; “Studying the Well-Trained Mind” 2003). The work of Mario Beauregard with Carmelite nuns in Toronto (Beauregard and Paquette 2006), Andrew Newberg (for example, Newberg and Iversen 2003) with Tibetan Buddhists at the University of Pennsylvania, Richard Davidson and colleagues (2004a, b) at the University of Wisconsin, also with Tibetan Buddhists, and the older work of Herbert Benson on the relaxation response (Roush 1997) all are beginning to shed light on experiences that may be related to what I call being in my Sacred center.

Although this work is still in its beginning phases, a couple of things can be said. First, many forms of prayer and meditation are being studied by a variety of technologies—electroencephalographs (EEGs), functional magnetic resonance imaging (fMRI), positron emission tomography (PET) scans, and single photon emission computed tomography (SPECT). It is not surprising that, depending on the form of meditation and the scientific technology being used, different parts of the brain may be discovered to be involved (Hankey 2006).

Some of these results are being put together by Newberg. I found his article in *Medical Hypotheses* (Newberg and Iversen 2003) helpful. Here are two ideas that I gleaned from this short but detailed article. If I wish to enter that centered, calm, compassionate state of self-leadership—my Sacred center—I usually begin with my breathing. Deep breathing is a part of many forms of meditation. Davis (2008, 673–74) mentions her own breathing and a breathing exercise used with a client who was homicidal and then suicidal. Many have suggested that deep breathing is a good way to calm down in times of stress. In his article, Newberg explains in some detail what happens in the brain when an individual’s breathing slows. A portion of the medulla stops stimulating the locus ceruleus of the pons, in the brain stem. This results in a decrease in norepinephrine, a neuromodulator that amplifies strong stimuli. Less norepinephrine is delivered to the part of the hypothalamus that secretes corticotropin-releasing hormone, and this decreases the level of the stress hormone cortisol, one of the hormones involved in fear. This is one of the nervous system pathways that helps bring about calm in times of stress—and being calm is one of the characteristics of “being in Self” or Sacred center.

Furthermore, if one follows Newberg’s article backward (the material about breathing is near the end), it turns out that more deliberate and extensive meditation by advanced meditators such as Tibetan Buddhist monks effects a series of events in the brain that leads to the slowing of breathing, as well as other things. Beginning with the activation of the

prefrontal and cingulate cortex, we might say there is a cascade of neurons firing and the release of various neurotransmitters, which increases activity in certain areas of the right and left thalamus. This decreases activity in the posterior superior parietal lobule, which alters our spatial orientation and our sense of ourselves as distinguished from the world. Meditation also affects the limbic system, especially the hippocampus, which influences the amygdala. Together the hippocampus and the amygdala modulate emotions. In the words of Newberg, the

stimulation of the right lateral amygdala has been shown to result in the stimulation of the ventromedial [lower middle] portion of the hypothalamus with a subsequent stimulation of the peripheral parasympathetic system [part of the autonomic nervous system]. Increased parasympathetic activity should be associated with the subjective sensation first of relaxation and, eventually, of a more profound quiescence . . .

in which the heart rate is reduced and also the rate of breathing (Newberg and Iversen 2003, 286). When heart and breathing slow down, further changes in the brain occur, as I outlined above, that reduce cortisol. All of this contributes to a state of calm centeredness.<sup>9</sup>

Entering this state can be interpreted theologically as coming into relationship with the presence of a wider reality, a reality that is more than human and that is at work creatively in the world. I sometimes sense this reality when, in a state of centeredness, I let go and experience myself resting within something greater than myself (see Peters 2008, 61, 66, 87–88). At these times, a phrase from Alcoholics Anonymous comes to my mind: “Let go, Let God.” With such a theological interpretation, which can be grounded in a feeling experience, it is possible to hold that we are not the sole deliverers of humans from evil,<sup>9</sup> that there is a more-than-human reality also involved. And if we believe this, it is possible to pray, “Lead us not into temptation, but deliver us from evil” (Matthew 6:13 KJV). Responding to evil then includes not only individual and social human resources but also the resource on which many traditional religious people have called, namely, the Sacred reality that is the source of all existence including the source of human individual, societal, and planetary well-being.

We can relate this kind of thinking to an evolutionary perspective (Konner’s cause no. 8). Taking into account natural selection, it is possible to suggest that calm, mindful states, which are facilitated by deep breathing and various forms of meditation and prayer, probably are adaptive. Individuals who can lead all their parts from a calm center—including fearful parts that can signal danger and controlled anger in self-defense—are probably more likely to survive and pass on both the learning and whatever genetic inheritance underlies such parts. Basically fear and anger are good things from an evolutionary perspective, as are sexual desire and love. They are a part of our nature. Yet, in various situations they can take

control of people. When that happens evil often occurs—within oneself and against others—in the form of being in a state of conflict, bondage to extreme parts, or alienation and behaving in ways that harm the well-being of self and of others.

Responding to extreme states of anger and fear in terms of all the causes I have enumerated, including relying on the leadership of the Sacred as it is present within and between us, can help deliver people from evil and bring them into a state that some call salvation—a state of being more integrated, effective human beings in life-enhancing relationships with other human beings, other species, and the rest of planet Earth.

#### NOTES

A version of this paper was delivered at the Chicago Advanced Seminar in Religion and Science, organized by the Zygon Center for Religion and Science, on 12 March 2007. I am grateful to John and Carol Albright for their encouragement in developing these ideas.

1. This complexity is nicely illustrated in Davis 2008, the essay that precedes this one.

2. There may be so-called necessary evils, in which humans impair the functioning of others in seeking their own well-being. One example is killing bacteria in fighting disease. Another could be the killing of animals for food. To what extent these evils are necessary can be argued. But it may be that necessary evil is an indication that life is intertwined with death and that suffering is a part of the natural scheme of things (see Peters 2002, 106–12).

3. Konner is Samuel Candler Dobbs Professor of Anthropology and associate professor of psychiatry and neurology at Emory University. In *The Tangled Wing* (2002) Konner writes about how humans have evolved, how we are both biological and cultural creatures. He does this in considerable detail, summing up the research of many scientists as of 2001 in the second, revised and updated, edition. He writes with elegance. Robert Sapolsky in endorsing *The Tangled Wing* says that “Melvin Konner is the nearest we have to a poet laureate of behavioral biology.” Konner does not provide specific references to his sources in his book of more than five hundred pages. References would have added another two hundred pages. However, they can be found online at [www.henryholt.com/tangledwing](http://www.henryholt.com/tangledwing).

4. Even though brain development research was not a factor in the trials of Herrin and Wang, their emotional states may have been, at least in the United States. Herrin was convicted of manslaughter and sentenced to a term of eight and a third to twenty-five years. He was released in 1995. In China, Wang was sentenced to life in prison (Konner 2002, 176).

5. In a *Zygon* article anthropologist Paul Heelas (1983) discusses both ways of viewing media and violence—whether watching violent films increases violent tendencies or acts as a catharsis to diminish them.

6. I leave it to the reader and also to my own future reflection to uncover the multiple causes of such things as random highway shootings.

7. I am using the idea of yoking intentionally here. Yoking expresses the basic task of *Zygon*, a word that is derived from the Greek word for yoking. Often in the pages of the journal the yoking of science and religion has been conceptual. I now suggest that *zygon* should also be applied to religious practice more intentionally, because responding to evil requires both understanding and action.

8. We have just quickly looked at some of Konner’s causes, nos. 2 and 3, in relation to this state.

9. Grounding ideas in a feeling experience is adopting the method of radical empiricism. In contrast to classical empiricism, which relies only on sense experience, radical empiricism holds that feeling states also have cognitive import (see Peters 2007, 99–103).

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