

# **SPIRITUAL EVOLUTION**

## **A Scientific Defense of Faith**

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**For  
S.B.V. (1908-1995)  
In Filial Gratitude and Love**

“I believe that I can see a direction and a kind of progress for life . . . If my hypothesis is correct . . .with their cyclical development horse, stag and tiger became like the insect, to some extent prisoners of the instruments of their swift moving or predatory ways . . . In the case of the primates, on the other hand, evolution went straight to work on the brain, neglecting everything else, which accordingly remained malleable.”

Teilhard de Chardin (1959) , Phenomena of Man, London: Collins, pp. 142-160

## CHAPTER 1

### POSITIVE EMOTION

Lord, make me an instrument of your peace . . .  
Where there is hatred, let me sow love.  
Where there is injury, let me sow forgiveness;  
Where there is doubt, let me sow faith;  
Where there is despair, let me give hope....  
Where there is sadness, let me give joy;  
O Master, grant that I may not so much to seek  
compassion but to give compassion . . .

*“The Peace Prayer of St. Francis”  
attributed to Father Esther Becquerel (1912)*

Here’s a true story told by Jack Kornfield, a clinical psychologist. Traveling by train from Washington to Philadelphia, Dr. Kornfield found himself seated next to the director of a rehabilitation program for juvenile offenders, particularly gang members who had committed homicide.

“One fourteen-year-old boy in the program had shot and killed an innocent teenager to prove himself to his gang. At the trial, the victim’s mother sat impassively silent until the end, when the youth was convicted of the killing. After the verdict was announced, she stood up slowly and stared directly at him and stated, “I’m going to kill you.” Then the youth was taken away to serve several years in the juvenile facility.

“After the first half year the mother of the slain child went to visit his killer. He had been living on the streets before the killing, and she was the only visitor he’d had. For a time they talked, and when she left she gave him some money for cigarettes. Then she started step by step to visit him more regularly, bringing food and small gifts. Near the end of his three-year sentence, she asked him what he would be doing when he got out. He was confused and very uncertain, so she

offered to help set him up with a job at a friend's company. Then she inquired about where he would live, and since he had no family to return to, she offered him temporary use of the spare room in her home. For eight months he lived there, ate her food, and worked at the job. Then one evening she called him into the living room to talk. She sat down opposite him and waited. Then she started, "do you remember in the courtroom when I said I was going to kill you?" "I sure do," he replied, "I'll never forget that moment." "Well, I did," she went on. "I did not want the boy who could kill my son for no reason to remain alive on this earth. I wanted him to die. That's why I started to visit you and bring you things. That's why I got you the job and let you live here in my house. That's how I set about changing you. And that old boy, he's gone. So now I want to ask you, since my son is gone, and that killer is gone, if you'll stay here. I've got room, and I'd like to adopt you if you let me." And she became the mother he never had (Kornfield, 2000, p. 235-36).

Her compassion! Her forgiveness! Where did they come from? We can all identify with the woman's primal growl of "I'm going to kill you." And when, in her living room, she reminded her boarder of what she had said in court, I feared what would come next. But, then, I was surprised. For Hindu and Jew, for Buddhist and Christian the moment would have been moving, but this story lacked even a hint of "religion." What had happened? Unselfish love had conquered both Darwinian selfish genes and Kantian pure reason. The transformative power of positive emotion had interceded.

Positive emotions—not only compassion, forgiveness, love and hope, but also joy, faith/trust, awe and gratitude—arise from our inborn mammalian capacity for unselfish parental love. They emanate from our feeling, limbic mammalian brain; and, thus, are grounded in our evolutionary heritage. All human beings are hardwired for positive emotions, and thus these positive emotions are a common denominator of all major faiths, and for all human beings.

Thus, this is, in some respects, a revolutionary book. I shall argue that the positive emotions are not just nice to have; they are essential to the survival of Homo sapiens as a species. In Descartes Error Antonio Damasio (1994), a sensitive clinical neurologist and arguably the wisest student of emotions on the planet, convincingly argues that the mind and the body are one.

However, he concluded: “It is difficult to imagine that individuals and societies governed by the seeking of pleasure, as much as or more than by the avoidance of pain, can survive at all” (Damasio, 1994, p. 267). If readers will permit me to define pleasure as the result of positive emotion rather than mere hedonism then Damasio is in error. This book will summarize scientific evidence—gathered over the 14 years that have elapsed since Damasio made his assertion—suggesting that positive emotions are very important indeed. As noted in Chapter 6, by the year 2003 Damasio, too, had softened his position.

As the twenty-first century begins, a great many people—especially in the English-speaking world—are in search of some kind of common spiritual ground. On the one hand, increasing education and intolerance for patriarchal dogma has led to steady erosion in membership in most mainstream religions. On the other hand, this shift toward secularism has been offset by an equally steady increase in fundamentalist religions that isolate their believers from the rest of the world. As a result contemporary culture holds no universally accepted view of human nature. If the world is going to function as one small planet, the development of some kind of consensus regarding human nature is essential. That consensus should include the recognition that human nature is more than a bunch of “selfish genes”.

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Recently, I tentatively began to discuss spirituality with a close friend of mine, a brilliant woman and a devout Episcopalian to boot. “When I hear the word spirituality,” she exploded, “I break out in spots!” I was surprised to hear her voice her sentiment so strongly; but to her, spirituality was no more than illusion. The problem, of course, is that the word, spirituality, has many meanings. While spirituality is both the source and the outgrowth of faith for many people; for just as many others it is considered suspect. For them, “spirituality” is equated with the occult and with bogus faith healers; it brings to mind reincarnation, telepathy, crystals, angels and Tarot cards. To others spirituality can appear as nothing more than covert narcissism and a new-age mandate to follow your bliss. I believe these mindsets to be terribly mistaken.

This book will define spirituality as the amalgam of the positive emotions that bind us to other human beings—and to our experience of “God” as we may understand Her/Him. Love, hope, joy, forgiveness, compassion, faith, awe (Keltner and Haidt, 2003) and gratitude (McCullough et al, 2001; Emmons, 2007)) are the spiritually important positive emotions

addressed here. I have omitted from the list four other positive emotions—excitement, contentment, mirth, and a sense of mastery, as we can feel these latter four emotions alone on a desert island. In sharp contrast, the eight positive emotions that I have selected all involve human connection. None of the eight are all about “me.”

Negative emotions such as fear and anger are also inborn and are of tremendous importance. Dedicated to individual survival, the negative emotions are all about me. In contrast, positive emotions have the potential to free the self from the self. We feel both the emotions of vengeance and of forgiveness deeply, but the long-term results of these two emotions are very different. Negative emotions are often crucial for survival—but only in time present. The positive emotions are more expansive and help us to broaden and build (Fredrickson, 2001). They widen our tolerance, expand our moral compass, and enhance our creativity. They help us to survive in time future. Careful experiments document that while negative emotions narrow attention and miss the forest for the trees (Fredrickson 2004), positive emotions, especially joy, make thought patterns more flexible, creative, integrative and efficient (Isen et al 1991; Lyubormirsky et al, 2005). In the example of the mother and her son's killer, positive emotion led to a remarkable expansion in the lives of each. In contrast, negative emotions like disgust and despair freeze us in our tracks. When we are frightened, angry or depressed, it is hard to create or to learn new things.

The effect of positive emotion on the autonomic (visceral) nervous system has much in common with the relaxation response to meditation popularized by Harvard professor of medicine, Herbert Benson (1996). In contrast to the metabolic and cardiac arousal that the fight-or-flight response of negative emotion induces in our *sympathetic* autonomic nervous system, positive emotion via our *parasympathetic* nervous system reduces basal metabolism, blood pressure, heart rate, respiratory rate and muscle tension. Indeed, if sleep slowly lowers our basal metabolism by 8%, meditative states lower our metabolism 10 to 17 percent. Functional imaging (fMRI) studies of Kundalini yoga meditation by Andrew Newberg and associates (Newberg and Iverson, 2003) at the University of Pennsylvania Medical School have documented such increased parasympathetic activity producing first relaxation followed by a profound sense of quiescence.

California psychology professor Robert Emmons (2007) has spent his career studying gratitude and notes that ingratitude shrinks the self; gratitude expands the self. “First, gratitude is

the acknowledgement of goodness in one's life . . . second, gratitude is recognizing that the source(s) of the goodness lie at least partially outside of the self" (p. 4). The wonder of an American Thanksgiving day celebration need not be religious; but I would like to submit that it is more spiritual than humanist. If the universe were just about humans, it would be a terrible waste of space.

Positive emotion, meditation and spiritual experience cannot be disentangled. One report noted that 45% of people sensed the sacred during meditation and 68% experience a sense of the sacred after childbirth (Kantrowitz et al, 1994). Benson (1996) reported that 80% of his meditators chose a sacred symbol as a mantra for meditation.

Spirituality, then, is not just about following your bliss. Spirituality has a deep psychobiological basis—a reality rooted in the positive human emotions that needs to be better understood. Today, many fear or mock religion because of its association with “holy terror” and “assault on reason.” In contrast, I believe that by taking the science of positive emotions seriously, we can make spirituality palatable, even useful, to religions’ critics. Simultaneously, we can help those enthralled by their own faith traditions to appreciate what they have in common with the faith traditions of others.

Positive emotion is a brain activity that all humans share because they are born with it. Richard Davidson is a University of Wisconsin neuropsychologist who has built his distinguished career on clarifying that in people with gloomy introverted personalities the right prefrontal brain (above your right eye socket) is biologically more active than the left prefrontal brain. In people with sunny, outgoing personalities the left prefrontal brain is more active than the right. In studying the brain activity of a devout Tibetan monk with decades of loving-kindness meditation behind him, the left prefrontal brain activity was higher than in any of 175 normative Westerners that Davidson had tested (Davidson and Harrington, 2002, p.17).

Once we recognize that spirituality has a biological basis, we realize that this means we have evolved toward spirituality. It is not too great a leap to hope that as natural selection continues, if we don't denude or blow up our planet first, human beings may become more spiritual.

Just as a prism separates white light into a spectrum of discrete colors, so this book will separate spirituality into a broad spectrum of positive emotions. By focusing on the positive

emotions, I wish to perform for spirituality what the science of nutrition has performed for the world's discordant diets. Just as nutrition identifies the vitamins and the four basic food groups that make the various ethnic diets nourishing; so, neuroscience, cultural anthropology and ethology identify the love, community building and positive emotions that enduring religions have in common.

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*Spiritual Evolution* builds on the relatively new scientific disciplines of ethology (animal behavior) and neuroscience—both of which have enabled the scientific study of positive emotions such as love, joy, hope, faith, forgiveness and compassion. Each of these emotions has a neurobiological basis and an evolutionary architecture that will be explored in individual chapters. The exact mechanism by which such evolution takes place is a subject of speculation, but over the last 15 years it has become clearer. The mechanism undoubtedly has something to do with the fact that “emotions are curious adaptations that are part and parcel of the machinery with which organisms regulate survival” (Damasio, 2000, p. 54). You see, evolution has the daunting task of how with only 45,000 genes to organize 100 billion neurons into an adaptive brain. All the genes can do is to provide the means by which environment can do the heavy lifting in sculpting our brains.

Over the past 15 years four scientists have suggested the means by which natural selection could lead to prosocial behavior. In 1992 Gerald Edelman (1992) began with his concept of Neural Darwinism (the sculpting of the brain by individual and cultural environment) outlined in an influential book *Bright Air, Brilliant Fire*. A few years later, Antonio Damasio (1995) with *Descartes' Error* and Jaak Panskepp (1998) with his magisterial but less well known book *Affective Neuroscience* marshaled evidence that the genetically hardwired mammalian emotional system might provide the value system by which our pro-social behaviors and “seeking” systems evolved. Finally, David Sloan Wilson (2002) with *Darwin's Cathedral* provided convincing evidence for positive group selection.

This architecture, and the evolution of the title, do not, however, refer just to natural selection. There are actually three forms of evolution that are relevant here: genetic, cultural and individual. All have been experimentally shown to help humans behave more communally, more creatively and to learn more quickly (Lyubomirsky et al, 2005). *Spiritual Evolution* argues that

human spirituality, however defined, is virtually indistinguishable from these positive emotions, and is thus rooted in our evolutionary biology. Both genetic and cultural evolution has been important. Of importance also is the evolution of the individual from narcissism to maturity over the human life span.

For selfish reptiles to evolve into loving mammals took genetic evolution which led to the development of the limbic system, the brain region underlying our positive emotions. For loving, playful, passionate mammals to become creative scientists and intellectual theologians took genetic evolution that led to the development of our huge human neocortex, the brain region underlying both our science and our religious dogma. Although these two very different brain regions are neurologically richly connected, they sometimes treat each other as strangers. Emotion and reason, spirituality and religious dogma often fail to understand each other.

For human beings to have evolved into Samaritans who often place compassion, forgiveness and unselfish love above a mentality of might-makes-right has required cultural evolution, for cultural evolution is more rapid and more flexible than genetic evolution. True, evil probably still occurs at the same per capita rate as it did in the Iron Age. However, with each passing century, cultural awareness, if not always scientific understanding, of the positive emotions gains ground and contributes to community survival.

The third kind of evolution is the evolution of the individual over the human life span. Drawing on my thirty-five years as director of Harvard's Study of Adult Development, I explore the brain maturation and the increasing social awareness that takes place in all of us as we mature from self-absorbed teenagers to generative grandparents.

My focus on positive emotion does not mean that I intend to ignore evil. The Holocaust, murder, addiction, torture and child abuse are all mentioned. Nor will I deny that "selfish" genes and negative emotions like pain, rage, and grief are extremely valuable. For example, grief draws others to the side of the bereaved. Lepers become disfigured only because the pain fibers to their extremities are destroyed. Anger protects us all from trespass. However, while pain, rage and grief provide short-term benefits, positive emotions provide benefits over the long-term. On the one hand, we are a challenged and embattled species. Global warming, nuclear bombs, urban decay, over population, selfish capitalism gone berserk, and the destruction of natural resources

threaten our planet. On the other hand, astonishing, as it may seem, we are learning to live peaceably with each other in greater and greater numbers.

The genetic evolution that led to the positive emotions took 200 million years, but consider the cultural evolution of Europe's relationship to Africa over just 500 years. In the fifteenth and sixteenth centuries the highly- cultured Jews and African Moors were slaughtered or expelled by the Spanish Inquisition. Selfish genes make Homo sapiens xenophobic. Intellectually, however, Spain has never completely recovered from this ruthless ethnic cleansing.

In the seventeenth and eighteenth century the lives of Africans were spared; instead, the dominant European powers profitably sold them into slavery in the Americas. Selfish genes render Homo sapiens hierarchical and exploitative of strangers. America, however, is still recovering from such ruthless use of power.

In the nineteenth century, realizing that slavery was a spiritual disaster for everyone, devout European Christians fought for abolition of slavery, only to assert that the superiority of their Christian religion and science gave them the moral right to claim all the land in Africa for their own. Selfish genes make human nature territorial and in love with certainty. However, once again, instead of leading to Darwinian success, European colonialism contributed heavily to the onset of World War I, which in turn led to the extinction of the very European emperors who had promoted empire building. Perhaps for successful human natural selection, a mode of communitarian evolution more adaptive than only selfish genes is necessary.

What next? In his tiny 1913 hospital in Equatorial Africa physician and Bach master Albert Schweitzer provided all Europe with an inspirational example of the genetically enabled, other-oriented emotions of compassion, love, and hope. By 2008, Schweitzer's example, unlike that of the emperors (who had gone the way of the dodo), has multiplied a thousand times. At first so-called enlightened France had snatched “enemy” Dr. Schweitzer—who in fact would not even kill a mosquito—from his hospital and interned him in 1917 as a prisoner of war. Later, Schweitzer's example helped inspire France to found *Medecins sans Frontieres* (Doctors without Borders). The organization was founded in 1971 because France was the first major Western country to appreciate fully the human tragedy taking place in distant Biafra during the Nigerian civil war. Human beings learn from their mistakes, albeit slowly. That is what cultural evolution is all about. For the survival of humanity, genetic evolution and cultural evolution are both important.

Over the last century, with its tyrants disappearing and its state religions hobbled, Europe has—with ever-evolving unanimity—agreed that Africa belongs to Africans and that Europe needs to ask for African forgiveness. With every African famine and epidemic Europe has responded with increasing, if imperfect, compassion. And I believe that the difference is made by cultural evolution. Just as the genetically derived limbic system with its positive emotions facilitated the survival of mammals over dinosaurs; just so evolving cultural focus on positive emotions has contributed to the communal survival and success of Homo sapiens. Since the beginning of recorded history, sixty years (from 1945 to the present) is the longest period of time that one European nation failed to declare war on another.

We may have trouble defining spirituality, but we know and admire it when we see it. Let me mention three men who would be on most people's list of spiritual exemplars. For reasons embedded in our evolving genes, it is likely that the behaviors of three forgiving and altruistic leaders, Nelson Mandela, Martin Luther King Jr., and Mohandas Gandhi, will remain in memory and continue to shape human behavior. The self-focused behaviors of Adolf Hitler, Joseph Stalin, and Uganda's former dictator Idi Amin will be remembered only as behavior not to be copied.

Religion has played a very uneven role in such cultural evolution. On the one hand, religious beliefs have provided cultural justification for some of the most heinous and selfish human behavior ever committed. On the other hand, for all their intolerant dogma, religions have provided communities with a unifying view of the human condition and have often provided the portal through which positive emotions are brought to conscious attention. While neither Freud nor psychiatric textbooks ever mention emotions like joy and gratitude, religious hymns and psalms give these emotions pride of place.

Evolution toward spirituality takes place not only in the genetic and in the cultural arena, but also in the lives of every one of us as we mature our focus from caterpillar “me” to community butterfly. This is illustrated in a quote from a forty-five-year-old member of my research study who wrote, “At twenty to thirty I think I learned how to get along with my wife. From thirty to forty I learned how to be a success in my job. And from 40 to 50 I worried less about myself and more about the children.” But adult development does not stop at midlife. Consider the life of the Australian Donald Bradman who began life as an isolated, self-absorbed youth teaching himself cricket. At age twenty-five he was the Babe Ruth and superstar of Test

cricket. At forty he became the generative captain of arguably the greatest cricket team ever assembled. From sixty to seventy in the international cricket world he fought apartheid, and at home instead of captaining elite players, he promoted cricket for Australian aboriginals and won the admiration of Nelson Mandela. In old age his talents belonged to the world, not to himself, and he was called “The Greatest Living Australian”. But he had begun life, like the rest of us, as a self-centered, not very useful, adolescent.

My intent is that *Spiritual Evolution* will create a middle ground for readers seeking to have both their spiritual hearts and their scientific intellects taken seriously. Thus, science and the “left-brain” are correct in asserting that the history of Europe above has been rhetorical rather than dispassionate and that the evolution of human love and compassion has been an arduous process of natural selection, good luck, and trial and error lasting more than a hundred million years. Meanwhile, the limbic and the “right brain” are correct in singing:

My life flows on in endless song,  
above earth’s lamentation.  
I hear the clear, though far off hymn  
that hails a new creation.

No storm can shake my inmost calm  
While to that Rock I’m clinging.  
Since love is Lord of heaven and earth,  
How can I keep from singing?

*Robert Lowry, 1860*

Or as Albert Schweitzer (1947), a both passionate and thoughtful scientist maintained, “Man can no longer live for himself alone. We realize that all life is valuable, and that we are united to this life. From this knowledge comes our spiritual relationship to the universe.”

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At this point, even tolerant readers may ask what right have I—a septuagenarian “Western” research psychiatrist studying adult development—to presume to write a book about spirituality. Perhaps my best answer is that by virtue of being for thirty-five years the director of Harvard’s

seven-decade-old Study of Adult Development, I have been profoundly privileged to watch teenagers mature into great grandparents. I have been able to watch prospectively what Gail Sheehy and Erik Erikson only speculated about—adult evolution as it unfolds. By watching adolescent caterpillars evolve into great grandfather butterflies I have been impressed by how unimportant are parental social class, religious denomination and even our conventional conception of IQ. Instead, human relationships and the positive emotions seemed critical to adaptation; best selling author Daniel Goleman and Yale psychology professor Peter Salovey call it "emotional intelligence". In addition, by studying lifetimes I have learned to pay attention to how people behave, not what they say—and to how they behave over decades, not just during last week.

When I was ten years old, I wrote my first “term paper” on the origin of the universe. I imagined that I would grow up to be an astrophysicist. In college, impressed by the devastation of the Great Depression, I gave up astrophysics for economics and then gave up economics, too, because neither science had a heart. Next, I debated becoming a minister, but I abandoned that because the ministry tried to help people without science. Instead, I chose medicine where I hoped that science and the heart are inseparable, where limbic compassion and left-brain reason work in synchrony.

In medical school I began to realize that Western medicine was often more spiritual than it acknowledged. When I began school in 1955, the best available “scientific” treatment for schizophrenia was insulin coma. The research literature included 700 papers showing that insulin coma—a dangerous but care-intensive treatment—helped schizophrenics. The scientific papers did not always acknowledge that the patients receiving insulin coma treatments were also viewed by hospital staff as having the best chance of recovery. Not only were they regarded with hope rather than despair, but also, since insulin coma was dangerous, they were looked after by the most competent nurses and were the focus of special attention and care in otherwise barren and loveless public institutions.

However, once modern medicine obtained Thorazine—a medicine that chemically alleviated schizophrenia, —a series of scientific papers emerged proving that insulin coma was no more than a form of active placebo therapy (Ackner et al, 1957, Cramand, 1987). Thorazine and its more effective pharmacological descendants now dominate schizophrenia treatment. Insulin

coma as a therapy for schizophrenia has essentially vanished. We must never forget, however, that the efficacy of the faith, hope and love with which insulin coma was administered was initially attributed to medical intervention in 700 scientific papers! Patients who received the care-intensive treatment recovered faster than those who did not receive it. While no medical journal would call the treatment spiritual, such caring behavior, involving as it did the three “theological virtues” faith, hope and love, would be regarded as spiritual by most religious denominations.

From 1960-66 in residency and in subsequent fellowships, I was exposed to the zeitgeist of the birth of neuroscience. A fellow psychiatric resident and friend, Eric Kandel, who four decades later went on to win the Nobel Prize, was already at work on his ground breaking research on the neurobiology of memory. After residency I did research in pharmacology in the Harvard Medical School basic science quadrangle, which was suffused with the generative spirit of Stephen Kuffler, one of the fathers of modern neuroscience. My own mentor, Peter Dews, the Stanley Cobb professor of Psychiatry, used to consult, with me tagging along, to two future Nobel Laureates in neuroscience, Thorsten Wiesel and David Hubel, who were studying the neurobiology of vision in the laboratory below us. Although I was to spend the rest of my life as a clinician and a clinical researcher, the scientific inspiration of those years never left me. My wonder about the origin of the universe was replaced by my wonder about the origins of the human brain.

Years later I became co-director of an alcohol detoxification center and a professor of psychiatry at Harvard Medical School. As a condition of employment, for ten years I had to attend one AA meeting a month. I was surprised to find that these monthly, nonsectarian AA meetings met my spiritual needs and my alcoholic clients’ medical needs better than either of the faith traditions in which I was raised—the Episcopalian Church and the Boston Psychoanalytic Institute.

In 1998, I was fortunate enough to be chosen as a nonalcoholic trustee of Alcoholics Anonymous. After a year a fellow non-alcoholic trustee, a bishop, confided to me that there was more “spirituality” in our trustees’ meetings than in his diocesan conventions. I believed him. For six years I tried to understand how one could have a medically effective spiritual program that served 150 countries and that was NOT a religion. Those six years of reflection led to the ideas

that started this book. What is the difference between spirituality and religion? Why does the former provide only comfort while the latter causes so much pain as well as comfort? Why should the emphasis of AA on positive emotions work as well or better than the exploration of negative emotions in which I engaged as a psychotherapist? In order to understand this paradox, for the last seven years I have been on the Steering Committee of Martin Seligman's Positive Psychology Center at the University of Pennsylvania.

Certainly, I am no theologian. By studying human behavior over a lifetime, I have perhaps become more a psychobiologist than a psychiatrist. My research has more in common with ethologists like Jane Goodall and Konrad Lorenz than with psychoanalysts like Sigmund Freud. Over the past four decades I have been tracking shifts in the evolving spiritual beliefs of the men in my study. It has all proven very instructive. With maturity, religious belief does not increase; yet we develop a more nuanced emotional life and a deepening spiritual appreciation (Vaillant 1977,1993, 2002). In the first thirty years leading the Study I learned that positive emotions were intimately connected to mental health. In the last ten years I have come to appreciate that positive emotions cannot be distinguished from what people understand as spirituality.

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Given the link between positive emotion and the deepening of spirituality over a life time does that mean that people with the most halcyon childhoods, with the most fulfilling adult family lives, and with the most reason for positive emotion are the most spiritual? No, quite the opposite. Often the most broken individuals, with a little help from their friends, become the most spiritual. In the words of playwright Eugene O'Neill, whose early life was filled with lovelessness and negative emotion, "Man is born broken, he lives by healing, and the grace of God is glue" (Sheaffer, 1968). For research psychiatrist Gail Ironson one of the most unexpected and moving experiences of working with fatally ill AIDS victims was witnessing the increased salience of spirituality and positive emotion in their lives (Ironson et al, 2002). Among the hundreds of men that I have followed for many decades, the men with initially the most traumatic lives often became the most spiritual (Vaillant et al, 2008).

In order to illustrate the transmutation of pain into positive emotion, I intend to show and not tell. Life histories will follow in later chapters. For now, let me provide a statistically convincing example of the power of emergent positive emotion. In an ongoing web-based survey

of 24 positive character “strengths,” two well-known psychologists, Christopher Peterson and Martin Seligman, charted the effect of the September 11, 2001 terrorist attacks. They compared the self-reported character strengths of 529 web respondents in the two months before the event with the self-reported character strengths of 490 web respondents in the two months after the 9/11 World Trade Center bombing. Cognitive “strengths,” like prudence, curiosity, bravery, self-control and wisdom did not change significantly. Six “strengths,” more emotional in nature, went up the most—all significantly. These strengths were gratitude, hope, kindness, love, spirituality, and teamwork (Peterson and Seligman, 2003). Work from several other investigators has confirmed the strong causal association between positive emotions and post-crisis resilience.

Barbara Frederickson and colleagues also undertook a study of University of Michigan students during the months before and the month after the World Trade Center bombing. The awareness of positive emotions after the crisis appeared to be a core ingredient in buffering students against depression by broadening post-crisis resources (Frederickson et al, 2003). As I have already pointed out negative emotions help us to survive in time present, while positive emotions help us to survive in time future.

Certainly violence, tantrums, cruelty, dishonesty, exploitation of the weak and the madness of crowds are also important to write about. Theological historian, Karen Armstrong wisely reminds us, “Unless we allow the sorrow that presses in on all sides to invade our consciousness, we cannot begin our spiritual quest. In our era of international terror, it is hard for any of us to imagine that we live in Buddha's pleasure park.” P.396, Armstrong, 2006). But there are already thousands of books on negative emotions.

This book will follow a less traveled path. First, in contrast to popular science, which places spirituality in our huge, reasoning Homo sapiens neocortex, I would concede that religious dogma might live there, but I place the spiritual impulse in our mammalian, emotional brain—the limbic system. I will argue that spirituality is not rooted in ideas, sacred texts and theology. Rather, spirituality is comprised of positive emotion and social connection. *Love* is the shortest definition of spirituality I know. Both spirituality and love result in conscious feelings of respect, appreciation, acceptance, sympathy, empathy, compassion, involvement, tenderness and gratitude. Like the prayer that serves as epigraph for this chapter, these unsimplistic words are not the worst place to seek what is important in life.

Second, I argue that spirituality reflects humanity's biological press for connection and community building as much as it reflects the individual's need for revelation. Spirituality is more about *us* than *me*. Thus, I would suggest that our spirituality is made manifest not as much by our inner enlightenment and our prayers as by our outward behavior. For example, Jesus Christ and Karl Marx are not usually paired, but both men were revolutionaries who mistrusted organized religion because religion talked about, without actually creating, loving communities. Physical fitness, after all, is not about the regularity with which you follow your exercise regimen or, worse yet, talk about it. Physical fitness is defined by how well you function in the real world. The Buddhist ideal is that of the bodhisattva, one who elects voluntarily to stay in this world and to help others, rather than entering directly into Nirvana.

Third, I hold that we do not have to be taught positive emotions. Our brain is hard wired to generate them. Humanity's task is to pay attention to them, for they are the source of our spiritual being and the key to our cultural evolutionary progress. For the last three thousand years organized religions, for all their limitations, have been the best means that humanity has found for bringing the positive emotions into conscious reflection. Only by noting the long-term consequences of competing faith traditions can we separate evolutionary truth from scriptural superstition.

We need to bring our positive emotions to conscious attention, and we must not disdain to study them with our science. If my purpose as an author can be oversimplified into a single wish, it would be this: to restore our faith in spirituality as an essential human striving.

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