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PRINCIPLES OF CONTEMPLATIVE SCIENCE



THE VERY IDEA of proposing a discipline called “contemplative science” may arouse suspicion among those who value the triumphs of science, which have been won, in part, by divorcing its mode of inquiry from all religious affiliations. Such unease has a strong historical basis, so it should be taken seriously. But there are also historical roots to the principles of contemplation and of science that suggest a possible reconciliation and even integration between the two approaches.

The Latin term *contemplatio*, from which “contemplation” is derived, corresponds to the Greek word *theoria*. Both refer to a total devotion to revealing, clarifying, and making manifest the nature of reality. Their focus is the pursuit of truth, and nothing less. As the Christian theologian Josef Pieper comments, the first element of the concept of contemplation is the silent perception of reality.¹ This, he claims, is a form of knowing arrived at not by thinking but by seeing. “Intuition is without doubt the perfect form of knowing. For intuition is knowledge of what is actually present; the parallel to seeing with the senses is exact.”² But unlike objective knowledge, contemplation does not merely move toward its object; it already rests in it.

While the term “science” has long been affiliated solely with the exploration of objective, physical, quantitative phenomena—even to the point that they alone are deemed by some scientists to be real—there are also grounds for viewing science in a broader context. *Webster’s Ninth New Collegiate Dictionary* defines the scientific method as follows: “Principles and procedures for the systematic pursuit of knowledge involving the recognition and for-

mulation of a problem, the collection of data through observation and experiment, and the formulation and testing of hypotheses.” There is nothing in this definition to preclude the possibility of first-person observations of mental phenomena and their relation to the world at large. Just as scientists make observations and conduct experiments with the aid of technology, contemplatives have long made their own observations and run experiments with the aid of enhanced attentional skills and the play of the imagination. In principle, then, there is nothing fundamentally incompatible between contemplation and science. But the weight of history is still against any fruitful collaboration between the two.

The strength science has acquired by divorcing itself from religion, and more recently from philosophy, has taken a severe toll on its host societies. It is sobering to note that the twentieth century, which generated the greatest growth of scientific knowledge in the entire course of human history, also witnessed man’s greatest inhumanity to man, as well as the greatest degradation of our natural environment and the decimation of other species. The expansion of scientific knowledge has not brought about any comparable growth in ethics or virtue. Modern society has become more knowledgeable and powerful as a result, but it has not grown wiser or more compassionate.

Science has long been viewed proudly, not without justification, as being “value free.” Time and again I have met with scientists who speak of the sheer joy of discovery, unrelated to any practical applications of their research. But we cannot ignore the fact that most scientific research is presently funded by governments and private institutions that have very specific goals in mind. They want a good return on their investments. With the modern dissolution of the medieval fusion of religion, philosophy, and science, there has occurred a similar disintegration of the pursuits of genuine happiness, truth, and virtue—three elements that are essential to a meaningful life. The contemplative science I have in mind seeks to reintegrate these three pursuits in a thoroughly empirical way, without dogmatic allegiance to any belief system, religious or otherwise. To explore this possibility, let us first review the salient features of genuine happiness, truth, and virtue that are to be united.

THE ESSENTIALS OF A MEANINGFUL LIFE

Genuine Happiness

Genuine happiness is a way of flourishing that underlies and suffuses all emotional states, embracing all the vicissitudes of life, and it is distinguished

from “hedonic pleasure,” which is the sense of well-being that arises in response to pleasurable stimuli. The Greek term that I am translating as genuine happiness is *eudaimonia*, which Aristotle in his *Nicomachean Ethics* equated with the human good. This is disclosed as a being-at-work of the soul in accordance with virtue, and if the virtues are more than one, in accordance with the best and most complete virtue.³ Genuine happiness is not simply the culmination of a meaningful life, but a characteristic of a developing person in the process of ethical and spiritual maturation. This is an intentionally general notion of human flourishing that leaves it up to the individual reader to determine what virtues are “the best and most complete.” Clearly, this ideal of genuine happiness can be embraced by both religious and nonreligious people, who may define its specific attributes in terms of their own worldviews. As we shall see in the following discussion, such well-being is a natural consequence of developing mental balance in ways that fortify the “psychological immune system,” so that one rarely succumbs to a wide range of mental afflictions. A state of calm presence, emotional equilibrium, and clear intelligence are all characteristics of such genuine happiness, which naturally expresses itself in a harmonious, altruistic way of life.

Saint Augustine (354–430) raised this theme when he declared that the only thing we need to know is the answer to the question “How can man be happy?”⁴ Genuine happiness, he declared, is a “truth-given joy,”⁵ while the two real causes of the miseries of this life are “the profundity of ignorance” and the “love of things vain and noxious.” The path to genuine happiness, he declared, is motivated by the love of God, which is the desire for union with him. This emphasis on the profundity of the pursuit of happiness is not confined to Greek antiquity or Christian theology. The Dalai Lama writes in his best-selling book *The Art of Happiness*, “I believe that the very purpose of our life is to seek happiness. Whether one believes in religion or not, whether one believes in this religion or that religion, we all are seeking something better in life. So, I think, the very motion of our life is towards happiness.”⁶

Truth

Genuine happiness is not experienced simply as a result of encountering a pleasant sensory or intellectual stimulus. Nor is it produced merely by learning to think in a certain way or by adopting an optimistic attitude. It must be based on a sound understanding of truth. But there are many truths that have little relevance to human flourishing. Many of the aspects of the natural world studied by scientists seem far removed from human values, and there seems no reason to believe that scientists in general, for all their knowledge

of the physical world, are happier than members of any other profession. As noted earlier, the exponential growth of scientific knowledge in the past century did not correspond to any comparable growth in human happiness, though advances in medicine have certainly contributed enormously to our physical well-being.

This implies that the types of truths most relevant to human flourishing are not those most commonly and successfully explored in modern science. While scientists have primarily focused their attention on the external world, there is no aspect of reality more pertinent to genuine happiness than the nature of human identity. Christian theologian Joseph Maréchal addresses this topic within the context of contemplative inquiry:⁷

The human mind . . . is a *faculty in quest of its intuition*—that is to say, of assimilation with Being, Being pure and simple, sovereignly one, without restriction, without distinction of essence and existence, of possible and real. . . . But here below, in place of the *One*, it meets with the *manifold*, the *fragmentary*. Now, in the order of truth, the unreduced multiplicity of objects suspends affirmation and engenders doubt. . . . The affirmation of reality, then, is nothing else than the expression of the fundamental tendency of the mind to unification in and with the Absolute.

In the Buddhist tradition, as well, the importance of self-knowledge cannot be exaggerated, especially in light of the Buddhist assertion that the fundamental cause of human suffering is ignorance and delusion, specifically pertaining to one's own identity. Of all the virtues emphasized in Buddhism, none is more important than that of wisdom, entailing insight into the ultimate nature of reality. The seventh-century Indian Buddhist contemplative Śāntideva wrote, "The Sage taught this entire system for the sake of wisdom. Therefore, with the desire to ward off suffering, one should develop wisdom."⁸

Virtue

Just as genuine happiness is inextricably related to the understanding of truth, so it cannot be understood apart from virtue. While diverse theories of virtue abound among philosophers and theologians, Augustine's short definition is particularly salient and universal, as he explained it in terms of "the order of love," which has to do with the priority of our values.⁹ Following the words of Jesus concerning the centrality of the love of God and of one's fellow humans, theologian John Burnaby writes, "The love of God which is the

desire for union with Him, and the love of men which is the sense of unity with all those who are capable of sharing the love of God, are indeed bound up most intimately with one another.”¹⁰ This is the basis of all virtues within this theistic context.

In Buddhism, which is commonly referred to as a nontheistic religion, a life of virtue is a necessary foundation for pursuing truth and genuine happiness, or human flourishing, of which there are three kinds: social/environmental, psychological, and spiritual. While Buddhist theories of ethics are deeply embedded in the Buddhist worldview, including its assertions of reincarnation and karma, in his book *Ethics for the New Millennium* the Dalai Lama has developed a view of secular ethics that is equally relevant to religious believers and nonbelievers alike.

Psychological Flourishing

The explanatory power of behaviorism, psychology, and neuroscience pertains to topics such as decision making, attention, and statements about what subjects experience under various controlled conditions. The mental processes studied in the cognitive sciences consist largely of those that have, from an evolutionary perspective, helped mankind survive and procreate. All branches of psychophysics, attentional psychology, cognitive psychology, and personality and social psychology depend on asking people such questions as how bright something seems, what color they see, how loud they hear a sound, what they believe, what attitudes they have, and so on. Many of these data have been organized in terms of coherent principles, and the structured sets of findings that cognitive scientists have been trying to organize and understand are very large. Contemporary neuroscience has shed additional light on what psychologists have explored regarding memory, attention, emotions, attitudes, and so forth.

Especially since the Second World War, most psychological research, particularly in the United States, has been focused on normal and pathological mental processes. Only recently has scientific attention begun to focus on mental well-being, but funding for such research has been limited due to the fact that the nature of well-being and its behavioral effects are not well understood—a catch-22! This is where the contemplative traditions of the world, which have long been concerned with human flourishing within the context of truth and virtue, could make significant contributions.

Within the broad context of genuine happiness, it may be useful to identify specific domains of flourishing. On the basis of the social and environmen-

tal well-being that derives from the cultivation of ethical behavior, one may bring about psychological flourishing that emerges from a healthy, balanced psyche. I am using the word “psyche” to refer to the whole range of conscious and unconscious mental phenomena studied by psychologists, including perceptions of all kinds, thoughts, emotions, memories, fantasies, dreams, mental imagery, and so on. Psychological processes are conditioned by the body, personal history, the physical environment, and society, and from moment to moment they are closely correlated with specific brain functions. The psyche can be studied *indirectly* by the interrogation of individuals and by the examination of behavior and the brain, and it can be observed *directly* through introspection.

If psychological flourishing emerges from mental health and balance, it must be understood with respect to specific types of mental imbalances to which normal people—often deemed relatively healthy—are commonly prone. A fundamental premise behind the following analysis is that mental distress is generally a symptom of mental imbalances, much as physical pain is a symptom of physical illness or injury.¹¹ In the following sections, I shall set forth four kinds of mental imbalances—conative, attentional, cognitive, and affective—and for each one identify imbalances in terms of deficit, hyperactivity, and dysfunction.

Conative Imbalances

“Conation” is a valuable term, though not in common use, which refers to the faculties of desire and volition. Conative imbalances constitute ways in which our desires and intentions lead us away from psychological flourishing and into psychological distress. A conative deficit occurs when we experience an apathetic loss of desire for happiness and its causes and an unwillingness to alleviate our own and others’ suffering. This is commonly accompanied by a lack of imagination and a kind of stagnated complacency: we can’t imagine faring better, so we don’t try to do anything to achieve such well-being. Conative hyperactivity occurs when we fixate on obsessive desires that obscure the reality of the present. We are so caught up in fantasies about the future—about unfulfilled desires—that our senses are dulled as to what is happening here and now. In the process, we may also blind ourselves to the needs and desires of others. Finally, conative dysfunction sets in when we desire things that are not conducive to our own or others’ well-being, and don’t desire the things that do contribute to our own and others’ flourishing. It is crucial to recognize that individual psychological flourishing is not something that can

be cultivated without any relation to others. We do not exist independently from others, so our well-being cannot arise independently of others either. We must take into account the well-being of those around us.

What kinds of goods (in the broadest sense, including both tangible and intangible things and qualities) are truly conducive to psychological flourishing? In his book *The High Price of Materialism*, psychologist Tim Kasser analyzes the relation between the materialistic values that so dominate today's world and the well-being that we all seek. He concludes:¹²

Existing scientific research on the value of materialism yields clear and consistent findings. People who are highly focused on materialistic values have lower personal well-being and psychological health than those who believe that materialistic pursuits are relatively unimportant. These relationships have been documented in samples of people ranging from the wealthy to the poor, from teenagers to the elderly, and from Australians to South Koreans.

As noted earlier, Augustine pointed to the “love of things vain and noxious” as a kind of conative dysfunction, while the most profound, reality-based desire is the love of God, which is the desire for union with him. Nicholas of Cusa, a fifteenth-century cardinal of the Roman Catholic Church, echoed this theme when he wrote, “Everyone . . . who is seeking seeks only the good and everyone who seeks the good and withdraws from you [God] withdraws from that which one is seeking.”¹³ Śāntideva expressed a similar theme from a nontheistic perspective: “Those seeking to escape from suffering hasten right toward their own misery. And with the very desire for happiness, out of delusion they destroy their own well-being as if it were their enemy.”¹⁴

Although there are many ways of restoring conative balance, a general approach is to remedy apathy with the recognition of the possibility of genuine happiness, remedy obsessive desire with the cultivation of contentment, and remedy mistaken desires with the recognition of the true causes of genuine happiness and of our vulnerability to suffering. Specific methods for counteracting conative imbalances have been developed in various psychological and contemplative traditions for individuals committed to secular, theistic, and nontheistic worldviews.

Attentional Imbalances

No one who suffers from severe attentional imbalances can be deemed psychologically healthy. An attentional deficit is characterized by the inability

to focus on a chosen object. The mind becomes withdrawn and disengaged, even from its own internal processes. Attentional hyperactivity occurs when the mind is excessively aroused, resulting in compulsive distraction and fragmentation. And attention is dysfunctional when we focus on things in afflictive ways, not conducive to our own or others' well-being. For example, a sex addict may attend to other people solely as sexual objects, and a salesperson may mentally engage with others only in terms of their willingness to buy a product. In such cases, the mind is prone to both attentional and conative imbalances, which often go hand in hand.

An attentional deficit corresponds closely to the Buddhist concept of laxity, and attentional hyperactivity correlates with excitation. These imbalances are remedied through the cultivation of mindfulness—the ability to sustain voluntary attention continuously upon a familiar object, without forgetfulness or distraction—and meta-attention—the ability to monitor the quality of the attention, swiftly recognizing whether it has succumbed to either excitation or laxity. Śāntideva emphasized the importance of developing attentional skills for psychological flourishing: “Upon developing zeal in that way, one should stabilize the mind in meditative concentration, since a person whose mind is distracted lives between the fangs of mental afflictions.”¹⁵

While Buddhist contemplatives have identified and learned to heal these imbalances of the attention, the same issues have been of great concern to all the contemplative traditions of the world. An Eastern Orthodox Christian contemplative writes, “Keeping watch over his heart, growing in self-awareness, the aspirant acquires *nepsis* (‘sobriety’ or ‘watchfulness’) and *diakrisis* (‘discernment’ or ‘discrimination,’ the power to distinguish between good and evil thoughts).”¹⁶ And Joseph Maréchal writes in a similar vein:

There can be no contemplation without sustained attention, at least for a few moments; now attention acts on the psychological elements after the fashion of the poles of a magnet, which gather up iron filings into magnetic shapes. Perhaps the characteristic of contemplation is rather a deep *orientation* of the human being *in* an intuition or *towards* an intuition?¹⁷

Cognitive Imbalances

A person with a severe cognitive imbalance is radically out of touch with reality and is commonly diagnosed as suffering from some kind of psychosis. Normal people too are generally prone to cognitive imbalances, which lie at the root of much mental distress. Such imbalances are often deemed to be in-

trinsic to human nature, but this is an assumption that begs to be challenged by rigorous empirical inquiry.

Returning to the threefold analysis of mental imbalances, a cognitive deficit is characterized by the failure to perceive what is present in the five fields of sensory experience and in the mind. Insofar as we are out of touch with what is going on around us and within us, we are suffering from a cognitive deficit disorder. Cognitive hyperactivity sets in when we conflate our conceptual projections with actual perceptual experience—fail to distinguish between perceived realities and superimposed assumptions and fantasies. Psychotic people do this in extreme ways, while normal people are more discreet, but most of us are positioned on the same spectrum of cognitive hyperactivity, and it results in unnecessary mental suffering. Finally, cognitive dysfunction occurs when we misapprehend the way things are, through defects either in our physical senses or in our ability to interpret what is happening.

Overcoming such cognitive imbalance is a central theme in Buddhist practice, where one of the primary interventions is the cultivation of discerning mindfulness. The first challenge is to learn how to attend just to what is being presented to our senses and to inner awareness of our own mental processes. In this regard, the Buddha set forth the following ideal: “In the seen there is only the seen; in the heard, there is only the heard; in the sensed, there is only the sensed; in the mentally perceived, there is only the mentally perceived.”²¹⁸ Elaborating on that theme, Buddhism gives detailed instructions on applying mindfulness to our own physical and mental presence in the world, with other beings, and with the inanimate environment. There is a rapidly growing mass of scientific research exploring the therapeutic effects of such mindfulness training, much of it inspired by the work of Jon Kabat-Zinn and his highly successful program of mindfulness-based stress reduction.

Affective Imbalances

Affective imbalances commonly occur as a result of conative, attentional, and cognitive imbalances, and they too can be viewed as being of three kinds. An affective deficit has the symptoms of emotional deadness within, and a sense of cold indifference toward others. Affective hyperactivity is characterized by alternating elation and depression, hope and fear, adulation and contempt, and obsessive craving and hostility. Affective dysfunction occurs when emotional responses are inappropriate to the circumstances at hand, such as taking delight in someone else’s misfortune. Psychologists and contemplatives the world over have devised a wide array of interventions to heal such im-

balances, some of them applicable to society in general, others embedded in religious worldviews. One fourfold approach drawn from Buddhism has spiritual depth without any necessary ties to a particular belief system. The essence of this practice is to remedy craving with loving-kindness, remedy aloof indifference with compassion, remedy depression with empathetic joy, and remedy personal prejudice with equanimity.

The overall effect of the four above-mentioned mental imbalances is constant dissatisfaction, which is only temporarily and superficially alleviated by latching onto pleasant sensory and mental stimuli or by altering the brain with drugs. Having little faith in their own inner resources for genuine happiness, many people today become addicted to pleasurable stimuli or chemical suppressants of dissatisfaction, but as soon as these props are removed, the sense of well-being disappears. From the perspective of contemplative science, the primary, pragmatic purpose of psychology is to explore states of the psyche to identify which lead to the perpetuation of suffering and which to genuine happiness. Like shifting from the use of fossil fuels to solar power, we have the opportunity to wean ourselves away from obsessive reliance on pleasurable stimuli and to shift to the cultivation of exceptional mental health as the basis of happiness.

A fundamental hypothesis behind this pursuit is that in terms of human nature, our habitual state is afflicted and suffering, but our potential state is healthy and flourishing. Our minds are not intrinsically unbalanced, only habitually so, and with continued, skillful effort, the imbalances may be remedied, resulting in a state of well-being that is not contingent upon agreeable sensory, chemical, intellectual, or aesthetic stimuli. This is an area in which science and the contemplative traditions may all collaborate for the benefit of the entire world.

There is a profound complementarity between scientific and contemplative approaches to the study of the psyche. The behavioral sciences, psychology, and neuroscience have shed light on cognitive processes that have enabled us to survive, propagate, and experience hedonic well-being. Contemplative traditions show how we can find genuine happiness, or eudaimonic well-being, and explore the spiritual dimensions of our existence. Hedonic and eudaimonic well-being do not usually stand in opposition to each other. On the contrary, without hedonic well-being, including good health and sufficient food, clothing, and shelter, it is difficult, though not impossible, to develop eudaimonic well-being. Likewise, the more we cultivate genuine happiness that arises from within, the more we can appreciate the simple pleasures of life. While hedonic well-being may have no intrinsic or endur-

ing value, it can aid in seeking a meaningful life, entailing the integrated pursuit of genuine happiness, truth, and virtue.

THE ORIGINS OF THE PSYCHE

Contemporary cognitive scientists, confining their inquiries to behavior, brain activity, and the subjective reports of normal and subnormal people, have strongly held assumptions about the origins of the psyche: there is a widespread consensus that all mental processes are nothing more than functions or properties of the brain. And as long as scientific inquiry remains within those confines, it is unlikely that compelling evidence will emerge to seriously challenge that consensus. Scientific methods for studying the mind that are based on materialist assumptions will likely only reinforce them.

But Western philosophy and science did not always take such an attitude. Pythagoras (c. 570–c. 495 B.C.E.), the most famous of the pre-Socratic philosophers, who allegedly coined the term “philosophy,” founded a contemplative community in the south of Italy that was both religious and scientific, with a strong emphasis on mathematics. Its main purpose was the cultivation of holiness through the purification of the body and mind. In his view, the man who devotes himself to such purification is the “true philosopher,” one who “looks on” (*theorein*), and the greatest purification method of all is science.

Pythagoras is widely known for advocating a theory of metempsychosis, or reincarnation, according to which the soul is immortal and is reborn in both human and animal incarnations. This view was allegedly an empirical finding based on his own experience of recalling up to twenty of his own and others’ past lives. The oldest and the latest accounts of his life agree in representing Pythagoras as a wonder worker, and the Pythagorean Society became the chief scientific school of ancient Greece.

In Plato’s *Phaedo*, Socrates addressed this issue by first commenting that according to the popular view, the soul is dispersed and destroyed at death.¹⁹ But the truth, he said, which is known only to those who have practiced philosophy, is far from that. The soul of the philosopher, having “practiced death” by shunning sensual craving and corporeal desires, “departs to a place which is, like itself, invisible, divine, immortal, and wise, where, on its arrival, happiness awaits it, and release from . . . all . . . human evils.”²⁰ But the souls of those who have not practiced philosophy, being permeated by the corporeal, become wandering spirits after death, in a manner virtually identical to the

Buddhist account of the intermediate state (*antarābhava*) following death and prior to the next rebirth. Eventually, Socrates declared, “through craving for the corporeal, which unceasingly pursues them, they are imprisoned once more in a body. And as you might expect, they are attached to the same sort of character or nature which they have developed during life.”²¹

Belief in metempsychosis was also common in early Christianity. Origen (185–254), widely viewed as the greatest Christian theologian after Paul and before Augustine, was strongly influenced by Pythagoras and Plato. Knowledge of God, he claimed, is natural to humanity and can be “recollected” and awakened by special disciplines. In this way, the soul can ascend to God in a long, steady journey from lifetime to lifetime. By means of contemplation (*theoria*), the soul advances in the knowledge (*gnosis*) of God, which transforms it until, as Plato had taught, it becomes divine. For Origen, like Pythagoras, there was no absolute divide between science and religion. The contemplative life may be subdivided into the contemplation of God and the contemplation of nature, and it has three stages: the active life (*praktikê*); the contemplation of nature, or “natural contemplation” (*physikê*); and contemplation in the strict sense, the vision of God, also termed “theology” (*theologia*), or “spiritual knowledge” (*gnosis*).²² This unifying vision of science and spirituality was later suppressed when Emperor Justinian wrote a series of anathemas against Origen’s writings. In the local synod of 543, he ordered the patriarch Mennas to call together all the bishops present in Constantinople and make them subscribe to the anathemas.

Despite the condemnation of Origen’s writings concerning the origins of the soul, the matter was far from settled. Augustine addressed the issue by proposing four hypotheses: 1) an individual’s soul derives from those of his or her parents; 2) individual souls are newly created from individual conditions at the time of conception; 3) souls exist elsewhere and are sent by God to inhabit human bodies; and 4) souls descend to the level of human existence by their own choice.²³ Augustine maintained that all these hypotheses are compatible with the Christian faith. In the true spirit of philosophy, he declared, “It is fitting that no one of the four be affirmed without good reason.”²⁴ While many Christians today have chosen the second—that individual souls are newly created from individual conditions at the time of conception—the empirical and logical grounds for this view are far from clear.

The origins of the psyche were largely ignored by scientists from the time of Copernicus until the rise of modern psychology. William James, who founded the first neuroscience laboratory in the United States at Harvard University, proposed three hypotheses to explain the origins of mental pro-

cesses in relation to brain functions: 1) the brain produces thoughts, as an electric circuit produces light; 2) the brain releases, or permits, mental events, as the trigger of a crossbow releases an arrow by removing the obstacle that holds the string; and 3) the brain transmits thoughts, as light hits a prism, thereby transmitting a spectrum of colors.²⁵ During his era and even today, all three of these hypotheses are consistent with everything that is scientifically known about mind-brain correlations. James, who believed in the third option, hypothesized:²⁶

When finally a brain stops acting altogether, or decays, that special stream of consciousness which it subserved will vanish entirely from this natural world. But the sphere of being that supplied the consciousness would still be intact; and in that more real world with which, even whilst here, it was continuous, the consciousness might, in ways unknown to us, continue still.

James further speculated that the stream of consciousness may be a different type of phenomenon than the brain, one that interacts with the brain while alive, absorbs and retains the identity, personality, and memories constitutive in this interaction, and can continue without the brain. While James is still widely respected among contemporary cognitive scientists, his views on the origins and nature of consciousness have been largely ignored or rejected. Most psychologists and neuroscientists categorically refute any kind of dualism on the ground that there is no evidence for the existence of any kind of subjective mental phenomenon apart from the functions and properties of the brain. But as long as cognitive scientists confine their inquiry to behavior, brain function, and the subjective reports of normal and pathological subjects, they have little chance of discovering evidence to the contrary.

One researcher who has scientifically challenged these views is Ian Stevenson, professor emeritus of psychiatry and the former director of the Division of Personality Studies at the University of Virginia.²⁷ In his recent book *Where Reincarnation and Biology Intersect*, he summarizes thirty years of research into alleged accounts of children accurately recalling specific people and events in their past lives. This book, written for the general public, consists mainly of abstracts of his studies, for which the detailed scientific accounts can be found in his massive, two-volume work *Reincarnation and Biology: A Contribution to the Etiology of Birthmarks and Birth Defects*. Stevenson's work provides some of the most compelling scientific evidence to challenge materialistic hypotheses about the origins of the psyche, but it has gone largely unnoticed by the scientific community.²⁸

This refusal to examine empirical evidence that contradicts long-held beliefs has generally been more associated with religious believers than scientists. Physicist Richard Feynman poignantly expresses the scientific ideals of skepticism and empiricism: “Experimenters search most diligently, and with the greatest effort, in exactly those places where it seems most likely that we can prove our theories wrong. In other words we are trying to prove ourselves wrong as quickly as possible, because only in that way can we find progress.”²⁹ Unfortunately, today’s cognitive scientists do not seem eager to search in those places where their materialistic theories may be proved wrong. Insofar as their research pertains to the origins of the psyche, they seem single-mindedly committed to pursuing only those kinds of investigation that will reinforce their beliefs. To find viable alternatives to the scientific orthodoxy, we might best look outside of contemporary science to the world’s contemplative traditions. I turn now to a Buddhist hypothesis that is based on contemplative training and is consistent with all that is currently known about brain-mind correlations.

The Substrate Consciousness

To discover the origins of any natural phenomenon, scientists have devised rigorous means of observing the phenomenon itself, conducting experiments on it when possible. This has been true for exploring the origins of all kinds of objects, from cells, on which experiments can be done, to stars, which can be observed but not manipulated through experimentation. The same is true for the psyche. To discover its origins, we must devise sophisticated methods for observing and experimenting on states of consciousness. It is not enough to observe and run experiments on their neural and behavioral correlates, and as long as cognitive science restricts its research to those, it cannot avoid the conclusion that consciousness emerges solely from the material processes under study. This is not a logical or empirical discovery, merely an inevitable conclusion based on a methodology of examining subjective, qualitative, mental processes by way of objective, quantitative, physical processes.

As a result of this orientation, cognitive scientists are confronted with an “explanatory gap”: how is it that patterns of neural activity either produce or are equivalent to subjective mental processes? There are certainly kinds of neuronal activity that causally contribute to the emergence of specific states of consciousness and mental activity. Let’s phenomenologically define causality as follows: if B follows A, and B does not occur in the absence of A,

then A has a causal influence on B. No physical mechanism is necessarily required for a causal relation to occur, as has been amply demonstrated in electromagnetism and quantum mechanics. Philosopher John Searle argues that “lower order” neuronal activity “causes” mental processes, while “higher order” neuronal patterns are *equivalent* to mental processes.³⁰ Whether or not he’s right, some kinds of prior neuronal activation are certainly necessary for the generation of specific, subsequent mental processes. But since those neural processes *precede* their resultant mental events, they can’t be said to be *equivalent* to them. There could be an identity between only those neuronal and mental processes that occur simultaneously.

With regard to a causal relation between neural and mental events, we encounter philosopher David Chalmers’s “hard problem”:³¹ what is it about those neuronal processes, unlike so many other electrochemical events, that enables them to produce the whole range of subjective mental experiences? Here is a serious explanatory gap. However, if certain neuronal processes are equated with their concurrent mental processes, what enables them to take on this dual nature: objective neuronal processes, which can be understood thoroughly in terms of physics, chemistry, and biology; and subjective mental processes that are undetectable using the instruments of measurement of these disciplines, but are immediately observable through first-person experience? It’s as if these concurrent neuronal processes have a secret life that is hidden from third-person, scientific measurement: they are simultaneously objectively perceptible neural events and objectively invisible, subjective mental processes.

A simple fact that is hardly acknowledged by either cognitive scientists or philosophers of mind is that mental events *can* be observed directly. But, as James acknowledges, “Introspection is difficult and fallible; and . . . the difficulty is simply that of all observation of whatever kind.”³² Crucial to making rigorous observations of mental phenomena is the cultivation of sustained, vivid, high-resolution attention, which Buddhists call *samādhi*. Such focused attention is to the scientific investigation of mental phenomena what the telescope is to the scientific investigation of celestial phenomena.³³ Buddhist contemplatives claim that with the achievement of a highly advanced degree of *samādhi* known as *śamatha*, or meditative quiescence, one gains experiential access to the relative ground state of consciousness known in the Great Perfection (Dzogchen) school of Tibetan Buddhism as the “substrate consciousness” (*ālayavijñāna*). This, they claim, is the individual stream of consciousness from which the psyche and all the physical senses emerge. According to their findings, the psyche is *conditioned* by the body and its

physical interaction with the environment, but it *emerges* from the substrate consciousness.³⁴

This is consistent with the hypotheses of Pythagoras, Socrates, Origen, Augustine, and William James, and it is compatible with everything that is currently known about mind-brain interactions. But this is also where all those contemplative views fundamentally diverge from the beliefs of most contemporary cognitive scientists. What Buddhism brings to this confrontation of worldviews is a practical way to put the hypothesis to the test of first-person experience, through the refinement of the attention and the settling of the mind in ways that are unknown to modern science.

One advantage of the cultivation of *śamatha* is that it does not require allegiance to any religious or philosophical belief system. Indeed, it has the potential to serve as a bridge between scientific and contemplative ways to explore the mind. When this exceptional degree of attentional balance is achieved, it is said that discursive thoughts become dormant and all appearances of oneself, others, one's body, and one's environment vanish. At that point, as in the states of sleeping and dying, the mind is drawn inward and the physical senses become dormant. Tibetan contemplatives report that what remains is a state of radiant, clear consciousness that is the basis for the emergence of all appearances to an individual's mind stream. All phenomena appearing to sensory and mental perception are imbued with the innate luminosity of this substrate consciousness. Like the reflections of the planets and stars in a pool of limpid, clear water, so do the appearances of the entire phenomenal world seem within this empty, clear, ground state of the psyche. Dūdjom Lingpa (1835–1904), a Dzogchen master of the Nyingma order of Tibetan Buddhism, wrote, "The substrate consciousness, with its vacuous and clear nature, abides as the cause of everything that is emanated. The psyche that emanates from that substrate consciousness presents forms, which are stabilized by a continuous stream of consciousness."³⁵

According to the experience of such contemplatives, there is a principle of conservation of consciousness that manifests in every moment of experience. The material constituents of the brain, such as neurons and electrochemical processes, do not transform into immaterial mental phenomena, such as dreams and hallucinations. No patterns of neuronal events actually *become* mental events. But nor do mental phenomena emerge from nothing. Rather, this empty, luminous, substrate consciousness transforms into the mental images, discursive thoughts, perceptions, emotions, and so on. In the course of a human life, these mental events are conditioned by the brain and environment, but they emerge from and dissolve back into the substrate

consciousness. Likewise, these mental events *influence* the brain, body, and the physical environment, but they do not *transform into* those physical phenomena. In short, from this Buddhist perspective, the “hard problem” of how the brain produces subjective mental experience is a false problem, for such experience actually arises from the substrate consciousness. And the explanatory gap in demonstrating how some kinds of neural activity can be equivalent to mental events is unbridgeable, for neural and mental events are never identical.

The substrate consciousness may be characterized as a relative vacuum state, voided of all the “kinetic energy” of active thoughts, mental imagery, and sense perceptions. Generally speaking, it is indiscernible while the mind is active; it normally manifests only in dreamless sleep and at death. While the substrate consciousness is depicted as the natural, unencumbered state of the mind, its innate radiance and purity are present even when the mind is obscured by afflictive thoughts and emotions. When at rest, it is luminous and empty, but when catalyzed by thoughts or sensory stimulation, its “potential energy” transforms into the “kinetic energy” of the psyche, manifesting as all kinds of mental and sensory activity.

This dimension of individual consciousness transcends the specific qualities and limitations of personal history in this lifetime, gender, and even species, and this substrate underlies all forms of consciousness, human and nonhuman.³⁶ Once a contemplative’s mind has settled in this silent, luminous state of awareness through the achievement of *śamatha*, it is said to be possible to direct the attention to the past, bringing to consciousness distinct, detailed memories of events that occurred years earlier in this lifetime. Then, through rigorous training, one may allegedly retrieve memories that precede the current life, remembering, like Pythagoras, the circumstances of preceding lives.

Such memories are not stored in the brain, though as long as the mind is *embodied*, the brain is necessary to retrieve them. Memories are stored, in a manner of speaking, in the continuum of the substrate consciousness, which carries on from lifetime to lifetime. This conclusion is based on the experiences of highly trained contemplatives who have refined their attention in ways unknown to modern science. Without such development of the internal telescope of *śamatha* for exploring deep states of consciousness, scientific evidence of reincarnation is limited to the field studies of researchers like Ian Stevenson.

While this description of the substrate consciousness may appear to be a Buddhist version of an immortal soul, it is important to note the differences

between this experientially based account and various philosophical and theological speculations about the soul. Contemplatives who have achieved *śamatha* commonly depict this dimension of consciousness as a stream of arising and passing moments of awareness, so it is not a single entity persisting through time, nor is it unchanging. Moreover, it influences the psyche and is conditioned by physical and mental events, so it is not independent.

The substrate consciousness may be characterized as the relative ground state of the individual mind in the sense that within the context of an individual mind stream, it entails the lowest possible state of activity, with the highest possible potential and degree of freedom or possibility. For example, once an individual stream of consciousness has been aroused from dreamless sleep, it can freely manifest in a vast diversity of dreamscapes and experiences. Such exceptional creativity is displayed while under deep hypnosis, which also taps into the substrate consciousness. But this potential is most effectively accessed when one lucidly penetrates to the substrate consciousness by means of *śamatha*, as has been achieved in a number of the great contemplative traditions of the world. Śamatha entails vivid awareness of this dimension of consciousness, in contrast to the dullness that normally characterizes dreamless sleep.

Relative Vacuum States of Consciousness and of Space

The Great Perfection tradition of Tibetan Buddhism draws a distinction between the substrate consciousness (*ālayavijñāna*) and the substrate (*ālaya*), which is described as the objective, empty space of the mind and is subjectively experienced by the substrate consciousness. This vacuum state is immaterial, like space, a blank, unthinking void into which all objective appearances of the physical senses and mental activity dissolve when one falls asleep; and it is out of this vacuum that appearances reemerge upon waking. Dūdjom Lingpa explained that when awareness settles in the substrate,

the ordinary mind of an ordinary sentient being, as it were, disappears. Consequently, discursive thoughts become dormant, and roving thoughts vanish into the space of awareness.... Adhering to the experiences of vacuity and luminosity *while looking inwards*, the appearances of oneself, others, and objects vanish. That is the substrate consciousness ... one has come to the essential nature of the mind.³⁷

This contemplative description of the substrate and the consciousness of that inner state of luminous vacuity is analogous to physicists' descriptions

of the relative vacuum state of space. In general, a vacuum is defined as the lowest possible energy state of a volume of space, the result when everything else is taken away. The true, or absolute, vacuum consists of whatever remains once everything has been removed from some well-defined space—everything that the laws of nature permit. A false, or relative, vacuum consists of whatever remains once everything has been removed from some well-defined space that the current state of technology permits. The relative vacuum has energy and structure, and is not perfectly symmetrical, which is to say that it is internally differentiated.

Much as conscious appearances are said to emerge from the substrate and consist of configurations of this internal space of the mind, so do all configurations of mass and energy emerge from the vacuum and consist of configurations of physical space. Fields of elementary particles are nothing but excitations of empty space, and mass can be viewed as frozen energy. Light is a kind of excitation of empty space, or more accurately, an oscillation of abstract field quantities in space, not an oscillation of space proper. Physicist Henning Genz explains: “Real systems are, in this sense, ‘excitations of the vacuum’—much as surface waves in a pond are excitations of the pond’s water. . . . The vacuum in itself is shapeless, but it may assume specific shapes. In doing so, it becomes a physical reality, a ‘real world.’”³⁸

While the vast majority of cognitive scientists today are convinced that the mind is nothing more than a function or emergent property of matter, physicists tell us that matter consists of oscillations of immaterial, abstract quantities in space. Further research is needed to determine whether these abstractions truly exist independently in objective space or are subjective artifacts of the minds that conceive them. Alternatively, the “real world” may be neither purely objective nor purely subjective.

William James’s philosophy of radical empiricism closely reflects the view of the Great Perfection in rejecting the absolute duality of mind and matter in favor of a world of experience, in which consciousness *as an entity*, in and of itself, does not exist; nor is it a function of matter, for matter *as an entity*, in and of itself, does not exist either. According to this view, the ideas of mental and physical substances are conceptual constructs, as is the metaphysical distinction between subject and object. Mind and matter are constructs, whereas pure experience is primordial.

Absolute Vacuum States of Consciousness and of Space

In contrast to the substrate consciousness, which can be viewed as the relative ground state of the mind, according to the Great Perfection, primordial

consciousness (*jñāna*) is characterized as the absolute ground state of consciousness. This state of perfect symmetry—internally undifferentiated in terms of any concepts or qualities—entails the lowest possible state of mental activity, with the highest possible potential and degree of freedom. While the substrate consciousness is aware of the substrate—the relative inner space of the mind—primordial consciousness is indivisibly aware of the absolute space of phenomena (*dharmadhātu*), which transcends the duality of external and internal space. All the phenomena that make up our intersubjective worlds of experience—appearances of external and internal space, time, matter, and consciousness—emerge from this absolute space and consist of nothing other than its configurations. In the limited, relative vacuum of the substrate, as in the case of deep sleep, mental events specific to one individual emerge and dissolve back into that subjective space of consciousness. But all phenomena throughout time and space emerge from and dissolve back into the timeless, infinite vacuum of absolute space. While the relative vacuum of the substrate can be ascertained by means of the cultivation of *śamatha*, the absolute space of phenomena can be realized only through the cultivation of contemplative insight (*vipaśyanā*).

The realization of absolute space by primordial consciousness transcends all distinctions of subject and object, mind and matter, indeed, all words and concepts. Such insight does not entail the meeting of a subjective mode of consciousness with an objective space, but rather the nondual realization of the intrinsic *unity* of absolute space and primordial consciousness. They are coterminous, nonlocal, and atemporal. While absolute space is the fundamental nature of the experienced world, primordial consciousness is the fundamental nature of the mind that experiences the world. But since the two have always been of the same nature, the view of the Great Perfection is not one of philosophical idealism, dualism, or materialism. All such distinctions between subject and object, mind and matter are regarded as mere conceptual fabrications. The indivisibility of absolute space and primordial consciousness is the Great Perfection, often referred to as the “one taste” of all phenomena.

On the relative level, the substrate consciousness is different from the substrate, and it is internally qualified by distinct experiences of bliss, luminosity, and nonconceptuality. It is experienced only when the mind is withdrawn from the external world, and it is bound by time and causality—specific to a given individual. The unity of absolute space and primordial consciousness, on the other hand, is also imbued with the qualities of bliss, luminosity, and nonconceptuality, not present as distinct attributes but as an ineffable unity.

This absolute vacuum is fathomed while letting consciousness come to rest in a state of nonduality, open to the entire universe. Devoid of all internal structure, it embodies a unique, absolute symmetry that transcends relative space, time, mind, and matter.

There are also important differences between the experiential effects of realizing the substrate consciousness and realizing primordial consciousness. When one realizes the substrate consciousness by achieving *śamatha*, mental afflictions are only temporarily suppressed, but it is said that by realizing primordial consciousness, all mental afflictions and obscurations can be eliminated forever. Likewise, the bliss that is experienced when resting in the relative ground state of consciousness is limited and transient, whereas the inconceivable bliss that is innate to the absolute ground state of primordial consciousness is limitless and eternal. By ascertaining the substrate consciousness, one realizes the relative nature of individual consciousness, but in the realization of primordial consciousness, the scope of awareness becomes boundless. Likewise, the creative potential of consciousness that is accessed through *śamatha* is limited, whereas that which is unveiled through such ultimate contemplative insight allegedly knows no bounds.

Primordial consciousness is said to be the ultimate source of genuine happiness, the ultimate truth that frees the mind of all afflictions and obscurations, and the ultimate wellspring of all virtue. It is in this dimension of consciousness that our deepest longing for happiness, truth, and virtue originates. This dimension is the alpha and omega of a meaningful existence, the ultimate ground of wisdom and compassion. The realization of primordial consciousness, when supported by the prior achievement of *śamatha*, is also said to open up limitless internal resources for various kinds of extrasensory perception and paranormal abilities. These include remote viewing, or clairvoyance; clairaudience; knowledge of others' minds; precognition; and other paranormal abilities, such as the ability to mentally control physical phenomena. Examples include moving through solid objects, walking on water, mental control of fire, flying, and mentally multiplying and transforming physical objects at will.

While claims of such seemingly miraculous, or supernatural, abilities are common in the annals of the contemplative traditions of the world, remote viewing and precognition have also been studied by modern researchers such as physicist Russell Targ.³⁹ The ability of the mind to influence physical objects has been studied by R. G. Jahn at the Princeton Engineering Anomalies Research Laboratory, but the findings of such researchers have been largely ignored by the scientific community. This may be due in part to the

inconclusive results and to the inherently conservative nature of the scientific community, especially regarding alleged discoveries that undermine fundamental assumptions of the scientific worldview.

The research of Stevenson, Targ, and Jahn is like studying high-energy elementary particles by examining those that are occasionally and unpredictably produced in nature, whereas cultivating deep states of meditative concentration, or *samādhi*, is like building a particle accelerator so as to study high-energy particles under laboratory conditions. The many cognitive scientific laboratories for studying the brain and behavior may be well complemented by establishing laboratories for contemplative research, specifically designed to generate refined, “high-energy” states of awareness and use them to explore the potentials of consciousness and its role in the natural world.

Just as classical mechanics and engineering are useful for solving non-relativistic problems, the current cognitive sciences are useful for answering questions pertaining to normal and subnormal states of consciousness. But some of the underlying assumptions of classical physics have never been true, and some of the materialistic assumptions of classical cognitive science may prove to be equally untrue when exceptional states of consciousness are developed under controlled conditions and studied with scientific rigor.

The Buddhist description of the absolute space of phenomena bears some similarities to the absolute, or true, vacuum of modern physics. In 1973, Edward Tyron formulated the theory that the universe is one gigantic vacuum fluctuation with total energy equal to, or close to, zero. As Genz explains, “If its total energy equals or approximates zero, it may have originated as a spontaneous vacuum fluctuation. We might imagine that there is an approximate cancellation between the negative potential energies of all the masses that attract each other in the universe and the motion (or *kinetic*) and mass energies of these configurations.”⁴⁰ Science writer K. C. Cole explains the symmetry of the true vacuum as follows:⁴¹

If you can transform something such that the transformation doesn't make a noticeable difference, that's symmetry. . . . If something were *perfectly* symmetrical, then no matter how you tried to change it, the hypothetical change would have no effect. Without change, there is no perception. A perfectly symmetrical nothing would be a state so changeless that nothing you could conceivably do to it would make a difference.

Both the absolute space of phenomena and the true vacuum are said to have played a crucial role in formation of the universe as we know it. Henning Genz suggests,

Maybe quantum mechanical fluctuations initiated not only the *stuff* our world was made of prior to inflation but also space-time itself. Maybe the true *vacuum*, the true *nothing*, of philosophy and religion should be seen as a state wholly innocent of laws, space, and time. This state can be thought of as nothing but a collection of possibilities of what might be.⁴²

K. C. Cole adds,

The release of energy may explain how the big bang got hot in the first place. Like water freezing into ice and releasing its energy into its surroundings, the “freezing” of the vacuum liberates enormous amounts of energy. . . . As simply as water freezing into ice, the inflated vacuum froze into the structure that gave rise to quarks, electrons, and eventually us.⁴³

In a remarkably similar vein, the Dalai Lama writes in his recent book on the Great Perfection:⁴⁴

Any given state of consciousness is permeated by the clear light of primordial awareness. However solid ice may be, it never loses its true nature, which is water. In the same way, even very obvious concepts are such that their “place,” as it were, their final resting place, does not fall outside the expanse of primordial awareness. They arise within the expanse of primordial awareness and that is where they dissolve.

While physicists have devised their theories of the true and false vacuums on the basis of physical experiments and mathematical analysis, Buddhists have formulated their theories of true and false vacuum states of consciousness on the basis of contemplative experience and philosophical analysis. Both traditions place a high priority on empirical investigation and rational analysis, but their starting assumptions and modes of observation are profoundly different. The scientific revolution began with the assumption that an external God created the world prior to and independently of human consciousness. Physicists then set themselves the goal of perceiving that objective universe from a “God’s-eye” perspective and formulating its laws in terms of God’s own language, which they thought to be mathematics. Since they were focused on the realm of objective space and its contents that exist independently of consciousness, it was quite natural for them to marginalize the role of mind in nature; and their theories of the true and false vacuums generally make no reference to consciousness.

Indeed, advocates of this mechanistic view have assumed from the outset that consciousness plays no significant role in the universe. As neurologist

Antonio Damasio proclaims, “Understanding consciousness says little or nothing about the origins of the universe, the meaning of life, or the likely destiny of both.”⁴⁵ Such confidence is remarkable in light of the fact that neuroscientists have not yet discovered the nature or origins of consciousness. Such researchers commonly assume that they already *know* that consciousness has no existence apart from the brain, so the only question to be solved is *how* the brain produces conscious states. In his book *The Discoverers: A History of Man’s Search to Know His World and Himself*, historian Daniel J. Boorstin calls such assumptions “illusions of knowledge.” It is these, he proposes, and not mere ignorance, that have historically acted as the greatest impediments to scientific discovery.⁴⁶

The significance of the vacuum states of physical space and of consciousness can hardly be overestimated. Physicist John March-Russell declares, “The current belief is that you have to understand all the properties of the vacuum before you can understand anything else.”⁴⁷ Physicists have not yet fathomed all the properties of the vacuum or all the laws of nature, but they have widely assumed that consciousness is irrelevant to the universe they are trying to understand. Insofar as the universe conceived by physicists exists independently of consciousness, Buddhists may counter that such a universe is irrelevant to the world of human experience, in which consciousness plays a crucial role.

Convergence with Christianity

While the scientific revolution was deeply influenced by the belief in a God who exists absolutely outside of his creation and who observes and rules the world from an absolutely objective perspective, this is not the only theology that has been advocated by devout Christians through the ages. In contrast to the pursuit of a God’s-eye view that has so influenced modern science, Eastern Orthodox Christian contemplatives have long advocated a kind of natural contemplation of seeing God in all things and all things in God, to discern the divine presence that is within each natural phenomenon and at the same time transcends it. The emphasis is on the immanence of God, instead of solely on his transcendence. Rather than seeking to comprehend the world using the language of mathematics, these contemplatives have sought to know God by moving beyond all kinds of thought and language.⁴⁸

Since the deity is a mystery beyond words and understanding, it follows that in such contemplation the human mind has to rise above concepts, words, and im-

ages—above the level of discursive thinking—so as to apprehend God intuitively through simple “gazing” or “touching.” As Evagrius put it, the mind is to become “naked,” passing beyond multiplicity to unity. . . . At the higher levels of contemplation, then, awareness of the subject-object differentiation recedes, and in its place there is only a sense of all-embracing unity.

Rather than regarding the God’s-eye view as being absolutely external to the human mind, Neo-Platonic Christian contemplatives following the tradition of the ninth-century Christian translator and philosopher John Scotus Eriugena (815?–877?) saw the possibility of seeking God within oneself. Nicholas of Cusa, who belonged to that contemplative tradition, likewise believed that the face of God can be known only by transcending all concepts, including mathematical ones. By so doing, he claimed, one may achieve “absolute sight, the source of all the sight of those who see, [that] excels all sharpness, all quickness, and all power of all who actually see and all who can become seeing.”⁴⁹

According to the Great Perfection tradition, ordinary, dualistic perception could not exist in the absence of primordial consciousness, and Nicholas of Cusa expressed a similar view when he declared, “Without absolute sight there can be no contracted sight. Sight that is absolute embraces in itself all modes of seeing, and it embraces all modes in such a way as to embrace each, and it remains entirely absolute of every variety.”⁵⁰ And he made another remarkable claim similar to the Buddhist assertion that the whole of reality can be fathomed by comprehending the nature of consciousness: “Whoever, therefore, merits to see your face sees all things openly and nothing remains hidden to this person.”⁵¹ Indeed, many of the great Christian mystics, including Augustine, have declared that an effect of their contemplative practice was a clearer perception of the nature of God, the human soul, and the laws of nature.⁵²

Some of the Christian contemplative insights into the nature of the material world seem to lend credence to this assertion. Material phenomena that appear to make up our physical environment, according to Nicholas, consist of “contracted natures,” and the same is true of ordinary mental phenomena. This theme appears in principle to be remarkably similar to the metaphor of ordinary states of matter and consciousness existing as “frozen” manifestations of the ultimate nature of reality. Nicholas writes in a similar vein, “prime matter’s power to be is material and thus contracted and not absolute; so too sensible or rational power to be is contracted, but completely uncontracted power coincides with the simply absolute, that is, with the in-

finite.”⁵³ According to modern physics, the absolute vacuum has the unique characteristic of perfect symmetry, as does the absolute space of phenomena, according to the Great Perfection view. And Nicholas commented, “All things that are said of God cannot differ in reality because of God’s highest simplicity.”⁵⁴ The ultimate theme of the Great Perfection is the nonduality of relative and absolute dimensions of reality, a belief with which Nicholas seems to concur: “There is nothing outside you, but all things in you are not other than you. You teach me, Lord, how otherness, which is not in you, does not exist in itself, nor can it exist.”⁵⁵

The above, brief discussion is obviously not conclusive. There are many important differences between Buddhist and Christian theories of consciousness, and between scientific and contemplative theories of space. But in the midst of these doctrinal and theoretical differences, there may also be a common, hidden ground on which these diverse traditions ultimately converge. If so, I believe they are converging on the most important truth that can be known and experienced. This is the truth that yields genuine happiness and results in a life of virtue in service to all beings.

CHALLENGES FOR A CONTEMPLATIVE SCIENCE

A central challenge facing contemplative science is to naturalize consciousness without reducing it to an emergent property or a function of matter. This requires exploring alternatives other than Cartesian dualism, which has proven futile, and scientific materialism, which severely limits our understanding of the nature and potentials of consciousness.

We are also faced with the challenge of fundamentally reassessing human nature. If we rely solely on physics to understand our place in nature, human existence is reduced to the status of a robot. If we rely solely on biology, we are reduced to the status of animals. Contemporary, mainstream psychology has largely confined itself to the study of normal and subnormal human minds, and has defined human identity within those limitations. Buddhism views our existence in terms of three dimensions: human nature qualified by the human body and psyche, and our nature as sentient beings, qualified by the individual substrate consciousness and by primordial consciousness, which transcends all limitations of individual human or sentient existence. Christianity declares that man is created in the image of God, which gives a basis for Jesus’ challenge for each person to be perfect as the Father in heaven

is perfect. But it also depicts human nature as fallen and therefore in need of redemption through Christ.

In terms of our view of reality as a whole, I have argued that the underlying principles of modern science are valid with respect to the objective physical world devoid of subjective awareness, and as long as one ignores the implications of refining consciousness (e.g., through the cultivation of *samādhi*). This neglect of the role of consciousness can seem insignificant, much as the underlying assumptions of classical mechanics appear valid as long as the matter being studied is large and doesn't approach the speed of light. But when consciousness is highly refined, it becomes necessary to speak of "relativistic" states of consciousness (so called, because their relevance to the physical world becomes obvious); current materialistic assumptions may prove to be false.

The contemplative refinement of consciousness and the scientific investigation of the implications of such states of consciousness may explicitly revolutionize the cognitive sciences and implicitly revolutionize natural science as a whole, which is largely based on the assumptions of nineteenth-century materialism. This will require a thorough investigation of the causal efficacy of consciousness, especially relativistic states of consciousness, in the natural world. This, in turn, may bring forth a science of the world of experience that replaces our current science of a purely objective world, devoid of subjectivity.

The ideals of the contemplative life have almost vanished in the modern West, but we need not look outside our culture to rediscover them. Indeed, we need look no further than Thomas Aquinas, whose influence on Western Christianity can hardly be overestimated: "It is requisite for the good of the human community that there should be persons who devote themselves to the life of contemplation."⁵⁶ The very purpose of civilization is the pursuit of genuine happiness, truth, and virtue, and the contemplative life is entirely focused on these themes. This, I believe, is what Aquinas had in mind when he wrote:⁵⁷

The whole of political life seems to be ordered with a view to attaining the happiness of contemplation. For peace, which is established and preserved by virtue of political activity, places man in a position to devote himself to contemplation of the truth.