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Final chapter of *Contemplative Science: Where Science and Buddhism Converge*

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Chapter 8

Beyond Idolatry: The Renaissance of a Spirit of Empiricism

The primary obstacle to the spirit of empiricism in both religion and science is the deeply ingrained human tendency of idolatry. My use of the term *idolatry* here is based on Francis Bacon's notion of an *idol* as a false absolute resulting from reification, in which we grasp onto an absolute entity where there is none. One sign of an idol is a non-reciprocal coupling, or interaction, between two entities, in which the unaffected partner in such a compound is identified as an idol. "Idols of the tribe," according to Bacon, are those common to a whole community, and historically they have cropped up in both religious and scientific contexts.¹ The history of physics has time and again proven that the coupling among such phenomena as space, time, mass, and energy is reciprocal. This is not Newton's physical principle of action and reaction, but, as physicist David Finkelstein suggests, it might be its philosophical grandmother.² We shall now explore some of the primary idols of religion and of science and explore

ways of overcoming them in order to restore a spirit of empiricism to both avenues of inquiry.

Religious Idolatries

The Idolization of the Self

According to the idolatry of *metaphysical individualism*, the self is regarded as unchanging, unitary, and autonomous.³ As a result of reifying such an absolutely separate, independent self, we similarly reify “the other,” creating an absolute division between self and other and between subject and object in general. This idol of the self is invisible, assumed to exist as an absolutely subjective entity, outside the domain of experience, yet exerting its own autonomous, free will on the body and the environment. This view has been formalized in certain philosophical systems, such as the philosophy of Descartes, who declared that the will is so free in its nature that it can never be constrained, yet the soul itself is unmoved.⁴

On the basis of this idolization of the self, we identify certain things, especially those things over which we believe we exert control, as “mine,” and we reify this sense of ownership. In our pursuit of hedonic well-being, we may identify things such as wealth, power, fame, and cherished people as true sources of happiness and others as objective sources of misery. Instinctively wishing to experience pleasure and avoid pain, we respond with craving and

attachment to these agreeable stimuli, and when anything obstructs our efforts to possess these objects or when anything appears to inflict us with pain, we respond with anger and hatred as we regard them as true sources of our frustration and dissatisfaction.

Most cognitive scientists now generally refute the notion of an autonomous self, or homunculus, that exists independently from and controls the mind and brain, and many contemporary secular and religious philosophers have come to the same conclusion.⁵ This does not necessarily imply that the self doesn't exist at all, but rather that it does not exist as an unchanging, unitary, autonomous entity.

Buddhism is perhaps the most prominent contemplative tradition to refute the existence of such an unchanging, unitary, independent self that autonomously controls the body and mind, but its refutation of such an independent self does not undermine the existence of selves altogether.⁶ Conventionally, each of us does exist as a distinct person, leading our lives in interdependence with other sentient beings and the rest of the environment. And each of us is morally responsible for our actions, both individually and collectively.

Through the contemplative investigation of the true sources of happiness and suffering, Buddhists have found that none of these objects are intrinsically pleasurable. This is not to say that such objects do not contribute to happiness

and suffering, but rather that they are not capable by themselves of producing those results. When this is realized, we may either fall into apathy and despair, feeling that the pursuit of happiness is futile, or we may begin to explore other avenues in our pursuit of genuine happiness, identifying its inner sources.

In the pursuit of hedonic pleasure, the more one person acquires in the way of such things as wealth, power, and fame, the less everyone else has, and this is an inevitable source of endless strife and conflict. In contrast, in the pursuit of eudaimonic well-being, one person's success in no way impairs or diminishes anyone else's well-being. On the contrary, it often serves as a source of inspiration and happiness for others. No wars have been fought over the eudaimonic well-being, but countless wars have been fought over the objects of hedonic pleasure.

The Idolization of God

One of the clearest idolizations of God appears in Aristotle's *Metaphysics*, in which he described God as an Unmoved Mover. Such a being, he argued, is the first principle because it causes all motion and is the basis of both heaven and nature.⁷ God eternally does one thing—God thinks—and because God thinks, God is alive. For this reason, life originates from God, for the actuality of life is thought. Moreover, Aristotle characterized God as a substance (*ousia*), but differentiated this substance from all other substances, insofar as it is “eternal, unmovable and separate from sensible things.”⁸

Religious believers who have idolized this invisible God commonly view Him as the one true source not only of eudaimonic well-being but of hedonic pleasure as well. As the ultimate source of all being, God is also the source of all misfortune, so He is frequently blamed for people's personal misfortunes and for natural calamities. From such idolatry naturally ensues attachment to one's God as supreme and intolerance to those who do not believe in and revere the object of one's devotions. This, in turn, leads to the perpetuation of a world of violence between factions reifying and clinging to their own gods.

Late medieval Christian theology was heavily influenced by this Aristotelian view of God, but it was gradually eroded by the advances of science. Especially since the nineteenth century, God has played little or no role in the scientific conception of the natural world. Einstein found any such concept of God fundamentally incompatible with science, and even declared that adherence to such an idol is the major source of conflict between religion and science.⁹ But this position does not deny all notions of divinity, as Einstein himself declared his "firm belief, a belief bound up with a deep feeling, in a superior mind that reveals itself in the world of experience."¹⁰

Nevertheless, many contemporary philosophers reject all notions of God and an afterlife. John Searle writes, "in our deepest reflections we cannot take such opinions seriously. When we encounter people who claim to believe such things...at bottom we remain convinced that either they have not heard the news

or they are in the grip of faith.”¹¹ While Buddhism has always rejected the notion of a divine unmoved mover, many contemplatives in both theistic and non-theistic traditions have also rejected the notion of God as an absolutely objective, independent being who exists apart from the world and controls it. Such a notion of God may be an extrapolation of the transcendental notion of the self, and both are idols that do not withstand empirical investigation or rational analysis.

Scientific Idolatries

The Idolization of the Brain

Many cognitive scientists believe there is the brain influences the mind, but the subjectively experienced mind does not influence the brain. By fixing on the brain as an absolute in this mind-brain coupling, the brain takes on the role of an idol. Neuroscientist Daniel M. Wegner adopts just such a view when he writes, “it seems to each of us that we have conscious will. It seems we have selves. It seems we have minds. It seems we are agents. It seems we cause what we do ... it is sobering and ultimately accurate to call all this an illusion.”¹² In making this claim, he rejects not only the idol of the self, but also the causal efficacy of the mind.

An implication of this stance is that the human mind and identity are reduced to the brain, which is regarded as the ultimate source of all happiness

and sorrow, for all pleasures and pains are generated, according to this view, solely by the brain. Therefore, to find greater happiness and freedom from suffering, the immediate path to success is through the manipulation of the brain. It is natural then to view psycho-pharmaceutical and psychotropic drugs as primary sources of happiness and relief from suffering. Medical doctors who adopt this view resist the notion that behavior and the mind influence the brain and body, and patients who accept this premise refuse to take personal responsibility for their health. This attitude results in a myriad of chronic diseases brought on by unhealthy diet and behavior, the symptoms of which are then “managed” with pharmaceutical drugs and other medical interventions. Another tragic consequence of this idolatry of the brain is the widespread disappearance of moral responsibility. If we were truly automatons programmed by our brains and genes, we would not be accountable for our behavior, and the whole notion of punishment (and reward) should be abandoned.

If scientific evidence clearly indicates that the mind is a passive epiphenomenon of the brain, then we must accommodate that fact. But a careful examination of what is and is not known scientifically about the mind-brain problem shows that this issue is far from resolved. Benjamin Libet’s well-known experiment¹³ shows that subjects don’t have the thought that they are consciously intending an action until some time after the brain activity underlying the action has begun. But this doesn’t imply that those preceding

brain activities weren't influenced by mental activity that preceded them. The same point holds true for Wegner's fundamental premise cited above.¹⁴ Wegner has attended to brain mechanisms, looking to them alone for causal efficacy, and as James predicted, he does not count subjectively experienced choices as existing at all.

Wegner's claim to make any "ultimately accurate" statement about mind-body interactions seems especially overambitious in light of the lack of current scientific knowledge about how neural events influence mental events and vice versa. John Searle acknowledges that "We would...need a much richer neurobiological theory of consciousness than anything we can now imagine to suppose that we could isolate necessary conditions of consciousness."¹⁵ And he admits that he does not know why the necessary and sufficient causes of consciousness have not yet been identified.¹⁶

The consensus among cognitive scientists that the brain is solely responsible for the generation of all states of consciousness is remarkable in light of the facts that (1) they have no scientific means of detecting the presence of consciousness in anything, (2) they have no scientific definition of consciousness, (3) they have not identified the neural correlates of consciousness, (4) and they have not discovered the necessary and sufficient causes of consciousness. Over a century of neurophysiological research has left us in the dark regarding all these questions, so it is premature to presume, as Searle declares, that "Dualism in any

form is today generally regarded as out of the question because it is assumed to be inconsistent with the scientific world view."¹⁷ In light of the extent of scientific ignorance regarding the nature and origins of consciousness, when people claim that the problem of consciousness must necessarily be a purely biological problem, to reflect Searle's comment back on his own position, such people either haven't heard the news or they are in the grip of faith. As Mark Twain cautioned, "It ain't what you don't know that gets you in trouble. It's what you know for sure that just ain't so."

Many cognitive scientists assume that if subjective mental experience were anything other than brain function, it could not possibly influence the brain or any other physical entity. This, they believe is the unavoidable implication of the closure principle, which states that there are no non-physical influences in the physical world. As discussed previously, this principle originated in nineteenth-century classical physics, which heralded the conservation of energy as the key for understanding nature as a whole. However, the closure principle must be reconsidered within the context of quantum mechanics, which does not support this principle as an absolute, invariable law of nature. Indeed, the more physics progresses, the more it appears to undermine previously held, absolute laws of conservation.¹⁸ According to quantum theory, the *energy-time uncertainty principle* does allow for violations of energy conservation, so it is possible in principle for nonphysical processes to influence matter. As physicist Paul C. W.

Davies writes, "One expression of the uncertainty principle is that physical quantities are subject to spontaneous, unpredictable fluctuations. Thus energy may surge out of nowhere; the shorter the interval the bigger the energy excursion."¹⁹ Whether such violations of energy conservation are relevant to brain activity is an open question that is presently being investigated by physicists and biologists. Another relevant, unresolved issue is the location of information that is stored in the brain. If it turns out that information is stored at the atomic level, this could imply that quantum effects are present in the brain. This requires further research.

The notion that the mind is passive, whatever its ontological status may be, has been thoroughly discredited by science. One of the clearest indications of this is the euphemism of the so-called *placebo effect*. I call this a euphemism, for a placebo refers to a substance or treatment with no known effect on the condition being studied. Therefore, the effects in question, evidently caused by such mental processes as expectation, desire, hope, belief, and trust are nominally attributed to something that is specifically designed *not to produce any effect* on the condition being studied. While the placebo effect refers to health benefits produced by a treatment that should have no effect, patients experiencing the *nocebo effect* experience the opposite. In such cases, people expect they will experience something painful or afflictive, and that's just what they get. In this

case, their thoughts, emotions, and beliefs cause physical effects, but how these mind-body causal interactions occur is far from clear.

The size of the placebo effect varies from study to study and depends on the condition under investigation, but 35% is a frequently cited figure, while in some cases it is far higher. In 1998, Irving Kirsch, who has done provocative work in this area, stirred up a lot of controversy with his paper "Listening to Prozac but Hearing Placebo: A Meta-Analysis of Antidepressant Medication."²⁰ More recent research reveals not only that 50%-75% of the efficacy of antidepressant medication is due to the placebo effect, but also that "effective" placebo treatment induces changes in brain function that are distinct from those associated with antidepressant medication.²¹ An even more mysterious proposition that is almost certainly true is that sometimes placebos catalyze novel kinds of somatic experiences, rather than simply replications of previous symptoms. In some documented cases, mental effects (let's finally call them for what they are) actually override the effects of physiologically active drugs.

In cases where the mind catalyzes unprecedented effects in the body, the nature of this mind-body interaction is especially mysterious. How is it that an individual with no knowledge of brain mechanisms or physiology can mentally cause changes in the body corresponding to an uninformed belief or expectation? Neuroscientists commonly believe that information is stored in higher orders of organization of neuronal networks. Maybe so. But how exactly

is that information stored in the brain? In the case of information stored in a computer, Searle points out, "the information in the computer is in the eye of the beholder, it is not intrinsic to the computational system...The electrical state transitions of a computer are symbol manipulations only relative to the attachment of a symbolic interpretation by some designer, programmer or user."²² If the brain is accurately portrayed as a biological computer, where is the outside "eye of the beholder," and what is the nature of the designer, programmer, or user? An alternative hypothesis is that information is actually stored in the mind, which acts as a substrate for certain neural events, rather than the other way around. As we shall see in the next section, the status of information in relation to the material world is one that physicists are grappling with today, sometimes proposing startling hypotheses.

Wherever information is stored, the undisputed prevalence of placebo effects incontrovertibly refutes the hypothesis that in the relation between the mind and brain, the mind is a passive partner. Instances of the placebo effect are far from unique in this regard. Other studies show that mental training modifies neural networks, coordinates regional brain oscillations, and modifies neurosecretory functions. The recent work of Antoine Lutz, Richard Davidson, and their colleagues has received a good deal of public attention in this regard.²³ All such research shows that the idol of the brain has been toppled by empirical

evidence, but there is one more idol to throw down, and this one is embedded in the foundations of scientific materialism.

The Idolization of Nature

Most members of the National Academy of Science now refute the idol of a God who exists apart from and controls the universe,²⁴ but just as Descartes' idol of the soul has been replaced by the idol of the brain, so has the idol of God been replaced by the idol of Nature. The current idolatry of Nature finds its historical precedent in Descartes' declaration that "there exists nothing in the whole of nature which cannot be explained in terms of purely corporeal causes, totally devoid of mind and thought."²⁵ According to the current view, the absolutely objective world of matter, transcending the subjective realm of sensory appearances and invisible to human perception, is viewed as causally closed: it generates all subjective appearances of the objective world, but it is uninfluenced by them. Much as Aristotle attributed thought and life to the Unmoved Mover, so do advocates of scientific materialism claim that life, intelligence, and consciousness all derive from the objective, physical world, which has been equated with Nature. In this way, Nature, comprised of space-time and mass-energy, has been turned into an idol, in which there is a non-reciprocal coupling between two entities: objective physical phenomena and subjective mental

phenomena. The material world is unaffected partner in such a compound, so it has been turned into an idol.

Some of the practical repercussions of such idolatry are the reification of the world of matter as the sole reality, together with the marginalization of all kinds of causal influences that cannot be identified within the world of physical mechanisms. This may account for the misnomer of the “placebo effect” in a worldview where only physical processes are supposed to exert any kind of influence. The idol of matter, like the divine idol that preceded it, is seen by its followers as the true source of all happiness and sorrow, all good fortune and adversity. Such a belief implies that one should seek happiness solely through the manipulation of the physical world, including inanimate objects and animate beings. Insatiable consumerism is a natural consequence of this idolatry of matter, and with the limitless pursuit of limited material resources, the degradation of the environment and conflict—from interpersonal strife to international warfare—inevitably follows. The very notions of eudaimonic well-being and virtue are alien to this worldview.

Philosophically, this view of matter may be traced as far back as Democritus, who declared that in the objective world only atoms moving in space exist. A competing view was proposed by the Pythagoreans, who maintained that all things are numbers, which they identified with geometrical forms. Plato built on this notion by proposing that the world of appearances

emerges from an underlying realm of pure ideas. Although physics through the nineteenth century appeared to corroborate the view of Democritus, with the advent of the twentieth-century revolution in physics, Werner Heisenberg concluded, "*With regard to this question, modern physics takes a definite stand against the materialism of Democritus and for Plato and the Pythagoreans.*"²⁶

The scientific idolatry of Nature received a major impetus due to Hermann von Helmholtz's 1847 formulation of the principle of the conservation of energy and his assertion that this was the key to the complete comprehensibility of nature.²⁷ This hypothesis appeared to be strongly bolstered by Einstein's famous 1905 equation $E = mc^2$, but this issue seems more uncertain when we recall that according to Richard Feynman, the conservation of energy is a mathematical principle, not a description of a mechanism or anything concrete, and that no one really knows what energy *is*.²⁸

If Nature does not fundamentally consist of discrete units of matter, what is it made of? Physicist John Archibald Wheeler has proposed that reality exists not because of physical particles but rather because of the act of observing the universe. "Information may not be just what we *learn* about the world," he says. "It may be what *makes* the world."²⁹ In classical physics, when an ideal experimenter determines the state of a system, the state influences the experimenter, who learns something, but the experimenter does not influence the state, which is fixed. Here the state is the absolute. But, as Wheeler asserts, in

quantum mechanics, “No elementary phenomenon is a phenomenon until it is a recorded phenomenon.”³⁰ For this reason, quantum mechanics has been characterized as a “non-objective physics,” suggesting that it is founded not on objects but on interactions.³¹

With the advances of modern physics, the idol of Nature appears to be crumbling from its foundations. It is uncertain whether the world of subjective experience has physical attributes (is there any reason to believe that dreamscapes consist of configurations of mass-energy?), and it is also not clear that the objective world, independent of all systems of measurement, conforms to our notion of “physical.” Even if it does, to which notion of physical and to which theory of matter does it conform? In terms of classical physics, a material body may be defined as a fraction of space endowed with constitutive properties such as impenetrability and mass. More conservatively, it may be said that a material entity is something that is (1) permanently located in space, (2) causally connected to changes in its spatial environment, and (3) endowed with mass. But as philosopher Michel Bitbol argues, these three criteria are threatened by quantum mechanics, which challenges the primitive concept of matter as a collection of inherently massive and spatially defined particulate bodies.³² Michael Lockwood posits a subtler definition of matter: “those things are material that occupy or take place in space, and whose existence is ultimately constituted by the properties and relations, actions and interactions of particles

and fields, or whatever basic entities physics treats of."³³ In light of this sophisticated definition, it appears that mental phenomena, such as dreams, have no place in the material world unless they are found to be equivalent to neural events. But such an equivalence has never been demonstrated.

There are two worlds that are invisible to the third-person methodology of scientific inquiry: the absolutely objective world and the absolutely subjective world. What's left over is the world in between: the world of experience, which is directly ascertainable with our six senses, including our five physical senses (enhanced and extended with the instruments of technology) and mental perception.³⁴ Strictly speaking, when we observe subjective phenomena (such as thoughts, emotions, and dreamscapes) and objective phenomena (such as electrons, apples, and galaxies), all that directly appears to our senses are appearances generated in part by our brains. Those appearances do not consist of regions of space endowed with constitutive properties such as impenetrability and mass, nor are they constituted by the properties and relations, actions, and interactions of particles and fields. So none of the immediate contents of our experience conform to any of the definitions of matter cited above. Matter, then, appears to be a conceptual construct that is superimposed upon the world of experience, which is immaterial.

This reframes the entire question of the nature of universe, which many scientists define as physical.³⁵ The laws of nature, which were first formulated by

Newton, are as exact and true as anything known in physics, yet they vanish into nothingness when examined very closely, while quantum-mechanical matter is found to consist of waves of nothing.³⁶ In this regard, it may be somewhat daunting to follow the implications of Robert Laughlin's assertion that "in physics, correct perceptions differ from mistaken ones in that they get clearer when the experimental accuracy is improved."³⁷

While neurobiologists insist that the mind be explained in terms of biology, and experimental physicists insist that biology be explained in terms of physics, mathematical physicists insist that physics be explained in terms of mathematics. But the realm of mathematics, like the realm of ideas in general, appears to be inseparable from the mind. So this succession brings us to a full circle! This suggests that there is a hierarchy in the sciences that challenges the widespread reductionist paradigm.³⁸

- Mathematical theories alone do not define, predict or explain the emergence of a physical universe.
- Physical theories alone do not define, predict or explain the emergence of living organisms in the universe.
- Biological theories alone do not define, predict or explain the emergence of consciousness in living organisms.

According to David Finkelstein, in Galilean physics, there is no space separate from time, so in the coupling of space and time, in which there is

absolute time but no absolute space, time is an idol.³⁹ Likewise, in Newtonian physics and special relativity, space-time acts on matter, but matter exerts no influence on space-time, so space-time becomes the idol in that coupling. In the general theory of relativity space-time and matter are found to be interdependent, and none of them are any more fundamental than the others. So space-time can exist and change in the absence of anything that had previously been called matter. Following this same development in the history of science, it may be time to challenge the common assumption that consciousness plays a secondary, subservient role in nature as an epiphenomenal, emergent property of matter. It may well be that consciousness, like space-time, has its own intrinsic degrees of freedom, and that neglecting these will lead to a description of the universe that is fundamentally incomplete. In short, our consciousness of the universe may be as real as the space-time and mass-energy of which we are conscious.⁴⁰

The real world that we *know* exists is experienced within intersubjective fields of consciousness, in which mental phenomena are just as real as physical phenomena. And neither is simply a derivative of the other: neither class of phenomena is an idol. We now can finally extricate ourselves from the absolute dualism of Descartes, in which a reified objective world is absolutely separated from a reified subjective world, and return to the world of experience in which those demarcations are recognized as human, conceptual constructs.

Materialists, for all their adamant rejection of Cartesian dualism, continue to accept half of Descartes' bifurcated universe—the objective, material, mechanical half—and then try to reduce the other half—the subjective, immaterial, qualitative half—into the portion they have idolized. But an alternative is to go a step further by rejecting both halves of this reified, dualistic view of reality, and accept instead a participatory world of subject-object interdependence and interaction.

The Idolizations of Theories

More fundamental than the religious idolization of the self and God and the scientific idolization of the brain and Nature is the idolization of theories to which all human communities are prone. David Finkelstein clarifies how this occurs: "One may think of any whole theory as a view, as etymology suggests. A view is a view from a position, which is then an idol of that theory. It seems that the process of making a theory inevitably introduces idols that only a later theory can break, and so the theory process can never be completed."⁴¹ A position, or stance, is primarily a way of behaving, involving an interpretative orientation and a commitment to act and understand events in accordance with a certain outlook. So it implies a kind of "epistemic policy" that is adopted in defining what counts as facts.⁴²

In any encounter between scientific and contemplative stances, we repeatedly confront the intriguing question: what constitutes evidence, or

empirical facts? As Robert Laughlin points out, “physics maintains a time-honored tradition of making no distinction between unobservable things and nonexistent ones.”⁴³ But are only objective observations to be considered as legitimate observations within science? While science relies overwhelmingly on third-person, objective observations, if it completely rejected first-person experience as evidence, there would be no empirical grounds for asserting the existence of mental phenomena, in which case the mind have no place in nature. On the other hand, until now, cognitive scientists have counted as evidence primarily the experiences of normal and subnormal people. Contemplatives, on the other hand, have an epistemic policy of counting the exceptional experiences of advanced meditators as the most important kind of evidence. The Dalai Lama has long taken the position that he is willing to reject any Buddhist assertion, such as belief in reincarnation, that is invalidated by scientific evidence.⁴⁴ But it is a rare scientist who is willing to reject any scientific assertion, such as a materialist interpretation of consciousness, if it is invalidated by contemplative evidence.

One of the primary consequences of the idolization of theories is the conflation of reality with one’s perspective on reality, while remaining oblivious of the limitations of the position on which that view is based. This commonly results in disdain and intolerance toward anyone who holds views incompatible with one’s beliefs, and this all too frequently erupts in ideological warfare waged

from pulpits, schools, and battlefields, as well as terrorist and military assaults on whole societies that reject one's worldview. For millennia, this has been a worldwide cause of religious wars, and in the more recent past, scientific materialists, often waving the banner of communism, have committed countless atrocities, sometimes amounting to genocide, against people who maintained their traditional religious beliefs despite the most brutal attempts to convert them to the ideology of materialism.

As Thomas Kuhn argued decades ago, human worldviews, scientific and otherwise, are always influenced by the societal context of the humans developing and advocating those views.⁴⁵ And Robert Laughlin comments more recently, "scientific theories always have a subjective component that is as much a creation of the times as a codification of objective reality."⁴⁶ But as long as we remain surrounded by people who adopt the same view from the same stance, it is difficult to identify our invisible, unsubstantiated assumptions and idols. A practical way to discover these hidden absolutes lurking within our belief systems is to engage with people whose ways of exploring reality are radically different from one's own. Regardless of how diverse their views may be, if common rules of logic and standards of empirical rigor can be found, meaningful collaboration may occur. In this regard, the Dalai Lama proposes a rational and empirical ideal that may be equally adopted by scientists and contemplatives alike: "A general basic stance of Buddhism is that it is

inappropriate to hold a view that is logically inconsistent. This is taboo. But even more taboo than holding a view that is logically inconsistent is holding a view that goes against direct experience."⁴⁷

Scientists and contemplatives of various traditions set out in their quest for truth using different sets of assumptions and methods of inquiry. Given the diversity of their ideological and methodological stances, any convergence of their views would be noteworthy, for this would be strong evidence that their conclusions transcend the limitations of their sociological contexts. So let us now examine whether any such deep convergence may have emerged from within the frameworks of science and two Buddhist and Christian traditions of contemplative inquiry.

Convergence

As we have noted repeatedly throughout this book, the first revolution in the physical sciences was brought about by such figures as Copernicus, Kepler, Descartes, Galileo, and Newton, who were all seeking a "God's-eye perspective" on the objective world as it exists independently of human consciousness. All these men were devout Christians well versed in theology, and Newton spent the last twenty-five years of his life writing more on theology than he did on science. In fact, he commented that he wrote his classic work *Mathematical Principles of Natural Philosophy* with an eye on principles that might cause people

to believe in God.⁴⁸ The aspirations of these scientific pioneers was to come to know the mind of the Creator by understanding His creation, and they drew an absolute demarcation between the objective world known by God and the subjective world perceived and conceived by humans. This theological stance gave rise to the Cartesian dualism of an absolutely objective world that is “represented” by subjective human percepts and concepts.

One fundamental assumption they held was that, although scientists are human subjects, with the faculty of reason they could infer the existence of objects and their qualities in the objective world on the basis of appearances to their senses, often enhanced by technological instruments of observation. There is an epistemological flaw, though, in this kind of reasoning. As Kant pointed out, we don't know that our sensory experiences resemble the external world if we have no means of knowing the external world as it exists independently from our experiences.

Quantum physicists have already run into the inconceivability of the nature of quantum entities existing independently of measurement, but this same problem crops up when trying to conceive of the true vacuum, which is defined as whatever remains once we have removed from some well-defined space everything that *the laws of nature* permit us to take away. The true vacuum, defined in this way, is distinguished from the false vacuum, which is whatever remains once we have removed from some well-defined space everything that

the *current state of technology* permits us to take away. The problem with conceiving of the true vacuum is that scientists have not yet discovered all the laws of nature. In the perfect symmetry of the true vacuum, which is devoid of any internal structure, quarks, electrons, gravity, and electricity are undifferentiated. In the words of science writer K. C. Cole, “The closest we can probably come to imagining perfect symmetry is a smooth, timeless, featureless empty space—the proverbial blank slate, the utter silence. It can’t be perceived because nothing can change. Everything would be one and the same; everything would be the same, as far as we could tell, as nothing.”⁴⁹

Both the false and true vacuums in physics are thought to be devoid of consciousness, but this was a foregone conclusion since physicists have always sought to understand the natural world as it exists independently of human consciousness. Scientists have no means of objectively detecting consciousness, human or divine, so they have no way of knowing whether any kind of consciousness existed before the evolution of life either on our planet or elsewhere. So the belief that consciousness can only have existed after the emergence of life on our planet is simply an assumption, and it is one that is now beginning to be questioned by a growing group of physicists.⁵⁰

In the world of contemporary physics, bodies of mass in a vacuum are regarded metaphorically as “frozen energy,” and they cause a curvature of space, such that the distances between two points in space also fluctuate.

Configurations of mass and energy can be considered, in this sense, excitations of the vacuum, much as surface waves in a pond are excitations of the pond's water. While the vacuum itself is shapeless, it may assume specific shapes, and in doing so it becomes a physical reality, a "real world." Such the true vacuum may have played a central role in the formation of the universe as we know it, in which at the time of the Big Bang the freezing of the true, or "melted," vacuum gave rise to the universe as we presently know it.⁵¹

As mentioned previously, the absolute space of phenomena is said to play a similar cosmogonic role in the Great Perfection tradition, which even also uses the metaphor of a primordial ground "freezing" into the appearance of ordinary reality. The nineteenth-century classic *The Vajra Essence* declares,⁵²

This ground is present in the mind-streams of all sentient beings, but it is tightly constricted by dualistic grasping; and it is regarded as external, firm, and solid. This is like water in its natural, fluid state freezing in a cold wind. It is due to dualistic grasping onto subjects and objects that the ground, which is naturally free, becomes frozen into the appearances of things.

In the practice of the Great Perfection, one comes to realize how all phenomena spontaneously emerge as empty, intangible, nonobjective configurations of space, and this all-pervasive domain is perceived as nondual from primordial consciousness. *The Vajra Essence* concludes, "Primordial consciousness is self-originating, naturally clear, free of outer and inner obscuration; it is the all-pervasive, radiant, clear infinity of space, free of contamination."⁵³

The description of the true vacuum in modern physics makes it look like one more version of an Unmoved Mover, an absolute dimension of reality that influences the phenomenal world but is uninfluenced by it. In other words, one more idol. According to the view of the Great Perfection, however, the absolute space of phenomena transcends all human conceptual categories, including those of permanence and impermanence and even existence and nonexistence. Words are useful only insofar as they lead one to the direct realization of ultimate reality. While absolute space is conventionally viewed as being existent, it cannot exist independently from relative space, and relative space cannot exist without absolute space. Likewise, the unity of primordial consciousness and the absolute space of phenomena does not exist independently of the phenomenal world but rather permeates it as the “one taste” of all phenomena.

In all kinds of interactions between two phenomena or classes of phenomena, idols creep in as a result of failing to attend to and comprehend one of the partners in those interactions. In scientific and contemplative inquiry, one unveils the idol of the self by closely examining one’s own and others bodies and minds, together with their interactions with the environment. To unmask the idol of God, one carefully observes the orderly patterns of dependently related events within the natural world and how they pertain to one’s understanding (if any) of the divine. To expose the idol of the brain, one investigates the causal efficacy of subjectively experienced mental processes; and to reveal the idol of

Nature, one scrutinizes the causal interactions of subjective experience with objective reality.

Likewise, to lay bare the idols of theories one investigates the influences on the position, or stance, from which those theories are created and adopted. In the cases of science and religion, for instance, one carefully studies the nonscientific and nonreligious influences on those worldviews, including all manner of subjective, individual and cultural participation. For the moment, what we attend to is reality, and that reality is prone to become an idol when we fail to attend to the influences on that reality.

In short, Buddhism throws down the idols of the self, God, the brain, and Nature, replacing them with an all-pervasive view of dependent origination. Let us now apply the view of the Great Perfection to the scientific concepts of space-time, mass-energy, and body-mind. The absolute space of phenomena is pervaded not only by primordial consciousness, but by the infinite, vital energy of that consciousness (*jñāna-prāṇa*),⁵⁴ and it is also of the same nature as “the fourth time,” a dimension of time that transcends the past, present, and future.⁵⁵ So relative space-time, mass-energy, and body-mind emerge from the ultimate symmetry of the absolute space of phenomena, the fourth time, primordial consciousness, and the energy of primordial consciousness, all of which are co-extensive and of the same nature. These two sets of ultimate and relative phenomena have no inherent identities of their own apart from the conceptual

frameworks in which they are conceived or apart from each other. In the mindful awareness of a world of dependent origination, there is no place for idols of any kind.

Many of the initial assumptions of Christian theology are as different from Buddhism as those of Buddhism are different from science. We have already noted some provocative similarities between scientific and Buddhist views of empty space, so let us now review some of the comparable conclusions drawn by Neo-Platonic Christian contemplatives beginning in the ninth century with John Scotus Eriugena. According to this view, *nihil*, or nothingness, transcends all phenomena, which all emerge from this Divine Essence.⁵⁶ Through contemplation, this transcendent good is seen to ineffably descend into the world of nature and is present in all things, with this ultimate reality proceeding by the power of thought from nothing to something. In this way, all phenomena are expressions of a theophany, consisting of appearances of the divine.

Nicholas of Cusa similarly explained the path of seeking God within oneself, resulting in the removal of all limits.⁵⁷ He described the ascent of the soul to God in this way:⁵⁸

I experience how necessary it is for me to enter into the cloud and to admit the coincidence of opposites, above all capacity of reason, and to seek there the truth where impossibility confronts me. And above reason, above even every highest intellectual ascent when I will have attained to that which is unknown to every intellect and which every intellect judges

to be the most removed from truth, there are you, my God, who are absolute necessity.

Similar descriptions of ultimate reality are expressed in the contemplative writings of Judaism, Islam, Hinduism, and Taoism, which is remarkable in light of the many significant differences in the original doctrines of each of these world religions. These brief allusions to apparent similarities among modern physics, Buddhism, and Christianity are far from conclusive, but they do suggest a possible, deep convergence to a truth that transcends our ordinary experience of the world.⁵⁹ These topics call for thorough, comparative analysis, and if it turns out that there are truths on which science and the great contemplative traditions of the world come together, those may be the most important truths that can be known by humanity.

Conclusion

If the above theories of the vacuum of modern physics, the absolute space of phenomena of Buddhism, and the nothingness of Christianity do in fact converge, we may be tempted to view the synthesis of these views as another attempt at a Grand Unified Theory, which would present us with one more idol. All objects of knowledge—both perceptual and conceptual—tend to become idols due to the deeply ingrained tendency to reify everything we experience. To see through the idols of knowledge, we must recognize that all objects of perception arise in interdependence with the perception of them, and all conceived objects,

including theoretical entities, such as fields and elementary particles, arise in interdependence with the conceptual framework in which they are conceived. The very categories of mind and matter, space and time, and mass and energy are human, conceptual constructs which we have superimposed on the world of experience, and they have no existence apart from the conceptual frameworks in which they are conceived.

When it comes to trying to determine the validity of our experiences and ideas, it is important to recognize the impossibility of discovering whether any isolated moment of cognition is valid without reference to another moment of cognition. In other words, no single moment of awareness can stand alone as an absolutely valid cognition. By implication it may be that no single mode of inquiry—scientific or otherwise—can stand alone as the one absolute valid means of knowledge. This implies that we must engage in a bootstrapping process in both scientific and contemplative inquiry, in which a discovery must be subjected to peer review and replication in order to be validated.

Another way to evaluate knowledge is to apply the criterion of pragmatism, for the value of our knowledge also hinges on the question: what is it good for?⁶⁰ This is a compelling rationale for bringing together very different disciplines, each having different working assumptions, goals, and methodologies. By cross-referencing them, their hidden assumptions may be more easily revealed, and deep truths may also surface. A starting point for such

comparative analysis may be to acknowledge the value of science for knowing the objective world and for enhancing our hedonic well-being, while recognizing the value of the world's contemplative traditions for revealing the nature of the world of experience and enhancing eudaimonic well-being. The worlds explored by scientists and contemplatives are mutually interdependent, as are hedonic and eudaimonic well-being.

Over the past four hundred years, the physical sciences have undergone two major revolutions, the first in the seventeenth century, and the second in the twentieth century. This second revolution is not yet complete, for no one has yet formulated a compelling unification of quantum mechanics and general relativity. A missing component that may be crucial for devising such a unified theory is an understanding of the role of the observer, which has thus far eluded physicists' understanding.⁶¹ The biological sciences have undergone one major revolution, begun by Darwin in the mid-nineteenth century and culminating in the Genome Project in the late twentieth century.

All those revolutions were based on the rigorous and precise observation of physical and biological phenomena.

The cognitive sciences have yet to undergo a single revolution. The direction of psychology proposed by William James, with its empirical emphasis on introspection, was stifled by the domination of scientific materialism over the past century. A major reason for this delay, which follows from the failure to

follow James's lead, is that cognitive scientists have yet to devise any rigorous and precise introspective methods for observing mental phenomena.

Consequently, the materialistic assumptions about the nature and origins of consciousness that constituted the "popular view" among non-philosophers since the time of Socrates remain unchallenged by modern science. Because of a dogmatic allegiance to the principles of scientific materialism, empirical methods for studying the mind have been confined mostly to verbal interrogation and the examination of the neural and behavioral correlates of mental phenomena. The first-person observation of these states of consciousness has been left in the hands of amateurs with no professional training in observing, experimenting with, or reporting on mental processes.

The revolutions in the physical and life sciences occurred only because scientists were willing to overthrow unsubstantiated beliefs when they conflicted with empirical discoveries, many of which occurred because of the development of increasingly sophisticated means of observation. One of the most prominent unsubstantiated beliefs in the current scientific study of the mind is that all states of consciousness are functions of the brain and have no existence apart from the brain. To determine whether this belief is true, we would need to know the full spectrum of all states of consciousness, like knowing the full spectrum of electromagnetic radiation before making broad generalizations about the nature of light. But, as mentioned before, the cognitive sciences have thus far confined

their investigations almost entirely to the medium and low “bandwidth” of human consciousness. Within that range, it appears very likely that all states of consciousness are dependent on the brain. But Buddhist contemplatives have been principally interested in developing “high-energy” states of consciousness, in which *samādhi*, the primary “technology” of contemplative inquiry, plays a crucial role. In contemplative, as well as scientific inquiry, truth and measurement technology are inextricably linked.⁶² Since the possibility of the higher frequency range of consciousness has hardly been considered by cognitive scientists, such states of consciousness have never been factored in to the scientific account of the mind.

When researchers do turn their attention to such highly developed modes of awareness, investigating them from both third-person and first-person perspectives in collaboration with highly advanced contemplatives, the scientific understanding of the mind may shift from classical mind-body relationships to relativistic ones. Buddhist contemplatives have long maintained that the participatory nature of the mind in nature is revealed most clearly when the mind is empowered by the unified cultivation of meditative quiescence (*śamatha*) and contemplative insight (*vipaśyanā*). This is a hypothesis that can be tested experientially, setting aside all dogmas and commitments to unsubstantiated beliefs, scientific or religious. As Robert B. Laughlin comments, “Seeing through ideologies and debunking them is what real science is all about. Mental life in

general, I think.”⁶³ This is certainly a central aim of both contemplative and scientific inquiry at its best, and it requires unflinching allegiance to the spirit of empiricism. But such a renaissance of empiricism in the cognitive sciences will not come easily. As philosopher Bas van Fraassen remarks, “Being or becoming an empiricist will then be similar or analogous to conversion to a cause, a religion, an ideology.”⁶⁴

Descartes bequeathed to humanity an ego-centric view of the mind, and modern cognitive scientists are committed to a neuro-centric view. The rejection of the idols of the mind and the brain may result in a shift of perspective on the mind-body problem as one of dependent origination, with both partners in this coupling participating in a relation of mutual interdependence. Aristotle left us a theo-centric view of the world, and modern physicists are committed to a physio-centric view. The rejection of the idols of God and Nature may give way to a reassessment of the whole of reality as one of dependent origination, in which all subjective and objective phenomena participate in relations of mutual interdependence. Physicist Nick Herbert comments that the source of all quantum paradoxes appears to lie in the fact that human perceptions create a world of unique actualities—our experience is inevitably “classical”—while quantum reality is simply not that way at all. And he asks, “Since physics assures us that our lives are embedded in a thoroughly quantum world, is it so

obvious that our experience must remain forever classical?"⁶⁵ To this question, contemplatives throughout history have responded with a resounding "No!"

Science has provided us with multiple conceptual revolutions in our way of viewing reality, but these have had little impact on the cultivation of genuine happiness or virtue throughout the world. The contemplative traditions of the world have resulted in multiple experiential revolutions in ways of viewing reality, which have directly altered the hearts, minds, and lives of those who have acquired such contemplative insights, and indirectly influenced their hosts societies. But contemplative inquiry has left humanity in the dark about many truths pertaining to the physical world, and they have yielded no advances in technology. In short, these two approaches to understanding appear to be fundamentally complementary, rather than incompatible.

In our modern world, the pursuits of happiness, truth, and virtue have been widely regarded as being unrelated and even incompatible. With the convergence of science with Buddhism and the other great contemplative traditions of the world, we may reintegrate these noblest of pursuits and help to heal our world from its current state of disintegration, alienation, conflict, and suffering.

¹ Francis Bacon, *Novum Organum*. P. Urbach and J. Gibson, trans. and ed. (Peru, Illinois: Open Court Publishing Company, 1620/1994).

² David Ritz Finkelstein, "Emptiness and Relativity" in *Buddhism & Science*, B. Alan Wallace, ed., 365-384.

³ Jeffrey Hopkins, *Meditation on Emptiness*, 296-304.

⁴ René Descartes, *Discourse on the method; and Meditations on first philosophy*. David Weissman, ed. (New Haven: Yale University Press, 1996) *Meditations* 1, 2, & 6.

⁵ S. B. Klein, "The Cognitive Neuroscience of Knowing One's Self" in *The Cognitive Neurosciences III*, M. S. Gazzaniga, ed. (Cambridge, MA: MIT Press, 2004) 1077-1090; Own Flanagan, *The Problem of the Soul: Two Visions of Mind and How to Reconcile Them* (New York: Basic Books, 2002; Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge, MA: Harvard University Press, 1989).

⁶ Steven Collins, *Selfless Persons: Imagery and Thought in Theravāda Buddhism* (London: Cambridge University Press, 1982).

⁷ Aristotle, *The Metaphysics*, John H. McMahon, trans. (Buffalo: Prometheus, 1991) 12.7; 1072b 14.

⁸ Ibid. 12.7; 1073a4.

⁹ Albert Einstein, "Science and Religion" In *Out of My Later Years* (New York: Philosophical Library, 1950) 27.

¹⁰ Albert Einstein, "On Scientific Truth" In *Ideas and Opinions* (New York: Crown Publishers, 1954) 262.

¹¹ John R. Searle, *The Rediscovery of the Mind*, 90-1.

¹² Daniel M. Wegner, *The Illusion of Conscious Will* (Cambridge, MA: MIT Press, 2003) 341-342.

¹³ B. Libet, C. A. Gleason, E. W. Wright, & D. K. Pearl, "Time of conscious intention to act in relation to onset of cerebral activity (readiness-potential). The unconscious initiation of a freely voluntary act." *Brain*, 1983, 106 (3): 623-42.

¹⁴ Jack & Robbins, "Review of Wegner's *Illusion of Conscious Will*." *Behavioral and Brain Sciences* (2004) 27, 649-692.

¹⁵ John R. Searle, *The Rediscovery of the Mind*, 76-7.

¹⁶ John R. Searle, *Consciousness and Language* (Cambridge: Cambridge University Press, 2002) 50.

¹⁷ John R. Searle, *The Rediscovery of the Mind*, 3.

¹⁸ Paul C. W. Davies, "An overview of the contributions of John Archibald Wheeler," 5-6.

¹⁹ Ibid. 7.

²⁰ *Prevention & Treatment*, Volume 1, Article 0002a, posted June 26, 1998. The full article may be viewed at:

<http://www.journals.apa.org/prevention/volume1/pre0010002a.html>

A more recent and more comprehensive version of the argument, published in 2002, called "The emperor's new drugs: an analysis of antidepressant medication data submitted to the U.S. Food and Drug Administration," can be accessed at: www.journals.apa.org/prevention/volume5/toc-jul15-02.html

For a broad, cultural perspective on the placebo effect in general, see Daniel E. Moerman, *Meaning, Medicine, and the "Placebo Effect"* (New York: Cambridge

University Press, 2002).

²¹ Andrew F. Leuchter, et al. "Changes in Brain Function of Depressed Subjects During Treatment with Placebo," *American Journal of Psychiatry* 2002; 159: 122-129.

²² John R. Searle, *Consciousness and Language*, 34.

²³ Antoine Lutz, et. al., "Long-Term Meditators Self-Induce High-Amplitude Gamma Synchrony During Mental Practice." *Proceedings of the National Academy of Sciences*, November 16, 2004, vol. 101, no. 46, 16369-16373. The full article can be found at: <http://www.pnas.org/cgi/content/full/101/46/16369>

²⁴ Edward J. Larson and Larry Witham, "Leading Scientists Still Reject God." *Nature*, 1998; **394**, 313.

²⁵ René Descartes, *Principles of Philosophy*, Pt. 4, § 187, F. Alquié, trans. & ed., *Oeuvres Philosophiques de Descartes* (Garnier Frères, 1973) Vol. 3, 502n.

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²⁷ P. M. Haman, *Energy, Force and Matter: The Conceptual Development of Nineteenth Century Physics* (Cambridge: Cambridge University Press, 1982), 43.

²⁸ Richard P. Feynman, R. B. Leighton, M. Sands. *The Feynman Lectures on Physics* (Cambridge, MA: MIT Press, 1965), sec. 4-2.

²⁹ Tim Folger, "Does the Universe Exist if We're Not Looking?" *Discover*, Vol. 23, No. 06, June 2002. For the full article see: <http://www.discover.com/issues/jun-02/features/featuniverse/>; Anton Zeilinger, "Why the Quantum? 'It' from 'bit'? A participatory universe? Three far-reaching challenges from John Archibald Wheeler and their relation to experiment" in *Science and Ultimate Reality*, 201-220; Jacob D. Bekenstein, "Information in the Holographic Universe -- Theoretical results about black holes suggest that the universe could be like a gigantic hologram," *Scientific American*, August 2003; David Bohm, *Thought As a System* (London: Routledge, 1994); David Bohm, *Wholeness and the Implicate Order* (London: Routledge, 1995).

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³¹ David Ritz Finkelstein, "Emptiness and Relativity," 366.

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