Beyond Physicalism

TOWARD RECONCILIATION OF SCIENCE AND SPIRITUALITY

Edited by
EDWARD F. KELLY,
ADAM CRABTREE, and
PAUL MARSHALL

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PREFACE AND ACKNOWLEDGMENTS

The rise of modern science has brought with it increasing acceptance among intellectual elites of a picture of reality that conflicts sharply both with everyday human experience and with beliefs widely shared among the world's great cultural traditions. A particularly stark but influential early statement of the emerging picture came from philosopher Bertrand Russell:

> That Man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms; that no fire, no heroism, no intensity of thought and feeling, can preserve an individual life beyond the grave; that all the labours of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of Man's achievement must inevitably be buried beneath the débris of a universe in ruins—all these things, if not quite beyond dispute, are yet so nearly certain, that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built. ("The Free Man's Worship," 1903)

There can be no doubt that this bleak vision continues to dominate mainstream scientific thinking and has contributed to the "disenchantment" of the modern world with its multifarious attendant ills. Prominent recent spokesmen include, for example, Nobel prize winners such as theoretical

physicist Steven Weinberg, for whom "the more the universe seems comprehensible, the more it also seems pointless," and physicist-turned-neurobiologist Francis Crick, whose "astonishing hypothesis" declares that "'You,' your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules. As Lewis Carroll's Alice might have phrased it: 'You're nothing but a pack of neurons.'"

Overt conflict between science and religion has erupted sporadically since the first stirrings of science centuries ago, and recent years have witnessed a series of heavily publicized attacks on nearly all things religious by well-meaning defenders of Enlightenment-style rationalism. Such persons clearly regard themselves, and current mainstream science itself, as reliably marshaling the intellectual virtues of reason and objectivity against retreating forces of irrational authority and superstition. For them the truth of the picture sketched above has been demonstrated beyond reasonable doubt, and to think anything different is necessarily to abandon centuries of scientific progress, release the black flood of occultism, and revert to primitive supernaturalist beliefs characteristic of bygone times.

Contributors to the present volume share a very different view. We believe it takes astonishing hubris to dismiss en masse the collective experience and wisdom of a large proportion of our forebearers, including persons widely recognized as pillars of all human civilization, and we are united in believing that the single most important task confronting all of modernity is that of *meaningful* reconciliation of science and religion. We emphatically reject, moreover, the idea of simply exiling these humanly vital subjects to independent "magisteria" where they can go their separate ways as a means to uneasy truce, as originally decreed by Descartes and recently suggested again by Stephen Jay Gould.

Rather, we believe that emerging developments within science itself are leading inexorably in the direction of an expanded scientific understanding of nature, one that can accommodate realities of a "spiritual" sort while also rejecting rationally untenable "overbeliefs" of the sorts targeted by critics of the world's institutional religions. We advocate no specific religious ideology, and we aspire to remain anchored in science while expanding its horizons. As explained in greater detail in the pages that follow, we are attempting in this way to find a middle path between

the excessively polarized fundamentalisms—both religious *and* scientific—that have so far dominated public discourse.

Our book itself is the latest product of a fifteen-year collaboration involving an uncommonly diverse group of participants including scientists, scholars of religion, philosophers, and historians, among others. Brought together under the auspices of Esalen Institute's Center for Theory and Research (CTR) by its guiding spirit, Michael Murphy, we are in many ways representative of the sorts of people we view as our primary target audience—scientifically minded, intelligent adults with broad interests, who regard themselves as "spiritual" but not "religious" in any conventional sense, and who are skeptical of the mainstream scientific vision sketched above but equally wary of uncritical embrace of any of the world's major religious systems with their often conflicting beliefs and decidedly mixed historical records.

It took a long time and a lot of hard work for us to overcome sufficiently for practical purposes the deep stylistic and ideological differences that typically impede communication between scientific and humanistic scholars—the "two cultures," in the terminology of C. P. Snow—and we have sometimes joked about our task being rather like that of building the transcontinental railroad. Nonetheless, we think it will be evident to most readers that the resulting book is more compound than mixture and manifests a surprising degree of coherence given the extreme diversity of its subject matter. We believe it can provide sustenance to those who, like ourselves, hunger for a more uplifting and intellectually satisfying worldview that draws upon the best in both science *and* religion.

Many persons have contributed to our discussions over the years, and our membership has changed as we adapted to our evolving challenges by recruiting relevant sorts of targeted professional expertise. Our current core group includes, in addition to the chapter authors identified below, Bill Barnard, Deb Frost, Bruce Greyson, David Hufford, Emily Kelly, Jeff Kripal, Gary Owens, Bob Rosenberg, Charles Tart, Jim Tucker, and Sam Yau. We thank all those who have read and commented on some or all of the chapters: these include Eben Alexander, Ross Dunseath, Bill Eastman, Jim Gilchrist, James Keaten, Fritz Klein, Jim Lenz, Jared Lindahl, Rafael Locke, Ohkado Masayuki, Binita Mehta, Andreas Sommer, and Vik Vad. Special thanks to John Cleese, Deb Frost, Gary Owens, and the Institute of Noetic Sciences for financial support of the project at

various critical times, and to Steve Dinan and Frank Poletti for efficient organization and administration of our many meetings. Most of those meetings took place, appropriately, in the unique ambience provided by Esalen's CTR community, operating as it does outside conventional academic boundaries, perched on a cliff overlooking the Pacific Ocean in Big Sur.

We would also like to thank Stanley Plotnick, Jon Sisk, and their staff at Rowman & Littlefield for their continued interest in our project, which began with the publication of *Irreducible Mind*, to which the present book is a companion volume. Rowman & Littlefield also kindly granted permission for substantial excerpts from *Irreducible Mind* to be made available on Esalen Institute's CTR website, as part of a collection of supplemental materials for the present book (we thank Bob Rosenberg for setting up this facility, and also for compiling the index). We are also grateful to the Alister Hardy Trust and the Alister Hardy Religious Experience Research Centre, University of Wales Trinity Saint David, Lampeter, UK, for permission to quote from their archive of spiritual accounts in Chapter 2. We thank Imprint Academic for permission to reproduce in Chapter 6 some parts of Harald Atmanspacher's article "Dual-aspect monism à la Pauli and Jung," published in 2012 in the *Journal of Consciousness Studies*, *19*(9–10), 96–120. The two figures in Chapter 11 are based on diagrams originally published in 2005 in Paul Marshall, *Mystical Encounters with the Natural World*, modified and included in the present volume by permission of Oxford University Press. Michael Murphy's "The Emergence of Evolutionary Panentheism" was published in 2014 in Loriliai Biernacki and Philip Clayton (Eds.), *Panentheism across the World's Traditions* (Chapter 9, pp. 177–199), and a modified version is included here by permission of Oxford University Press, USA.

Above all, we again thank Michael Murphy for initially conceiving this project, for bringing us together in the spectacularly stimulating environment of Esalen, and for his apparently limitless reserves of comradeship, wit, and wisdom.

had emerged. We saw clearly that our work needed to proceed in two overlapping stages: first, to assemble in one place the main lines of evidence demonstrating the empirical inadequacy of conventional physicalism; second, and even more challenging, to try to find some better conceptual framework to take its place.

An ideal vehicle for the first stage was available in the form of the extraordinary magnum opus of F. W. H. Myers, entitled *Human Personality and Its Survival of Bodily Death*, published in 1903. Myers, one of the founders in 1882 of the Society for Psychical Research, had systematically collected evidence of human capacities that resist explanation in conventional materialist terms, and on that basis had advanced an expanded model of human mind and consciousness that was greatly admired by many leading contemporaries including William James. We were also aware that James himself had explicitly applied this model to his psychological studies of *The Varieties of Religious Experience* (1902), and that he had gone on to explore possible further extensions in his late metaphysical work *A Pluralistic Universe* (1909). We therefore decided to take advantage of the impending centennial of Myers's landmark contribution by revisiting and reevaluating it in the context of the subsequent century of relevant psychological and neurobiological research.

This turned out to be a mammoth project—far larger than we imagined at the outset—but it resulted in the publication in 2007 of *Irreducible Mind: Toward a Psychology for the 21st Century* (Kelly, Kelly, Crabtree, Gauld, Grosso, & Greyson, henceforth *IM*), an 800-page behemoth that also included on CD a complete copy of Myers's *Human Personality* itself (1,400 pages in two volumes) plus its five most significant contemporary reviews. Parenthetically, *IM* has subsequently been released in paperback without the CD, but all of that supplemental material and several other relevant scholarly resources are now freely available on the Esalen website at http://www.esalen.org/ctr. Topics addressed include (in addition to everyday phenomena such as autobiographical and semantic memory, intentionality, the qualitative features of consciousness, and indeed consciousness itself) phenomena of extreme psychophysiological influence such as stigmata and hypnotically induced blisters, prodigious forms of memory and calculation, psychological automatisms and secondary centers of consciousness, near-death and out-of-body experiences including experiences occurring under extreme physiological conditions

such as deep general anesthesia and/or cardiac arrest, genius-level creativity, and mystical-type experiences whether spontaneous, pharmacologically induced, or induced by transformative practices such as intense meditative disciplines of one or another sort (see the following chapter for more details).

In contrast with the prevailing *production* model of the brain/mind relation, as described above, these "rogue" data collectively support an alternative class of models which view the brain not as the generator of mind and consciousness but as an organ of adaptation to the everyday environment, selecting, focusing, channeling, and constraining the operations of a mind and consciousness inherently far greater in capacities and scope. As Myers (1903) himself expressed it:

> There exists a more comprehensive consciousness, a profounder faculty, which for the most part remains potential only . . . but from which the consciousness and the faculty of earth-life are mere selections. . . . [N]o Self of which we can here have cognisance is in reality more than a fragment of a larger Self,—revealed in a fashion at once shifting and limited through an organism not so framed as to afford it full manifestation. (Vol. 1, pp. 12, 15)

The primary purpose of the present book is to develop this central concept in greater depth and detail.

Before moving on it is also worth pointing out that *IM* added a rich *empirical* dimension to what appears to be a rising chorus of *theoretical* dissatisfaction with physicalism as a philosophical position (for example, Chalmers, 1996, 2002; Koons & Bealer, 2010; Nagel, 2012; Velmans, 2009), coupled with resurgent interest in formerly "deviant" philosophical views including not only interactive dualism (Baker & Goetz, 2011), but panpsychism or panexperientialism (for example, Griffin, 1998; Seager & Allen-Hermanson, 2013; Skrbina, 2005; Strawson et al., 2006), neutral and dual-aspect monisms (Velmans & Nagasawa, 2012), and even absolute idealism (Sprigge, 1983). Our cumulative sense of the philosophical situation is that we are at or very near a major inflection point in modern intellectual history.

Physicalism in its current forms seems clearly inadequate, but what should take its place? This is by far the harder task, and the focus of the present theory-oriented sequel to *IM*. I emphasize again that we intend to remain anchored in science, and that what we are trying to do is not to

overthrow science but to *expand* it to dimensions more fully commensurate with the complexity of our subject matter: in the words of Francis Bacon (1620/1960), at the dawn of modern science, "[T]he world is not to be narrowed till it will go into the understanding . . . but the understanding to be expanded and opened till it can take in the image of the world as it is in fact" (p. 276).[3] Descartes' conceptual bifurcation of reality into physical and mental parts enabled science to get on efficiently with its analysis of the physical side for several centuries, with undeniably spectacular theoretical and practical results, but now it's time to get on too, and better than we have thus far, with the humanly more vital psychological side.

A critical and unique feature of our approach to this daunting task lies in our willingness to take into consideration *all* relevant classes of data. One of our central contentions is that precisely because of its physicalist presuppositions, the currently dominant mainstream scientific approach to brain/mind issues has been seriously compromised by virtue of systematically and deliberately excluding from consideration some of the *most* important and theoretically significant categories of mental phenomena, including in particular (1) paranormal, psychic, or "psi" phenomena, and (2) "higher" or "mystical" altered states of consciousness.

With regard to psi phenomena, here I will simply say that in our collective judgment the thousands of field and laboratory studies carried out by competent scientists over the 130-plus years since the founding of the Society for Psychical Research cumulatively provide an overwhelming body of evidence—*for those who will take the trouble to study it with an open mind*—that these phenomena really do exist as facts of nature. The italicized qualifications are important, however, because public discussion is being systematically distorted at present by a small cadre of highly vocal, entrenched professional skeptics—*deniers*, really—who conspicuously lack those credentials.

The theoretical significance of psi phenomena arises from the fact that they are so unexpected—perhaps even *impossible*, although this is not entirely clear—in the context of classical physicalism. This fact by itself accounts for much of the skepticism about psi among mainstream scientists, who typically have little or no time to devote to firsthand study of the relevant literature and must depend on others for their information. It is also evident that one major obstacle if not *the* major obstacle to wider acceptance of psi is the absence at present of a conceptual framework or

theory in terms of which these phenomena make sense and do not conflict with other parts of our scientific understanding of nature. For readers who wish to pursue this subject further we recommend *IM* itself, which deals fairly briefly with psi but provides many pointers into the literature via an annotated bibliography, and other recent books which focus more specifically on this topic and the debates surrounding it (for example, Carter, 2012; Radin, 2006; Tart, 2009).

The public controversy regarding psychical research is in principle mainly a *scientific* controversy, although workers professionally engaged in such research routinely suffer accusations of heresy and/or incompetence from persons for whom current scientific opinion constitutes a set of fixed beliefs to be defended at any cost. But our other scientifically "taboo" topic, mystical experience, and higher states of consciousness, is even more contentious, because it draws us into the far larger and more superheated cultural arena occupied by the ongoing public hostilities, alluded to in our Preface, between science and *religion*.[4]

Viewed from a sufficiently high altitude, the current science–religion debate here in the United States resembles a Tolkien-like mythic clash of armies, one consisting mainly of secular humanists claiming for themselves the mantle of science, and the other made up of vocal adherents of warring traditional faiths including in particular radical Islam and evangelical forms of Christianity who seem determined to cling to received religious doctrine no matter what science has to say. Both camps, interestingly, appear mostly hostile to psychical research while knowing little if anything about it.

This cartoon-style description obviously caricatures a much more complex reality, particularly in ignoring the millions of serious and open-minded persons who quietly continue practicing their faiths of origin while struggling to resolve apparent conflicts with contemporary science, but it will serve for present purposes. The point is that one enters the treacherous no-man's land between these powerful and highly polarized cultural forces, shrouded as it is with the smoke and debris of ongoing combat, only at one's peril and with considerable trepidation. More must therefore be said about why and how we are doing this, as background for the chapters to follow.

Most fundamentally, our view is that both sides are mistaken in thinking that they represent the only possible alternatives. What we are attempting to do here is to open up a third way—a tertium quid—that

somehow combines an expanded science with the recognition of genuine empirical realities underlying traditional forms of religion.[5]

Turning now to the religion side itself, one striking difference between the modal Asian and Western approaches to a comprehensive description of nature lies in the Asian traditions' more overt reliance upon direct experience of powerful altered states of consciousness as the primary background for a millennia-long evolution and mutual contesting of mystically informed philosophical theologies. Our concern here is with these sorts of experiences and the associated philosophies, not with religions as social institutions characterized by discordant doctrinal particularities, and it is essential to recognize here at the outset that contemporary attacks on religion such as those noted in our Preface have been directed primarily at the latter.

We believe that a vital task of scientific modernity is to try to extract from the great mass of religious experience and philosophy whatever may be valid and useful both for theory construction and for soteriological purposes. As a working scientist I further believe, again with F. W. H. Myers, that "such an inquiry must be in the first instance a scientific, and only in the second instance a religious one. Religion, in its most permanent sense, is the adjustment of our emotions to the structure of the Universe; and what we now most need is to discover what that cosmic structure is" (1893/1961, p. 37).

The information we are looking for, however, is unlikely to be found at the level of overt religious forms or institutional histories. The public critics of religion are certainly correct in pointing out that numerous and sometimes profound doctrinal differences divide the world's major faiths. I personally cannot help but think of traditional religions in terms of the familiar parable of the blind men and the elephant, each in touch with aspects of a tremendous and objectively existent reality, but all suffering from characteristically human limitations of perspective and none in position to claim exclusive possession of the truth in its entirety. I believe what we need to do is to look beyond these differences at the level of surface forms in an effort to get at whatever truth or truths may underlie them, and that the most effective way to accomplish this is through comparative studies of mystical experience—studies carried out, moreover, in direct and deep conversation with emerging science.

Before proceeding further in this direction, however, let me briefly note certain kinds of resistance we have already encountered (leaving

natural world that remain hidden from us in ordinary states of consciousness.

This upgrading of extrovertive forms of mystical experience also brought with it a clearer sense of the relationship between experience and doctrine in the mystical realm. The mystical traditions themselves, with their practical emphasis on personal liberation, tend to value experience over doctrine and theory. Such experience is universally characterized, moreover, as both *ineffable*—beyond ordinary forms of reason, understanding, and verbal expression—and yet profoundly *noetic*—somehow directly revealing the nature of deeper realities and answering our questions about them. Systems of religious philosophy can attempt to rationalize such experiences and to provide a kind of intellectual scaffolding that may assist others to rise to the same experiential heights, but these systems cannot substitute for the experiences themselves.

The world's mystically informed philosophical systems themselves, moreover, are not equally cogent on their own terms. One immediate consequence of this picture is that it makes sense to pay particularly close attention to those rare historical figures who have combined high philosophic acumen with direct personal experience of deep mystical states—notably, persons such as Plotinus, Śaṅkara, Abhinavagupta, and in modern times Sri Aurobindo. As noted already by William James in the *Varieties,* the views of such persons tend at least roughly toward the sorts of philosophy that also dominated Western metaphysical thinking from German idealists such as Fichte, Schelling, and Hegel up through the early twentieth century, and it is important to recognize that such views were never decisively refuted, but simply brushed aside by the advancing tide of modern physicalism.

Myers's psychological theory has been substantially rehabilitated by *IM*, and we surmise that a companion metaphysics of some broadly idealist type can also be rehabilitated, and may in fact prove *necessary*, especially in light of the empirical phenomena of psi and mystical experience. It is noteworthy for example that idealism's central philosophical problem of relations between the Many and the One—the main focus of James's *A Pluralistic Universe*—has been revisited in an important modern defense of absolute idealism by Sprigge (1983), who explicitly recognizes the striking correspondence between his philosophic views and those of certain monistic Indian schools. It is also encouraging to us that all of the great mystically informed religious philosophies explicitly ac-

cept the reality of phenomena such as psi, postmortem survival, and inspirations of genius flowing in from higher realms of consciousness, although it remains to be seen to what degree such philosophies may really help us to understand or explain these "rogue" phenomena.

We had already taken a first stab at theory in the concluding chapter of *IM*, where we sketched possibilities ranging from post-Cartesian forms of interactive dualism to some sort of idealism or perhaps a neutral or dual-aspect monism, leaning slightly toward the latter. We also attempted there to show how theories of these types might fit together with leading-edge developments in physics and neuroscience. As our discussions have continued to evolve, commonalities across a wide range of conceptual frameworks have begun to emerge more clearly, with the psychological theories of Myers and James at the empirical center, flanked by quantum theory and Whiteheadian-type process metaphysics on one side and the various mystically informed religious philosophies on the other.

Our current net sense of the situation is that the empirical phenomena surveyed in *IM*, including in particular the deeply correlated phenomena of psi and mystical experience, collectively point the way to an expanded science, one that penetrates deep into territory traditionally occupied by the great world religions and that accommodates the central notion of something God-like at the heart of individual human beings and of nature itself. A pathway seems to be opening up toward some sort of fundamentally spiritual worldview that is compatible with science, one that would appeal to the large number of discontented modern persons who hunger for such a worldview but experience difficulties with scientifically problematic "overbeliefs" associated with the traditional faiths.

A common figure thus seems to be emerging, though still partially hidden, from the fog and mist. To expedite its emergence we have gradually reinforced our membership, adding two physicists and a cosmologist, a historian of science, a basic neuroscientist, a Whiteheadian philosopher, a folklorist/anthropologist, and Paul Marshall himself plus several other scholars of religion representing various branches of the mystical tradition including Neoplatonism, Hinduism, and Tantric outgrowths of Hinduism such as the nondual mystical philosophies of Abhinavagupta and Sri Aurobindo. The resulting group is extremely unusual in terms of its capacity to bring to bear high-level professional expertise on *both* of the theoretically crucial but scientifically "taboo" topics identified above, individually and jointly: many of our scientific members have devoted

large parts of their careers to investigation of paranormal phenomena and altered states of consciousness in laboratory and/or field settings, and our scholars of religion, similarly, are internationally recognized experts on the mystical tradition generally as well as specialists regarding some of its historically most significant and philosophically able exemplars.

In general terms, then, our goal is to find or construct a conceptual framework potentially capable of accommodating psi phenomena (provisionally including postmortem survival), mystical experiences, and all of the other "rogue" phenomena documented in *IM*, as well as phenomena of more everyday sorts, and we are pursuing that goal by bringing together the diverse and normally non-interactive perspectives of empirical science, metaphysical philosophy, and the great mystical traditions with their broadly similar but far-from-identical views. In effect, we are attempting to drive as far and as quickly as possible toward an empirically justified, theoretically satisfying, and humanly useful "big picture" of how things really are and how we humans fit in. We have no interest in fighting rearguard actions against entrenched psi-deniers and scientific fundamentalists and the like, important though such efforts undoubtedly are, and we are not apologetic about prospecting in the literature of mystical experience and mystically informed religious philosophies for clues about how best to advance our theoretical purposes.

Although a common picture of some sort seems to be emerging, it has not yet fully emerged, and we remain short of full agreement on the form(s) it may ultimately take. The present book therefore amounts to a kind of progress report based on an initial reconnaissance of what we now collectively view, borrowing our guiding metaphor from the Lewis and Clark Expedition, as a crucial "undiscovered country" of science. We believe our efforts to be headed in the right general direction, although sure to be flawed in many details.

Part I, consisting of two chapters, provides essential background. Chapter 1, by myself, summarizes the central arguments of *IM* and the synoptic empiricism that we regard as the obligatory foundation for adequate theorizing. Its primary task is to identify the principal empirical issues and data that candidate conceptual frameworks or theories must address in useful fashion if they are to be of serious long-term interest to us.

Chapter 2, by Paul Marshall, goes on to flesh out in detail the special theoretical challenges and opportunities associated with mystical experi-

ence. As indicated above, a unique aspect of this book in the context of contemporary scientific and scholarly work concerns its strong emphasis on comparative study of mystical experience and mystically informed philosophical systems in service of theory development. Paul's chapter further justifies that emphasis, focusing mainly but not exclusively on experiences of the extrovertive type. Discussion centers on key features of these experiences such as unitive feeling, special luminosities, altered temporality, and expansive knowing—that is, "gnosis" as a special way of knowing, different from sense and reason, which may sometimes provide access to normally hidden aspects of reality.

Part II provides a sampling of theoretical perspectives that currently seem in various respects promising to us, including indications of how each deals with at least some of the relevant empirical phenomena. Our sample is not exhaustive of relevant possibilities, having been constrained by the interests and skills available within our current core group. Furthermore, all of these perspectives are viewed individually as works in progress, and none makes any pretense of being complete or correct in all respects. Note that we have arranged these chapters roughly in order from more scientific or "grounded" frameworks to more metaphysical or "grand" ones. The chapters themselves have been deliberately limited in length, but many also contain pointers to supplemental materials available through a special section of the Esalen website devoted to this book (see http://www.esalen.org/ctr-archive/bp).

Chapter 3, by Michael Grosso, sets the stage by providing a first-ever large-scale historical inventory of relevant thinkers. This chapter, which could easily become a book in itself (and probably will), traces the long and illustrious pedigree of the movement central to our book—that is, the movement away from physicalist "production" models and toward some sort of generalized or expanded "permission" or "filter" model of the Myers–James–*IM* type. Models of this sort picture everyday conscious life as emerging in the context of what James described as a "something more," something mental like our everyday conscious selves but of greater scope and power, to which most of us gain access only fitfully at best, under conditions which at present are very poorly understood but which are definitely amenable to systematic research. The central message of Mike's chapter is that against this common background of world intellectual history, current physicalist brain/mind orthodoxy stands out as an

aberration, a pathologically contracted and impoverished vision of our human possibilities.

Chapter 4, by myself and David Presti, presents the basics of the Myers–James–*IM* picture as an alternative to the currently standard production model, emphasizing possible neurobiological and psychophysiological approaches to deeper analysis of its central "permission" metaphor and identifying numerous possibilities for further empirical research, research which can be expected with confidence to lead both to improved understanding and to fruitful applications in real human lives.

Chapter 5, by Henry Stapp, presents a summary of his "orthodox" and "quasi-orthodox" ontological interpretations of quantum theory (building upon its original formalization by John von Neumann), and outlines their applications to brain/mind theory in general and to many of the critical phenomena targeted in Chapter 1. Particularly noteworthy, I believe, is Henry's cautiously worded judgment that all of our targeted phenomena, even extreme ones such as postmortem survival and rebirth, are in principle potentially compatible with—and certainly not ruled out by—this most fundamental of current basic-science theories.

Chapter 6, by Harald Atmanspacher and Wolfgang Fach, provides an introduction to the dual-aspect monism conceived by physicist Wolfgang Pauli in collaboration with psychologist Carl Gustav Jung, according to which the physical and mental aspects of the experienced world are complementary, and arise through transformation of an underlying psychophysically neutral holistic reality to which they cannot be reduced. They further show that this picture leads naturally to a conceptual typology of exceptional experiences which closely mirrors the forms of such experiences actually occurring in a large sample of human adults.

Chapter 7, by Bernard Carr, first briefly summarizes the main features of previous hyperdimensional or hyperspace theories as conceived by persons such as philosopher C. D. Broad, neuroscientist John Smythies, and others, and then provides a compact exposition of his own updated and generalized version of such a theory plus a discussion of its connections with emerging physics and cosmology, and its possible applications to many of our targeted phenomena.

Chapter 8, by Greg Shaw, provides an introduction to the mystically informed metaphysics of Plotinus, which profoundly influenced all of our Western monotheistic faiths, and its subsequent "applied" developments in the theurgical mysticism of Iamblichus and later Neoplatonists. This

classical theisms in their various forms, and although a great deal remains to be done both theoretically and empirically to narrow the class to its most viable member(s), we at least now have an overall sense of direction.

Chapter 15, by Michael Murphy, articulates the worldview that has implicitly guided Esalen Institute for the past fifty years. In this wide-ranging, provocative, and long-gestating essay, which has served as a navigational aid for our other chapters and a destination for the book as a whole, Mike portrays evolutionary panentheism as an emerging metaphysical vision which integrates the great but neglected modern philosophical tradition of German idealism (Fichte, Schelling, Hegel, et al.) with the common deliverances of the world's great mystical traditions more generally (as represented within Vedāntic, Tantric and Kashmiri Śaivite, Buddhist, Jewish, Christian, Islamic, and Neoplatonic perspectives), *and* with the incipient expansion of science itself as previewed in Mike's *Future of the Body* (1992) and our own *Irreducible Mind*. This synoptic vision not only appears broadly compatible with the more specific conceptual frameworks set forth in Part II but has tremendous practical implications—its "cash value"—in terms of providing humanity with an expanded worldview that is fundamentally life-affirming and optimistic, profoundly spiritual and ecumenical in character, and defensible in light of our most fundamental traditions including that of leading-edge modern science.

NOTES

1. James (1890–1896/1910, pp. 299–300).
2. Whitehead (1929/1958, p. 61).
3. Bacon himself unfortunately did not apply his own principle without restriction, but took the view that in regard to fundamental matters such as survival of bodily death we should refrain from empirical investigation. Myers (1903), however, consciously and deliberately removed that restriction: "The realm of 'Divine things' he [Bacon] left to Authority and Faith. I here urge that that great exemption need be no longer made" (Vol. 2, p. 279).
4. European readers in particular may be surprised by the amount of space devoted to this topic, which for them is probably less contentious than that of paranormal phenomena, but we assure any such readers that the situation here in the United States really exists at present as described in the text.

5. It is worth pointing out here that modern popular claims as to the supposed intrinsic incompatibility of science and religion are largely false, a product of crude nineteenth-century scientistic attacks on evangelical Christianity. See for example Dixon, Cantor, and Pumfrey (2010), and Sommer (2013). I thank Andreas Sommer for this information.

REFERENCES

Bacon, F. (1960). *The New Organon and Related Writings* (F. H. Anderson, Ed.). New York: Liberal Arts Press. (Original work published 1620)

Baker, M. C., & Goetz, S. (Eds.). (2011). *The Soul Hypothesis: Investigations into the Existence of the Soul*. New York: Continuum.

Carter, C. (2012). *Science and Psychic Phenomena: The Fall of the House of Skeptics*. Rochester, VT: Inner Traditions/Bear & Co.

Chalmers, D. J. (1996). *The Conscious Mind: In Search of a Fundamental Theory*. New York: Oxford University Press.

Chalmers, D. J. (2002). Consciousness and its place in nature. In D. J. Chalmers (Ed.), *Philosophy of Mind: Classical and Contemporary Readings* (pp. 247–272). New York: Oxford University Press.

Dixon, T., Cantor, G., & Pumfrey, S. (Eds.). (2010). *Science and Religion: New Historical Perspectives*. Cambridge: Cambridge University Press.

Griffin, D. R. (1998). *Unsnarling the World-Knot: Consciousness, Freedom, and the Mind–Body Problem*. Berkeley and Los Angeles: University of California Press.

James, W. (1902). *The Varieties of Religious Experience: A Study in Human Nature*. New York: Longmans, Green.

James, W. (1910). What psychical research has accomplished. In *The Will to Believe and Other Essays in Popular Philosophy* (pp. 299–327). London: Longmans, Green. (Composed of segments originally published 1890, 1892, and 1896)

James, W. (1971). *A Pluralistic Universe*. In *Essays in Radical Empiricism and A Pluralistic Universe* (pp. 121–284). New York: E. P. Dutton. (Original work published 1909)

Kelly, E. F., Kelly, E. W., Crabtree, A., Gauld, A., Grosso, M., & Greyson, B. (2007). *Irreducible Mind: Toward a Psychology for the 21st Century*. Lanham, MD: Rowman & Littlefield.

Koons, R. C., & Bealer, G. (2010). *The Waning of Materialism*. New York: Oxford University Press.

Kripal, J. J. (with Anzali, A., Jain, A. R., & Prophet, E.). (2014). *Comparing Religions: Coming to Terms*. Chichester, England: Wiley Blackwell.

Marshall, P. (2005). *Mystical Encounters with the Natural World: Experiences and Explanations*. Oxford: Oxford University Press.

Murphy, M. (1992). *The Future of the Body: Explorations into the Further Evolution of Human Nature*. New York: Jeremy P. Tarcher/Putnam.

Myers, F. W. H. (1903). *Human Personality and Its Survival of Bodily Death* (Vols. 1–2). London: Longmans, Green. (Available on CTR website, http://www.esalen.org/ctr/scholarly-resources)

Myers, F. W. H. (1961). *Fragments of Inner Life: An Autobiographical Sketch*. London: Society for Psychical Research. (Original work published privately 1893)

Nagel, T. (2012). *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False*. New York: Oxford University Press.

Radin, D. (2006). *Entangled Minds: Extrasensory Experiences in a Quantum Reality*. New York: Simon & Schuster.

Seager, W., & Allen-Hermanson, S. (2013). Panpsychism. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Fall 2013 ed.). Retrieved from http://plato.stanford.edu/archives/fall2013/entries/panpsychism/

Skrbina, D. (2005). *Panpsychism in the West.* Cambridge, MA: MIT Press.

Sommer, A. (2013). Crossing the boundaries of mind and body: Psychical research and the origins of modern psychology (Unpublished doctoral thesis). UCL Center for the History of Psychological Disciplines, University College London.

Sprigge, T. L. S. (1983). *The Vindication of Absolute Idealism*. Edinburgh: Edinburgh University Press.

Strawson, G. et al. (2006). *Consciousness and Its Place in Nature: Does Physicalism Entail Panpsychism?* (A. Freeman, Ed.). Charlottesville, VA: Imprint Academic.

Tart, C. T. (2009). *The End of Materialism: How Evidence of the Paranormal Is Bringing Science and Spirit Together.* Oakland, CA: New Harbinger Publications.

Velmans, M. (2009). *Understanding Consciousness* (2nd ed.). Hove, England: Routledge.

Velmans, M., & Nagasawa, Y. (Eds.). (2012). Monist alternatives to physicalism [Special section]. *Journal of Consciousness Studies, 19*(9–10), 4–165.

Whitehead, A. N. (1958). *The Function of Reason.* Princeton, NJ: Princeton University Press. (Original work published 1929)

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The Essential Background: "Rogue" Phenomena in Search of a Theory

correlations occurring across physical barriers that should be sufficient, on presently accepted physicalist principles, to prevent their formation ("basic limiting principles" as formulated by Broad, 1962, and refined by Braude, 2002). Popular terms for the main classes of relevant phenomena are "extrasensory perception" (ESP) and "mind-over-matter" or "psychokinesis" (PK). ESP itself is sometimes broken down into subtypes such as "telepathy" (unmediated awareness of the mental state or mental activity of another person), "clairvoyance" (of distant or hidden events or objects), and "precognition/retrocognition" (of future/past events). It is widely recognized by researchers that these popular terms are unduly theory-laden and probably do not correspond to real differences in underlying process, and many therefore prefer the more theory-neutral terminology introduced by Thouless and Wiesner (1947)—"psi" for paranormal phenomena in general, occasionally divided into "psi gamma" for the input (ESP) side and "psi kappa" for the output (PK) side.

As already indicated in the Introduction, a large amount of peer-reviewed research involving experimental, quasi-experimental, and case studies of various kinds has produced cumulative results more than sufficient to demonstrate beyond reasonable doubt to open-minded persons who take the trouble to study it that the sheer existence of the basic input/output phenomena is a fact of nature with which we must somehow come to scientific terms (Radin, 2006; Tart, 2009). Indeed, we predict with high confidence that future generations of historians, sociologists, and philosophers of science will make a good living trying to explain why it took so long for scientists in general to accept this conclusion.

All psi phenomena are theoretically important by virtue of providing examples of human behavioral capacities that appear impossible to account for in terms of presently recognized psychological, biological, or classical-physics principles. Two special subcategories stand out, however, in terms of the magnitude of the challenges they represent for theoreticians.

First is "macro-PK," psychokinesis involving human-scale physical objects. There are many sources of evidence for such occurrences, including individual spontaneous PK events, often associated with extreme emotions of one or another sort; recurrent spontaneous PK (RSPK or "poltergeist" cases), typically involving disturbed adolescents; and various kinds of physical manifestations associated with trance mediums such as D. D. Home and Eusapia Palladino (Braude, 1986). I will illus-

trate the subject here with a single case that exemplifies the theoretical challenges in particularly stark form.

Levitation, a phenomenon reported of mystics from many traditions, was a principal feature in the case of Joseph of Copertino, a seventeenth-century Franciscan monk for whom "ecstatic flight" was a literal reality. Joseph was observed levitating in broad daylight on hundreds of occasions that cumulatively involved thousands of witnesses of varied types including skeptical and even hostile witnesses. Sworn testimony was obtained within a few years from scores of these and exhaustively reviewed in connection with the formal investigatory processes leading to Joseph's canonization. His flights occurred both indoors and outdoors, covered distances and altitudes ranging from a few feet to thirty yards or more, and went on for periods ranging from a few seconds to many minutes at a time. The reported phenomena, in short, were anything but subtle, and not glibly dismissible in terms of global allegations about "inattentional blindness" (Simons & Chabris, 1999), "mass hypnosis," or other possible errors of observation and/or memory. Of special interest is the fact that during his canonization proceedings, the *promotor fidei*—the "Devil's Advocate" or defender of the faith—was none other than the great humanist (and acquaintance of Voltaire) Prospero Lambertini, later Pope Benedict XIV, who was also the principal codifier of the Church's rules of procedure and evidence for canonization. Lambertini himself was initially hostile to Joseph's cause, but upon thorough and searching examination of all details of the case, including the sworn depositions, he concluded that the ecstatic flights must have occurred essentially as reported. Subsequently, as Pope, he published the decree of Joseph's Beatification.

Further details and supporting references are provided in Chapter 8 of *IM*, but a definitive treatment of this extraordinary case will soon be available in the form of a forthcoming book by our colleague Mike Grosso (in press), who not only provides a thorough and detailed account of Joseph's own well-documented phenomena but situates them in the larger history of macro-PK and related psychic phenomena. Meanwhile, we have placed on the Center for Theory and Research (CTR) website as supplemental material for this chapter a summary prepared by Mike of the main features of the case (http://www.esalen.org/ctr-archive/bp).

Second and in some ways even more disturbing is "true precognition"—direct or unmediated apprehension of future events. Such phe-

nomena would seem on the surface to suggest that the future is fully determined, and hence to undermine any possibility of free will. This greatly troubled F. W. H. Myers (1895), who was therefore relieved to discover cases in which future accidents seemed to have been anticipated clearly and in detail, but were then averted by appropriate interventions.

The conceptual issues related to precognition are complex and deeply entangled. I will not attempt to unravel them here but rather will simply address the state of the evidence itself. We have devoted special attention to this subject in the context of previous Sursem meetings, and our collective sense is that true precognition too is a genuine phenomenon. The large amount of apparently supportive evidence from forced-choice precognition experiments is rendered somewhat uncertain in its bearings by the possibility that it might have been produced or contaminated by PK (Morris, 1982), but precognitive "remote viewing" experiments in which the possible targets are not even known to the subjects in advance and have not been picked at the time of the viewing seem less subject to alternative explanations of this sort. Most significant, in our view, are the many well-documented spontaneous cases involving multiple low-level factual details that are recorded at the time of the original experience (which often takes the form of an unusually vivid or intense dream), and then verifiably occur at a distant point in the future. Bob Rosenberg, who has led our investigation of this subject, has placed on the CTR website an annotated bibliography of case studies covering 130 years of serious precognition literature, including summaries of a few cases and discussions of the various authors' interpretations and conclusions.

Still more important for our theoretical purposes is the large further body of evidence directly suggestive of postmortem survival, the persistence of elements of mind and personality following bodily death. It is simply *false* to declare, as does physicalist philosopher Paul Churchland (1988, p. 10), that we possess no such evidence. We in fact possess a great deal of such evidence, much of it of very high quality, but unfortunately this work remains practically unknown outside the small circle of persons professionally involved with it. Here I can provide only the barest glimpses into a literature consisting of literally hundreds of thousands of pages of heavily documented case studies—anything but mere "anecdotes," as would-be critics often allege. Three main lines of survival research are of special interest for our purposes here.

The first concerns trance mediumship, a principal focus of the Society for Psychical Research (SPR) during the first several decades of its work. "Mediums" here are persons who seem able, usually when in some sort of trance-like altered state of consciousness, to make contact with the dead (Gauld, 1982). A large proportion of the most important research revolves around a half-dozen or so such persons who proved especially good at providing, under well-controlled conditions, detailed and accurate information seeming to derive from specific deceased persons about whom they could not have learned in any normal way. There is a difficult issue here related to proper interpretation of such evidence, which we will get to shortly, but let me first indicate the character of the evidence itself.

One of the first and best of the great trance mediums was Leonora Piper, discovered by William James in 1885, and the most important phase of her mediumship involved a communicator named GP (George Pellew), ostensibly the surviving personality of a young man who had recently died unexpectedly in a fall. Over several years her principal investigator, Australian lawyer Richard Hodgson, arranged for some 150 "sitters," exactly thirty of whom had been known to GP during his lifetime, to be introduced to sessions anonymously after Mrs. Piper had entered her trance state. The GP communicator recognized all and only those thirty sitters, and for most of them provided numerous and appropriate details of events and memories they shared, often with compelling verisimilitude in terms of GP's own characteristic vocabulary, diction, sense of humor, and so on. Hodgson himself, initially a skeptic, became convinced of the reality of survival largely on the strength of this one series of sittings (Hodgson, 1898).

Speaking more generally, all of the main properties of minds or personalities as we customarily understand these terms are sometimes evident in high-grade mediumistic communications. In the formulation of Pols (1998), for example, building on that of Descartes in Book II of the *Meditations*: "mind knows, makes (that is, forms, produces, creates), understands, thinks, conceives, perceives, remembers, anticipates, believes, doubts, attends, intends, affirms, denies, wills, refuses, imagines, values, judges, and feels" (p. 98). Summarizing a very large literature, it is fair to say that all of these properties are exemplified individually in many cases, and most or all of them jointly in the best cases such as that of GP. Not only are previously existing semantic, autobiographical, and procedural memories apparently in considerable degree preserved, but

new memories can also be formed, mediated at least in part by continuing and presumably psi-based interactions with the world of the living, whether directly or by way of the medium. Less verifiably, the communicating personalities also seem to experience themselves as continuous with their prior selves, and as conscious selves who inhabit some sort of body and are able to interact with other deceased persons in some sort of shared phenomenal world.

The full picture regarding trance mediumship is of course far more complicated and hazy than this brief summary suggests. A large proportion of garden-variety mediumistic (and "channeled") communications are pure twaddle, and even the best cases sometimes display surprising weaknesses and limitations. Some of these limitations seem to derive from the medium, some from the communicators, and some perhaps from the still largely unknown nature of the connection between them. The GP persona for example exhibited certain curious lacunae, such as a determined unwillingness to discuss philosophic and scientific matters that had been of burning interest to the living GP, and he vouched for the authenticity of other Piper "controls" who were transparently bogus, such as the *soi-disant* "Walter Scott" and "Julius Caezar" (*sic*) personae. As in many other cases GP's awareness of ongoing events in this world was also very limited and imperfect, often extending even to uncertainty as to whether his attempted communications had gotten through Mrs. Piper to the sitters. For further information about Mrs. Piper and other great mediumistic cases see for example Balfour (1935), Braude (2003), Broad (1962), Gauld (1982), Hart (1959), Murphy (1961), Salter (1950), and Sidgwick (1915).

A second large area of survival research concerns what we call "cases of the reincarnation type" (CORT), in which small children—typically ages two to five—begin to speak and act as though they are remembering events from a previous, usually very recent, lifetime. The children often give detailed information about people and places they had known, or talk about the circumstances in which they died, and with this information the parents, or sometimes an independent investigator, can identify a deceased person whose life and death corresponds to what the child was saying. In the best cases, detailed records of the child's statements have been made by independent investigators before the child visits the home and family of the ostensible previous personality (PP). The children also frequently show strong and unusual behaviors that seem appropriate for

how overriding normally existing barriers. Also striking is their apparent association with altered states of consciousness in the percipients, especially dreaming and hypnagogic/hypnopompic states—the "twilight zone" between waking and sleeping. In many cases the event begins with a vague feeling of distress or disturbance, sometimes accompanied by a vivid sense that the injured person is present at a particular location nearby, and progresses into a full-fledged apparition only later on when the percipient enters a more receptive state. Third, as argued by Myers (1903), the timing of the events relative to verified times of death is sharply asymmetrical, rising steeply just before death and declining slowly thereafter (Vol. 2, p. 14). Percipients also typically have only a single such experience in their entire lifetime and remember it vividly for decades afterward as something uniquely significant (and note that Gurney and colleagues took pains to show that when questioned repeatedly over long intervals of time percipients reported *fewer* rather than *more* details as time passed).

Many crisis apparitions seem potentially interpretable as hallucinations generated by percipients alerted at some level to their loved ones' circumstances by a psi process, as argued in particular by Louisa Rhine (1977). Others, however, seem to locate agency and purpose squarely in the dying or deceased, as for example in the case of a long-dead husband who seems to have come for his newly deceased wife but is seen by her tenant, a total stranger. Many apparitions also display what are aptly described as "quasi-physical" properties, as discussed by Tyrrell (1953, pp. 77–80). For example, they sometimes obscure the background, cast shadows, and can be seen in mirrors, like ordinary physical objects. They may also be detected by pet animals, and if more than one human is present all or most may observe it, with differences of perspective appropriate to their differing locations in the communal space. On the other hand, apparitions sometimes enter and exit through walls or floors, become transparent and disappear, and in sundry other respects behave very *unlike* normal physical objects. Thus, they both resemble and differ from ordinary embodied persons, approximating them in widely varying degree, from marionette-like to so lifelike as to be mistaken temporarily for the corresponding person. (Similar properties apply, parenthetically, to "haunting" cases in which the apparitional form is recurrently associated with some particular *place*.) Complicating the picture further, there are also a number of well-documented "reciprocal" and "experimental" cases

of out-of-body experiences in which one living person more or less deliberately "projects" to a distant location, observes verifiable circumstances there, and is observed at the corresponding location in the form of an apparition by one or more persons present (Hart & Hart, 1933; Myers, 1903, Vol. 1, pp. 682–685).

The bulk of the available evidence concerning apparitions thus seems consistent with a picture in which some part or aspect of a given person departs from one place and appears in another in a form which is somehow intermediate between genuinely physical and purely hallucinatory. Further confirmation lies in the fact that certain kinds of crisis apparitions which might be expected on the telepathy-plus-hallucination model seem *not* in fact to occur—in particular, what might be called "disseminated" apparitions, in which a dying person appears simultaneously to loved ones in widely separated locations. This is essentially the picture originally arrived at by Myers (in debate with Gurney), which has also been endorsed reluctantly and after lengthy consideration by our *IM* co-author Alan Gauld (1982).

What shall we make of this survival evidence? Ironically, the primary threat to survivalist interpretations usually arises not from considerations of evidential *quality*—problems of fraud, credulity, errors of observation or memory, and the like—but from the difficulty of excluding alternative explanations based upon psi interactions involving only living persons. For example, a trance medium who appears to be delivering veridical information from your deceased uncle might actually be acquiring that information by means of a psi-type process from you as the sitter, or from other living persons who knew him, or from physical records of some relevant sort, rather than from your deceased uncle himself, and in general it proves difficult to determine with certainty which sort of explanation is correct. This is the infamous "survival vs. superpsi" debate, discussed at some length in the concluding chapter of *IM* (pp. 595–599), and for convenience we have added those pages to the supplemental material for this chapter.

Either horn of this interpretive dilemma—survival or psi—seriously threatens the prevailing physicalist brain/mind orthodoxy, and this undoubtedly helps explain the hostility of dogmatic physicalists to both. It should also be evident that compelling evidence for postmortem survival, an element of belief common in some form to all of the world's great religious traditions, would demonstrate especially clearly the inadequacy

of present-day mainstream physicalism. In our collective Sursem judgment we are at or very close to that point—close enough, certainly, to justify rational belief in the *possibility* if not indeed the *likelihood* of one's own personal survival. For the theoretical purposes of this volume we will therefore assume the empirical reality of both survival and rebirth without further discussion or argument.

Evidence for the occurrence of psi phenomena in general and postmortem survival in particular played an important though largely tacit role in the overall argument of *IM*, and my exertions here will be rewarded if they lead scientifically minded readers to take these subjects more seriously than they otherwise might. It is crucial to recognize, however, that psi cannot be isolated and quarantined as though it were the *only* serious threat to contemporary physicalism. The many other kinds of evidence surveyed in following sections point in the same general direction.

EXTREME PSYCHOPHYSIOLOGICAL INFLUENCE

Under this heading comes a variety of phenomena especially suggestive of direct mental agency in the production of physiological or even physical effects (for a comprehensive review see *IM*, Chapter 3).

Placebo effects and related kinds of psychosomatic phenomena, to begin with, have long been informally recognized and are now widely accepted, but they were accepted by modern biomedical science only grudgingly, as new mechanisms of brain/body interaction came to light that seemed potentially capable of explaining them. In particular, psychoneuroimmunology has demonstrated the existence, previously unsuspected, of interactions between the central nervous system and the immune system. Nevertheless, the adequacy of such explanations even for some kinds of placebo effects remains in question, and there are many kindred phenomena that pose progressively greater challenges to explanation in such terms. The following examples will serve to capture their flavor.

Both Sigmund Freud and F. W. H. Myers were impressed by hysterical "glove anesthesias," in which a patient loses sensation from the skin of a hand in the absence of identifiable organic lesion. In such cases the anesthetic skin region typically corresponds only to a *psychological* en-

tity, the patient's idea, in complete disregard of the underlying anatomical organization. At the same time, curiously, something in the patient remains aware of the afflicted region and protects it from injury.

Related phenomena have often been reported in the context of deep hypnosis. Highly suggestible persons who can vividly imagine undergoing an injurious circumstance such as receiving a burn to the skin sometimes suffer physiological effects closely analogous to those that the physical injury itself would produce, such as a blister. More rarely, the correspondence between the hypnotic blister and its imagined source extends even to minute details of geometric shape, details too specific to account for in terms of known mechanisms of brain/body interaction. Similarly dramatic phenomena have occasionally been documented in psychiatric patients in connection with exceptionally vivid recall of prior physical trauma (see *IM*, pp. 156–158). A closely related and well-documented phenomenon is that of "stigmata," in which fervently devout or pious believers in Christ develop wounds analogous to those inflicted during his crucifixion. The injuries are again localized and specific in form, vary in locus and character in accordance with their subjects' differing conceptions of Christ's own injuries, and appear and disappear, often suddenly and regularly, and also in accordance with subjects' expectations.

The conventional hope, of course, is that even the most extreme phenomena of the sorts just mentioned might ultimately prove explainable in terms of physiological processes alone. Continuing allegiance to this hope, despite the indicated explanatory difficulties, is undoubtedly encouraged by the fact that the phenomena described so far all involve effects of a person's mental state on that person's *own* body. Still more drastic explanatory challenges are posed, however, by phenomena in which one person's mental state seems to have directly influenced *another* person's body. These include "maternal impressions" (unusual birthmarks or birth defects on a newborn that correspond to an unusual and intense experience of the mother during the pregnancy), distant healing (including studies of effects of prayer on healing), experimental studies of distant mental influence on living systems, and cases in which a child who claims to have memories of the life of a deceased person also displays unusual birthmarks or birth defects corresponding closely with marks (usually fatal wounds) on the body of that person (Stevenson, 1997). In addition, there has been a considerable accumulation of sponta-

neous cases and experimental evidence demonstrating the reality of psychokinesis (PK), which by definition involves direct mental influence on the physical environment.

INFORMATIONAL CAPACITY, PRECISION, AND DEPTH

A number of well-documented psychological phenomena involve levels of detail, precision, or logical depth that are difficult to reconcile with what can be achieved by a brain which must operate in statistical fashion with neural components of low intrinsic precision and reliability. I will give just three examples from a very large class.

The first involves a case of "automatic writing" observed by William James (1889). The subject wrote with his extended right arm on large sheets of paper, his face meanwhile buried in the crook of his left elbow. For him to see what he was doing was "a physical impossibility." "Nevertheless," James continues, "two or three times in my presence on one evening, after covering a sheet with writing (the pencil never being raised, so that the words ran into each other), he returned to the top of the sheet and proceeded downwards, dotting each *i* and crossing each *t* with absolute precision and great rapidity" (pp. 554–555).

This remarkable episode illustrates two features that have often appeared together in the large but neglected scientific literature dealing with automatic writing (Stevenson, 1978): the subject is in an altered state of consciousness, and the motor performance, itself remarkable, is apparently guided by an extremely detailed memory record, an essentially photographic representation of the uncompleted page.

The latter property relates to the phenomenon of eidetic imagery, my second example, the most dramatic demonstration of which has been provided by Charles Stromeyer using Julesz stereograms (Stromeyer, 1970; Stromeyer & Psotka, 1970). These are essentially pairs of computer-generated pictures, each of which by itself looks like a matrix of randomly placed dots, but constructed in such a way that when viewed simultaneously (by presentation to the two eyes separately) a visual form emerges in depth. Stromeyer presented pictures of this type to the eyes of his single subject, a gifted female eidetiker, at different *times*, ultimately as much as three days apart. Under these conditions, the subject could extract the hidden form only if she could somehow fuse current input to

of "traces," physical changes produced in the brain by experience and carried forward more or less reliably in time, but there has been little real progress toward scientific consensus on the details of these mechanisms despite many decades of intensive research.

Significant progress *has* been made, to be sure, in regard to "learning" and "memory" in simple creatures such as the sea slug, and more generally in regard to what might be called "habit memory" (Bergson, 1908/1991), the automatic adjustments of organisms to their environments. But these discoveries fall far short of providing satisfactory explanations of the most central and important characteristics of the human memory system, including in particular our supplies of general knowledge (semantic memory) and our ability to recall voluntarily and explicitly our own past experience (autobiographical or episodic memory). Furthermore, recent functional neuroimaging studies, although generating vast amounts of data, have yielded little if any progress toward a comprehensive and coherent account of memory based on trace theory.

Meanwhile, deep conceptual problems have been identified in trace theory itself (Braude, 2002; Bursen, 1978; *IM*, Chapter 4). For example, autobiographical memory clearly involves something more than mere revival of traces of experiences past, something that allows us to interpret what we experience now as a representation of our own past rather than a contemporary perception, dream, or hallucination. Traces as such, that is, provide only memory aids rather than memories per se, and it has proven extremely difficult to specify in conventional physicalist terms what that extra something is, without falling into regressive forms of explanation that presuppose and hence cannot explain the phenomenon of memory itself. Similarly, the content of a concept or semantic memory typically transcends any finite set of experienced circumstances that can plausibly be imagined as having deposited corresponding "traces" in a form capable of explaining its future deployment in an unlimited variety of novel but semantically appropriate contexts, including metaphorical contexts.

Most challenging of all to mainstream views is the large body of evidence directly suggesting that autobiographical, semantic, and procedural (skill) memories sometimes survive bodily death. If this is the case, memory in living persons presumably exists at least in part outside the brain and body as conventionally understood.

These conceptual problems regarding trace theories of memory have deep connections with issues raised below in regard to central and unex-

plained properties of everyday conscious mentation, and as shown in Chapter 4 of *IM*, similar issues arise in relation to allied components of current cognitive theory such as "information" and "representation."

PSYCHOLOGICAL AUTOMATISMS AND SECONDARY CENTERS OF CONSCIOUSNESS

Phenomena catalogued under this heading involve what looks like multiple concurrent engagement, in potentially incompatible ways, of major cognitive skills (linguistic skills, for example) and the corresponding brain systems. I will next explain in more detail what this means, and provide relevant examples.

Current cognitive neuroscience pictures the mind or "cognitive system" as a hierarchically ordered network of subprocessors or "modules," each specialized for some particular task and corresponding (it is hoped) to some particular brain region or regions. Leaving aside major issues regarding the details of its specification, this picture seems broadly consistent with the overall manner in which our minds seem *ordinarily* to operate. Our basic way of consciously doing things, that is, is essentially one at a time in serial fashion. Although psychologists recognize that with suitable training people can do more things simultaneously than they customarily suppose, this generalization applies mainly to relatively divergent things, and conspicuously fails as the simultaneous tasks become more complex and more similar.

Nevertheless, a large body of credible evidence, some dating back to the late nineteenth century, demonstrates that additional "cognitive systems," dissociated psychological entities indistinguishable from full-fledged conscious minds or personalities as we normally understand these terms, can sometimes occupy the same organism—not in *alternation,* moreover, but *concurrently*—carrying on their varied existences as it were in parallel and largely outside the awareness of the primary, everyday consciousness. In essence, the structure that cognitive neuroscience conventionally pictures as *unitary*, as instantiated within and identified with a particular organization of brain systems, can be functionally divided—divided, moreover, not "side-to-side," leading to isolation of the normal cognitive capacities from each other, but "top-to-bottom," leading to the appearance of what seem to be two or more complete cognitive

systems each of which includes all of the relevant capacities. Emergent "multiple" or "alter" personalities also can differ widely, not only in demeanor and knowledge but even in regard to deep involuntary physiological characteristics such as visual defects and susceptibilities to allergies. Secondary personalities are also sometimes markedly superior to the primary personality in knowledge, skills, and creativity, as in the cases of Victor Race, "Hélène Smith," and Patience Worth described in *IM* (pp. 447–450). More challenging still, it sometimes happens that one of these personalities has direct access to the conscious experience of one or more others, but not vice versa (Braude, 1995; *IM*, Chapter 5).

Two brief examples drawn from an enormous literature will help convey a more concrete sense of the character of these phenomena. The first comes from a report by Oxford philosopher F. C. S. Schiller on automatic writing produced by his brother (Myers, 1903, Vol. 2, pp. 418–422). As is characteristic of this genre of automatisms, the writer was typically unaware of the content of his writing, which went on continuously while he was fully and consciously engaged in some other activity such as reading a book or telling a story. Of particular relevance here, however, were occasions on which he wrote simultaneously with both hands and on completely different subjects, one or the other of these streams of writing also sometimes taking mirror-image form.

Second is the case of Anna Winsor, described by William James in his report on automatic writing. This case was protracted and bizarre, and only superficially resembles the neurological "alien hand" (Dr. Strangelove) syndrome. Its central feature is that the patient, Anna, at a certain point lost voluntary control of her right arm, which was taken over by a distinctive secondary personality. This personality, whom Anna herself named "Old Stump," was benign, often protecting Anna from her pronounced tendencies toward self-injury. As in the case of Schiller's brother, Stump typically wrote or drew while Anna was occupied with other matters. But Stump also continued writing and drawing even when Anna was asleep, and sometimes in total darkness. This secondary personality also remained calm and rational during periods when Anna was feverish and delusional, and it manifested knowledge and skills—such as knowledge of Latin—which Anna herself did not possess.

THE UNITY OF CONSCIOUS EXPERIENCE

Under this heading I will briefly address two interrelated problems. The first and narrower is the so-called binding problem, which emerged as a consequence of the success of contemporary neuroscientists in analyzing sensory mechanisms, particularly in the visual system. It turns out that different properties of a visual object such as its form, color, and motion in depth are handled individually by largely separate regions or mechanisms within the brain. But once the stimulus has been thus dismembered, so to speak, how does it get back together again as a unit of visual experience?

Only one thing is certain: the unification of experience is *not* achieved anatomically. There are no privileged places or structures in the brain where everything comes together, either for the visual system itself or for the sensory systems altogether. Some early theorists such as James and McDougall had argued that the evident disparity between the multiplicity of physiological processes in the brain and the felt unity of conscious experience could only be resolved in materialist terms by anatomical convergence, and since there is no such convergence, materialism must be false. This argument, although ingenious, relied upon the faulty premise that the only possible physical means of unification must be *anatomical* in nature. All current neurophysiological proposals for solving the binding problem are instead *functional* in nature: the essential concept common to all of them is that oscillatory electrical activity in widely distributed neural populations can be rapidly and reversibly synchronized, particularly in the "gamma" band of EEG frequencies (roughly 30–80 Hz), thereby providing a possible mechanistic solution.

A great deal of sophisticated experimental and theoretical work over the past thirty years has demonstrated that such mechanisms do in fact exist in the nervous system, and that they are active in conjunction with normal perceptual synthesis. Indeed, contemporary physicalism has crystallized neurophysiologically in the form of a family of "global neuronal workspace" theories, all of which make the central claim that conscious experience occurs specifically—and only—in conjunction with large-scale patterns of oscillatory neuroelectric activity capable of linking widely separated areas of the brain at frequencies extending into the gamma band (e.g., Crick, 1994; Dehaene & Naccache, 2001; Edelman,

Gally, & Baars, 2011; Engel, Fries, & Singer, 2001; Laureys & Tononi, 2009; Singer, 2007; Varela, Lachaux, Rodriguez, & Martinerie, 2001).

The neurophysiological global workspace, however, cannot be the whole story, because a large body of recent research on "near-death experiences" (NDEs) demonstrates that elaborate, vivid, and life-transforming conscious experience sometimes occurs under extreme physiological conditions—including conditions such as deep general anesthesia, cardiac arrest, and coma—that *preclude* normal workspace operation (Laureys & Tononi, 2009). Moreover, and especially relevant to the concerns of the present book, the more extreme transformations of consciousness associated with NDEs sometimes extend deep into the mystical realm, include veridical psi elements, and more commonly occur when the subjects are in fact physiologically closer to death (see *IM*, Chapter 6; Alexander, 2012; Holden, Greyson, & James, 2009; Owens, Cook [Kelly], & Stevenson, 1990; van Lommel, 2010, 2013).

In short, it appears that McDougall and James were right after all, albeit for the wrong reason. In effect, I believe, recent progress in biomedical science has provided new means for the falsification of mainstream physicalist theories of brain/mind relations. We can also expect to see more and better cases of this sort as our technical capacity to retrieve human beings from the borderlands of death continues to improve (Parnia, 2013).

Availability of this emerging evidence emboldens me to make some further and more contentious remarks regarding the second and larger problem of ordinary perceptual synthesis, and the direction in which things seem to me to be moving.

It is a historical fact that mainstream psychology has always tended on the whole to try to solve its problems in minimalist fashion and with as little reference as possible to what all of us experience every day as central features of our conscious mental life. The early workers in "mechanical translation," for example, imagined that they could do a decent job simply by constructing a large dictionary that would enable substitution of words in one language for words in the other. This approach failed miserably, and we were slowly driven, failed step by failed step, to the recognition that truly adequate translation presupposes *understanding,* or in short a full command of the capacities underlying the human use of language.

neuroscientists essentially ignore the vast historical literature on this subject and seek instead to reduce it without residue to "unconscious cerebration"—the automatic, fast, parallel, cheap, and often reliable but sometimes error-prone out-of-sight operations of a nervous system tuned to its normal environment by factors such as genetics, learning and conditioning, priming, and so on (Eagleman, 2011; Kahneman, 2011; D. G. Myers, 2002).

There is undoubtedly much truth in this picture, especially in the context of everyday life and ordinary cognitive function, but it does not by any means exhaust the subject matter. Indeed, as reviewed in Chapter 5 of *IM*, we've had this conversation before! Specifically, at the end of the nineteenth century F. W. H. Myers and William James found the unconscious cerebration doctrine then being advanced by W. B. Carpenter, T. H. Huxley, and others specifically unable to account for well-documented empirical phenomena such as the highly developed secondary personalities that sometimes also displayed paranormally acquired knowledge in the context of automatic writing. Many social psychologists in particular appear to have forgotten James's (1890) counsel that postulation of unconscious mental states "is the sovereign means for believing what one likes in psychology, and of turning what might become a science into a tumbling-ground for whimsies" (Vol. 1, p. 163). It also does not help that a number of recent experiments previously thought to support the concept of elaborate and intelligent unconscious cerebration have turned out to be difficult to replicate or in some cases outright fabrications.

Psi phenomena, of course, pose another kind of threat to the unvarnished automaticity story. To his credit D. G. Myers (2002) recognizes this, and for that reason provides in his book a chapter which seeks to dismiss all of the accumulated evidence for psi. That chapter makes practically no contact with the real scientific literature of the field, however, relying for the most part on the opinions of professional psi-deniers and on anecdotes from the popular press, and the threat remains.

The farther reaches of intuition and creativity include much more than psi phenomena, too, as recognized clearly by more traditional authors such as Wild (1938), who surveys the long philosophical history of the subject and its deep association with unusual states of consciousness and unusual forms of cognition. Her work complements that of Myers and James, who similarly invert the modern "deflationary" approach by consciously and deliberately focusing on extreme examples of genius that

point in the direction of the enlarged conception of human personality they were struggling to articulate. Myers (1903) himself specifically targeted what "the highest minds have bequeathed to us as the heritage of their highest hours" (Vol. 1, p. 120). Responding to the cultural levelers of his own era, he encapsulated the main features of his picture of genius as follows:

> Genius . . . should rather be regarded as a power of utilising a wider range than other men can utilise of faculties in some degree innate in all;—a power of appropriating the results of subliminal mentation to subserve the supraliminal stream of thought;—so that an "inspiration of Genius" will be in truth a *subliminal uprush*, an emergence into the current of ideas which the man is consciously manipulating of other ideas which he has not consciously originated, but which have shaped themselves beyond his will, in profounder regions of his being. I shall urge that there is here no real departure from normality; no abnormality, at least in the sense of degeneration; but rather a fulfilment of the true norm of man, with suggestions, it may be, of something *supernormal;*—of something which transcends existing normality as an advanced stage of evolutionary progress transcends an earlier stage. (Vol. 1, p. 71)

The deeper forms of subliminal uprush, moreover, are notable both for their typically involuntary character and for their "incommensurability" with the subject's characteristic everyday forms of mentation. Myers saw both of these properties as present in germ in the case of calculating prodigies, but he also pointed to the existence of a "mythopoeic" realm of heightened imagination potentially available to all of us. In this he echoed the views of Romantic poets such as Blake, Wordsworth, and especially Coleridge, who distinguished between the imaginal and the imaginary—between Imagination, which he regarded as a higher faculty of the mind, and mere Fancy or fantasy (*IM*, pp. 454–457)—and anticipated the views of contemporary scholars such as Brann (1991), Corbin (1997), and Globus (1987), noted in the previous section.

All of the challenging phenomena surveyed in this chapter—including extreme psychophysiological influence, psychological automatisms and secondary centers of consciousness, flashes of inspiration involving unusual forms of thinking and symbolism, prodigious memory, spontaneous psi phenomena, and altered states of consciousness sometimes overlap-

ping the mystical realm—are inescapably bound up with genius in its fullest development, but these connections go virtually unmentioned in contemporary mainstream discussions (see *IM*, Chapter 7).

A particularly dramatic case in point is that of the Indian mathematician Ramanujan, rated by his distinguished British sponsor G. H. Hardy as standing alone at 100 atop a scale of mathematical ability on which most of us lie at or near 0, Hardy himself only at 25, and the magnificent David Hilbert, Ramanujan's nearest rival, at 80. Replete with demonstrations of prodigious memory, psychological automatisms, mathematical discoveries presented in the form of dreams, and profound and beautiful intuitions of hidden but ultimately verifiable properties of the physical world, this astonishing case fairly beggars the theoretical apparatus currently available to cognitive science and could well serve as a kind of reality check and navigational aid for this important field of study (Eysenck, 1995; Kanigel, 1991).

To put the central point of this section in more general terms, the speed, precision, complexity, novelty, and truth-bearing character of these "subliminal uprushes" reveal the presence within human beings of something that radically transcends ordinary cognitive capabilities and forms, and something moreover that is rooted more deeply than ordinary experience in the world in which we find ourselves embedded. This leads directly to our next topic, with which genius is profoundly connected both psychologically and historically.

MYSTICAL EXPERIENCE

Experiences of this type have deeply influenced the world's major religious traditions and civilizations and have occurred throughout history and across cultures. Their existence as a distinctive and important class of psychological phenomena can scarcely be denied. Nevertheless, they have largely been ignored by modern mainstream science, and the few previous commentators from the viewpoints of clinical psychology, psychiatry, and neuroscience have almost invariably sought to devalue and pathologize them. Even when acknowledging that such experiences are typically life-transforming and self-validating for those who have them, the historically standard epistemological approaches in psychology and philosophy treat them as purely subjective events having authority only

for those who experience them, and thus deny their objective significance and the testability of the associated truth claims.

However, a large though scattered literature testifies to the common occurrence in such experiences, or in individuals who have them, of genius-level creativity, spontaneous psi-type events, and many other unusual empirical phenomena of the sorts catalogued in this chapter. Mystical-type states of consciousness are also now known to be at least partially reproducible by psychedelics ("entheogens") such as LSD and psilocybin, and they can be induced by protracted self-discipline involving transformative practices such as the various forms of meditation. A more objective, informed, and sympathetic appraisal of mystical experience thus finds within it much additional support for an enlarged conception of human personality, and many new opportunities for empirical research (see *IM,* Chapter 8, and Marshall, 2005). Furthermore, as already indicated in the Introduction, and as brought out more fully by Paul Marshall in the following chapter, this region of human experience appears especially germane to our ongoing efforts to identify a conceptual framework more comprehensive and satisfying than that of contemporary physicalism.

THE HEART OF THE MIND

In this section I will comment briefly on a hornet's nest of issues lying at the core of human mental life as all of us routinely experience it, every day of our lives. These issues have been the focus of extensive recent debates, especially in the philosophical literature, precisely because of their resistance to understanding in conventional physicalist terms. The issues are deep, individually complex, and densely interconnected, and what I can say here will necessarily amount to little more than a summary of my own opinions. The crucial point I want to make, especially to my fellow psychologists, is this: our a priori commitment to conventional physicalist accounts of the mind has rendered us systematically incapable of dealing adequately with the mind's most central properties. We need to rethink that commitment.

Consider first the issue of semantic content, the "meanings" of words and other forms of representation. Throughout our history, we have tried unsuccessfully to deal with this by "naturalizing" it, reducing it to something else that seems potentially more tractable. An old favorite among

psychologists and philosophers, traceable at least as far back as Locke and Hume, was the idea that representations work by *resembling* what they represent, by virtue of some sort of built-in similarity or structural isomorphism, but any hope along these lines was long ago exploded (see e.g., Goodman, 1972; McClendon, 1955). The central move subsequently made by classical cognitive psychology is essentially the semantic counterpart of the prevailing "functionalist" doctrine in philosophy of mind. Thus, meanings are not to be conceived as intrinsic to words or concepts, but rather as deriving from and defined by the functional role those words or concepts play in the overall linguistic system. Similarly, there is currently great interest in "externalist" causal accounts of meaning. In connectionism, dynamic systems theory, and neuroscience, for example, the "meaning" of a given observed response (such as the settling of a neural network into one of its attractors, or the firing off of a volley of spikes by a neuron in the visual cortex) is identified with whatever in the organism's environment provoked that response. But this simply cannot be right: how can such an account possibly deal with abstract things, for example, or nonexistent things? Responses do not qualify ipso facto as representations, nor signs as symbols. Something essential is being left out. That something, as John Searle (1992) so effectively argued, is precisely what matters, the semantic or mental content.

Closely related to this is the more general and abstract philosophical problem of "intentionality," the ability of representational forms to be *about* things, events, and states of affairs in the world. Mainstream psychologists and philosophers have struggled to find ways of making intentionality intrinsic to the representations themselves, but again it just does not and cannot work, because something essential is left out. That something is the *user* of the representations. Intentionality is inherently a three-way relation involving users, symbols, and things symbolized, and the user cannot be eliminated. As Searle puts it in various places, the intentionality of language is secondary and derives from the intrinsic intentionality of the mind. Searle thus agrees in part with Brentano (1874/1995), for whom intentionality was the primary distinguishing mark of the mental, but he ignores the other and more fundamental part of Brentano's thesis, which is that intentionality cannot be obtained from *any* kind of physical system, including brains (but see, for example, Dupuy, 2000, for an opposing point of view).

the power of preexisting theoretical commitments to blind us to countervailing facts.

QUANTUM MECHANICS AND ITS IMPLICATIONS

It cannot be emphasized too strongly that these unresolved explanatory problems concerning consciousness, the heart of the mind, and all the other empirical phenomena surveyed above have a common source in the narrow physicalist consensus that undergirds practically everything now going on in mainstream psychology, neuroscience, and philosophy of mind. But that consensus itself rests upon an outdated conception of nature, deriving from Galileo, Descartes, Newton, and Laplace, that began its career by deliberately banishing conscious human minds from its purview! And as I will next briefly explain, *that* sort of physicalism is itself incompatible with the deepest of our current physical sciences.

William James, like Newton and Leibniz before him, clearly recognized the impossibility of explaining consciousness and allied phenomena within the framework of classical physics. James himself cautioned that its underlying physical-science concepts were "provisional and revisable things," but he had no good alternatives in sight. As he clearly and correctly anticipated, however, that classical conception of nature was soon to be undermined by a tectonic shift in the foundations of physics itself—specifically, the shift driven by the rise of quantum mechanics early in the twentieth century.

The founders of quantum mechanics discovered to their horror that in application to the subatomic world the fundamental ideas of classical physics were not just limited but wrong, leading repeatedly to predictions that were falsified by experiment. The theory they were ultimately driven to in response, quantum theory, is a more fundamental and more comprehensive physical theory that explains everything explainable in classical terms and a host of additional things as well, often to extraordinary levels of accuracy. No prediction made by it has ever been experimentally falsified.

Furthermore, the rise of quantum theory demonstrates that the undeniable experimental and practical triumphs of classical mainstream science were insufficient to validate its associated physicalist ontology. It may in the past have been appropriate to say, as did Burtt (1932) just prior to the

advent of quantum theory, that "It has, no doubt, been worth the metaphysical barbarism of a few centuries to possess modern science" (p. 303), but the situation now is radically different. Despite many remaining uncertainties regarding its proper interpretation, quantum theory clearly impacts our most fundamental ideas about the nature of reality and opens the door to new and very different conceptions (Rosenblum & Kuttner, 2011). Conventional physical realism has been radically undermined, and "matter" as classically conceived shown not to exist. Quantum theory essentially inverts the priority of the mental and physical aspects of nature by shifting the focus of physics itself to regularities in the connections between *psychologically* described events—i.e., conscious experiences of human observers. For example, mathematical physicist Henry Stapp (2007; see also Chapter 5) has proposed an interpretation in which the conscious human mind with its powers of attention and decision making plays a critical role in completing the quantum dynamics. As a corollary, the classical doctrine of causal closure or completeness of the physical, which underwrites contemporary physicalist denials of free will, collapses. It also appears likely, as discussed later in this book, that many of the "rogue" empirical phenomena cited above, from stigmata and hypnotic blisters to psi phenomena and even postmortem survival, are potentially accommodated within broader conceptual frameworks of this sort.

In sum, the empirical challenges systematically marshaled in *IM* and sketched above seem sufficient in themselves to compel, and to some extent foreshadow, a radical reworking of conventional production models of brain/mind relations along the alternative lines envisioned by Myers and James, among numerous others (see Chapter 3). But it is also vital to recognize that a scientific psychology enlarged in these ways will likely prove not *less* but *more* compatible than current mainstream doctrine both with everyday human experience and with our most fundamental physical science!

Let me now close this chapter with a telegraphic summary of the principal mental and psychophysical phenomena that we regard as firmly established or probable, and beyond the reach of explanation in conventional physicalist terms:

1. Psi phenomena of all currently recognized types, including in particular true precognition and macro-PK.

2. Postmortem survival, where what survives at least sometimes approximates a full-fledged mind or personality that preserves previous semantic, autobiographical, and procedural memories, forms new memories in conjunction with continuing interactions with the world of living persons, and displays other features of mind such as thinking, planning, imagination, volition, and a continued sense of embodied selfhood. Under this heading I also include the possibility of rebirth and the quasi-physical properties of apparitions as described above.
3. Phenomena of extreme psychophysiological influence such as stigmata, hypnotic blisters, or other skin markings of specific shapes and at specific locations induced by suggestion or vivid imagination; maternal impressions; distant mental influence on living systems; and unusual birthmarks and birth defects in cases of the reincarnation type.
4. Prodigious memory and calculation abilities, as seen in the savant syndrome, eidetic imagery, and related phenomena.
5. Phenomena of dissociation and superior forms of secondary personality, including not only concurrent streams of consciousness but overlapping and sometimes asymmetrical relationships between them.
6. Deep, life-transforming NDEs, especially those occurring under extreme physiological conditions such as deep general anesthesia, cardiac arrest, and coma, in which cerebral conditions regarded by contemporary neuroscience as necessary for consciousness have been grossly degraded or abolished altogether.
7. Extreme cognitive phenomena associated with the inspirations of true genius, including novel and complex forms of imagination and veridical intuition of previously unrecognized properties of the natural world.
8. Life-transforming mystical experiences of both extrovertive and introvertive forms, and their connections with genius-level creativity, psi phenomena, and NDEs occurring under extreme physiological conditions.
9. The central phenomena of our everyday conscious mental life including meaning, intentionality, and consciousness itself with its built-in features of unity, qualitative or phenomenal content, and subjective point of view.

Our central goal henceforth is to find or construct some sort of enlarged conceptual framework that can potentially accommodate or explain (in some sense yet to be determined) some or all of these challenging empirical phenomena. I should perhaps also add in closing that the second item on this list—postmortem survival—seems especially critical in the sense that a theory capable of handling *that* group of phenomena in satisfactory fashion would likely handle most or all of the rest as well.

REFERENCES

Alexander, E. (2012). *Proof of Heaven: A Neurosurgeon's Journey into the Afterlife*. New York: Simon & Schuster.

Balfour, G. W., Earl of (1935). A study of the psychological aspects of Mrs. Willett's mediumship, and of the statements of the communicators concerning process. *Proceedings of the Society for Psychical Research, 43*, 41–318.

Bergson, H. (1991). *Matter and Memory* (N. M. Paul & W. S. Palmer, Trans.). New York: Zone Books. (Original 5th ed. published 1908)

Brann, E. T. H. (1991). *The World of the Imagination: Sum and Substance*. Lanham, MD: Rowman & Littlefield.

Braude, S. E. (1986). *The Limits of Influence: Psychokinesis and the Philosophy of Science*. London: Routledge & Kegan Paul.

Braude, S. E. (1995). *First Person Plural: Multiple Personality and the Philosophy of Mind* (Rev. ed.). Lanham, MD: Rowman & Littlefield.

Braude, S. E. (2002). *ESP and Psychokinesis: A Philosophical Examination* (Rev. ed.). Parkland, FL: Brown Walker Press.

Braude, S. E. (2003). *Immortal Remains: The Evidence for Life after Death*. Lanham, MD: Rowman & Littlefield.

Brentano, F. (1995). *Psychology from an Empirical Standpoint* (A. C. Rancurello, D. B. Terrell, & L. L. McAlister, Trans.). London: Routledge. (Original work published 1874)

Broad, C. D. (1962). *Lectures on Psychical Research*. London: Routledge & Kegan Paul.

Bursen, H. A. (1978). *Dismantling the Memory Machine*. Dordrecht, The Netherlands: Reidel.

Burtt, E. A. (1932). *The Metaphysical Foundations of Modern Physical Science: A Historical and Critical Essay* (Rev. ed.). London: Routledge & Kegan Paul.

Chalmers, D. (1996). *The Conscious Mind: In Search of a Fundamental Theory*. New York: Oxford University Press.

Churchland, P. M. (1988). *Matter and Consciousness* (Rev. ed.). Cambridge, MA: MIT Press.

Corbin, H. (1997). *Alone with the Alone: Creative Imagination in the Sūfism of Ibn ʿArabī* (R. Manheim, Trans.). Princeton, NJ: Princeton University Press. (Original work published 1969)

Crawford, H. J., Wallace, B., Nomura, K., & Slater, H. (1986). Eidetic-like imagery in hypnosis: Rare but there. *American Journal of Psychology, 99*, 527–546.

Crick, F. (1994). *The Astonishing Hypothesis: The Scientific Search for the Soul*. New York: Simon & Schuster.

Dehaene, S., & Naccache, L. (2001). Towards a cognitive neuroscience of consciousness: Basic evidence and a workspace framework. *Cognition, 79*, 1–37.

Dennett, D. (1978). *Brainstorms: Philosophical Essays on Mind and Psychology*. Cambridge, MA: MIT Press.

Dupuy, J.-P. (2000). *The Mechanization of the Mind: On the Origins of Cognitive Science*. (M. B. DeBevoise, Trans.). Princeton, NJ: Princeton University Press.

Eagleman, D. (2011). *Incognito: The Secret Lives of the Brain*. New York: Pantheon Books.

Edelman, G. M., Gally, J. A., & Baars, B. J. (2011). Biology of consciousness. *Frontiers in Psychology, 2*, article 4. doi:10.3389/fpsyg.2011.00004

Engel, A. K., Fries, P., & Singer, W. (2001). Dynamic predictions: Oscillations and synchrony in top-down processing. *Nature Reviews: Neuroscience, 2*, 704–716. doi:10.1038/35094565

Eysenck, H. J. (1995). *Genius: The Natural History of Creativity*. New York: Cambridge University Press.

Gauld, A. (1982). *Mediumship and Survival: A Century of Investigations*. London: Heinemann. (Available on CTR website, http://www.esalen.org/ctr/scholarly-resources)

Globus, G. (1987). *Dream Life, Wake Life: The Human Condition Through Dreams*. Albany: State University of New York Press.

Goodman, N. (1972). Seven strictures on similarity. In N. Goodman (Ed.), *Problems and Projects* (pp. 437–446). New York: Bobbs-Merrill.

Grosso, M. (in press). *The Strange Case of St. Joseph of Copertino: Ecstasy and the Mind–Body Problem*. New York: Oxford University Press.

Gurney, E., Myers, F. W. H., & Podmore, F. (1886). *Phantasms of the Living* (Vols. 1–2). London: Trübner. (Available on CTR website, http://www.esalen.org/ctr/scholarly-resources)

Hart, H. (1959). *The Enigma of Survival*. Springfield, IL: Charles C. Thomas.

Hart, H., & Hart, E. B. (1933). Visions and apparitions collectively and reciprocally perceived. *Proceedings of the Society for Psychical Research, 41*, 205–249.

Hartmann, E. (1975). Dreams and other hallucinations: An approach to the underlying mechanism. In R. K. Siegel & L. J. West (Eds.), *Hallucinations: Behavior, Experience, and Theory* (pp. 71–79). New York: Wiley.

Hodgson, R. (1898). A further record of observations of certain phenomena of trance. *Proceedings of the Society for Psychical Research, 13*, 284–582.

Holden, J. M., Greyson, B., & James, D. (Eds.). (2009). *The Handbook of Near-Death Experiences: Thirty Years of Investigation*. Santa Barbara, CA: Praeger.

James, W. (1889). Notes on automatic writing. *Proceedings of the American Society for Psychical Research, 1*, 548–564.

James, W. (1890). *The Principles of Psychology* (Vols. 1–2). New York: Henry Holt.

James, W. (1986). *Essays in Psychical Research* (F. H. Burkhardt, Ed.). Cambridge, MA: Harvard University Press.

Kahneman, D. (2011). *Thinking, Fast and Slow*. New York: Farrar, Strauss and Giroux.

Kanigel, R. (1991). *The Man Who Knew Infinity: A Life of the Genius Ramanujan*. New York: Scribners.

Kelly, E. F., Kelly, E. W., Crabtree, A., Gauld, A., Grosso, M., & Greyson, B. (2007). *Irreducible Mind: Toward a Psychology for the 21st Century*. Lanham, MD: Rowman & Littlefield.

Kelly, E. W. (Ed.). (2013). *Science, the Self, and Survival After Death: Selected Writings of Ian Stevenson*. Lanham, MD: Rowman & Littlefield.

Laureys, S., & Tononi, G. (Eds.). (2009). *The Neurology of Consciousness: Cognitive Neuroscience and Neuropathology*. London: Elsevier, Academic Press.

Leary, D. E. (1990). William James on the self and personality: Clearing the ground for subsequent theorists, researchers, and practitioners. In M. G. Johnson & T. B. Henley (Eds.), *Reflections on* The Principles of Psychology*: William James After a Century* (pp. 101–137). Hillsdale, NJ: Lawrence Erlbaum.

Llinás, R., & Ribary, U. (1994). Perception as an oneiric-like state modulated by the senses. In C. Koch & J. L. Davis (Eds.), *Large-Scale Neuronal Theories of the Brain* (pp. 111–124). Cambridge, MA: MIT Press.

Lowe, E. J. (1998). There are no easy problems of consciousness. In J. Shear (Ed.), *Explaining Consciousness—The "Hard Problem"* (pp. 117–123). Cambridge, MA: MIT Press.

Luria, A. R. (1968). *The Mind of a Mnemonist* (L. Solotaroff, Trans.). New York: Avon Books.

Marr, D. (1982). *Vision: A Computational Investigation into the Human Representation and Processing of Visual Information*. San Francisco: W. H. Freeman.

Marshall, P. (2005). *Mystical Encounters with the Natural World: Experiences and Explanations*. Oxford: Oxford University Press.

2

MYSTICAL EXPERIENCES AS WINDOWS ON REALITY

Paul Marshall

St. Benedict of Nursia was once deep in prayer at the monastery of Monte Cassino when an extraordinary light appeared to him. It was nighttime, and the monks were sound asleep. Only Benedict was awake, keeping vigil high in the tower that he used as his quarters. As Benedict stood by a window and prayed to God, a great light flashed out from above and dispelled the darkness. But this was no ordinary radiance: it was brighter than the light of day and brought together the created world in its entirety, both heaven and earth. The cosmic vision, which nowadays would attract the label "mystical," was joined by a more specific, "clairvoyant" perception. Gazing intently into the light, Benedict discerned what he took to be the soul of his friend Germanus, Bishop of Capua, carried aloft in a fiery sphere by angels. Benedict had a messenger sent to Capua, and it was found that at the time of the vision the Bishop had passed away.

The story is told in Book II of *The Dialogues of Gregory the Great*, composed by Pope Gregory around 593, over 40 years after the death of Benedict. Gregory helpfully provides an explanation of the mysterious occurrence, for the deacon Peter, Gregory's interlocutor in the dialogues, asks in wonderment how it is possible for one man to see the entire world. Gregory explains that when a soul is raised up in the light of God, everything below becomes visible to it and appears small. But heaven and earth have not shrunk. Rather, the mind has expanded in God, opened up by the divine light and lifted above the world.

Even if the story is a hagiographical concoction indebted to Greco-Roman sources for some of its details, the combination of unifying mystical vision and psychical perception in conjunction with Gregory's attempt at explanation provides an appropriate entrée to the guiding idea behind the present chapter: *if deep connections exist between mystical experience and other types of extraordinary phenomena, such as the psychical range of perceptions, then the study of mystical experience is likely to contribute significantly to the explanation of these other phenomena.* It will do so in the first instance by expanding the range of data to be taken into account when formulating and evaluating explanations. But it will contribute in a more radical fashion too *if* mystical states are windows on reality, "windows through which the mind looks out upon a more extensive and inclusive world," as William James (1902, p. 428) put it.[1] Moreover, the story of Benedict's vision introduces a feature of mystical experience that will be important here, namely a special luminosity associated with what appear to be heightened powers of perception and knowing that can even be cosmic in reach.

There is good reason to think that mystical and psi phenomena are related. Elsewhere I have described several points of contact (Marshall, 2011):

1. They both appear to bring perceptual and cognitive enhancements of a "paranormal" kind, not possible according to present-day, mainstream science, or more generally, to the often unquestioned, culture-specific, period-specific assumptions about the nature of the world and how it can be known, assumptions that Broad (1949, 1962) called "Basic Limiting Principles."
2. Certain personality traits, including high transliminality, thin boundaries, and high absorptive capacity, predispose individuals to both kinds of experiences.
3. They share many triggers, including meditation, sensory deprivation, psychological distress, illness, near-death trauma, dreams, and psychedelics.
4. They can both feature in the same near-death experience (NDE).
5. Psychical experiences can develop into mystical ones: for example, clairvoyant perceptions and out-of-body experiences (OBEs) sometimes take a mystical turn.

In addition, mystical experiences are sometimes preceded or followed by events of a psychical or synchronistic character, giving rise to temporal clusters of unusual experiences. It is also noteworthy that some systems of spiritual cultivation bring together psi and mystical phenomena. These include the yoga of Patañjali, discussed by Kelly and Whicher in Chapter 9, and the yogic-tantric systems that seek to raise a power (*kuṇḍalinī*) said to be latent in the body through a series of wheels or knots (*cakras*), bringing at first psychical abilities and then mystical realizations (Biernacki, Chapter 10). Consciousness, which is ordinarily constricted by the somatic knots, is progressively released by yogic practice. In modern parlance, these systems can be construed as early examples of "filter theory," according to which consciousness is not generated by the body but constrained by it, with the senses, nervous system, and brain acting as "reducing valves" in some way (Grosso, Chapter 3). Another example of great interest is to be found in Jainism. Here omniscience (*kevalajñāna*) is said to be the intrinsic possession of the soul, but it is ordinarily obscured by various kinds of karmic matter that are attracted to the soul and which bind to it. Stage-by-stage removal of the obscuring karmas yields first the clairvoyant and clairaudient perceptions of bodily things, then the subtler telepathic knowledge of mental things, and finally unlimited knowledge, perception, bliss, and power. Again, the scheme may qualify as filter theory, one in which various kinds of karmic matter act as the reducing valves.

Scholars of mysticism have often neglected psi phenomena despite the occurrence of these and other so-called miraculous or accidental phenomena on the mystical path, and parapsychologists have been similarly neglectful, paying little attention to mystical experience (Carr, 2007; Marshall, 2011).[2] However, the connections highlighted above do require explanation, and, if they are as significant as they appear to be, it would be remiss to treat mystical, psychical, and related phenomena (such as near-death and out-of-body experiences) in isolation. Theories of telepathy, clairvoyance, precognition, and psychokinesis that might seem plausible within their own field of application could be found lacking when called upon to accommodate mystical cognitions. Similarly, theories of mystical experience may show their limitations when asked to find a place for veridical psi perceptions. A theory of NDE that dwells on the neuropsychology of the "dying brain" will be unsatisfactory if it is unable to account for very similar experiences of a mystical character in circum-

stances that are not at all life-threatening, such as appreciation of music and the beauty of nature. Clearly, theorists of psi and NDE will have to include the mystical range of experiences in their considerations, and theorists of mysticism cannot afford to neglect psi and the other secondary phenomena associated with the mystical path. Indeed, a unifying theoretical framework is called for, one that subsumes the related phenomena, attentive to differences as well as similarities. It is to be hoped that the framework would surpass single-phenomenon approaches in the way that unified theories in the sciences are richer and deeper than theories of individual phenomena.

Of the various kinds of rogue phenomena to be brought together in such a framework, mystical experience may be the one that holds the key to the "big picture." This is because mystical experience seems to reach into the deeper nature of things, to disclose reality behind its outward appearances, as some definitions have emphasized. For example, Carmody and Carmody (1996) define mystical experience succinctly as "direct experience of ultimate reality" (p. 10). For present purposes a slightly more elaborate definition will be useful: *experiences are "mystical" if they bring a sense of deepened contact with reality, the contact consisting of unity or at least intimate connection or presence, and often an intuitive type of knowing.* In this more inclusive definition, contact is not limited to ultimate reality, variously understood as God, "the ground of being," pure consciousness, "the Absolute," and so forth, but can involve facets, levels, or contents of reality that may not be ultimate yet have a claim to objective existence, to be "real," such as the natural world, fellow human beings, otherworldly realms, and various spiritual entities. A narrow understanding of reality is thereby avoided, and so too a concomitantly narrow definition of mystical experience.

Perhaps more so than any other kind of experience, mystical experience invites us to question received assumptions about the nature of reality, the ways in which it can be known, and our relation to it. Mystics can feel as though they have looked behind the veil of appearances and caught sight of the nature of self, world, consciousness, time, and even the meaning of it all. While the traditional branch of philosophy called "metaphysics" has approached a similar set of concerns through discursive reasoning, mystical experience is said to involve a direct intuition, a special way of knowing or "gnosis" independent of the senses and rational analysis. In the modern period, philosophers have not generally ac-

knowledged the possibility of an "intellectual intuition" that grasps its object directly, but if there is such a form of knowing, the study of mystical experience may offer special insights into the nature of reality and so help elucidate psi and other extraordinary experiences, and indeed the nature of consciousness itself.

PRELIMINARIES: THEORETICAL AND PRACTICAL CHALLENGES

The proposal that mystical experiences offer insights into the deeper nature of things faces significant challenges. On the theoretical side, many have denied that the experiences do bring contact with objective reality. Indeed, it is often claimed that they merely reflect the subjective religious/cultural contexts of those who have them or are simply products of a disordered brain. However, these viewpoints, which can be called *radical contextualism* and *neuroscientific reductionism*, respectively, are beset by serious difficulties, which have been detailed elsewhere (e.g., Forman, 1990, 1999; Kelly & Grosso, 2007b; Marshall, 2005; Studstill, 2005). This is not to say that religious conditioning, neurobiology, or a combination of the two are irrelevant, for there can be little doubt that they do contribute to some features, as I observe below in connection with time and luminosity. Moreover, filter theory alerts us to the possibility that psychology and biology have important roles to play in the occurrence of mystical experience because they regulate the contents of consciousness.

How, then, might one go about ascertaining whether mystical experiences do what they seem to do, which is to bring deepened contact with reality? One approach is to appeal to the "realness" of the experiences, for the experiences feel very real indeed. The feeling of realness presumably derives from their clarity, vividness, intensity, and knowing quality. In comparison with the crystal-clear awareness and profound knowing of mystical experience, everyday experience can feel dreamlike, shadowy, lifeless, limited, superficial. For those personally acquainted with the contrast, the appeal to realness carries great weight, but it is unlikely to impress critics, who will counter with the observation that psychotic episodes can feel very real, and that a sense of "realness" is not a reliable guide to what is "real" (Deikman, 1966, pp. 332–333). Nevertheless, the clarity, wakefulness, and intensity of mystical experiences are by all ac-

can still be a diversity of metaphysical teachings across the mystical traditions. In the first place, such teachings do not derive from mystical experiences alone but draw upon religious and philosophical ideas too, which can vary considerably across traditions. Moreover, if reality is multifaceted or stratified, containing domains or levels, then mystics in different traditions may latch onto different aspects of reality, emphasizing and valuing mystical contact with some more than others, in accordance with their religious backgrounds.

There are practical challenges too. Mystical experience is not an everyday occurrence and not usually inducible at will. When it does occur, it may be hard to comprehend, and subsequently forgetfulness and difficulty of expression can intervene. It is a common regret of mystics that they are unable to bring back to mind their discoveries or give adequate expression to them. Fortunately, mystics do grasp and recall their experiences up to a point, and they do report specific details, general characteristics, and stages of development, and so the situation is not as bleak as it might first appear. There is, however, another difficulty relevant to a study of the present kind. Choices have to be made about the types and specific examples of mystical experiences on which to draw, and also the kinds of mystical texts, traditions, and thinkers. These choices can reflect the presuppositions of the researcher and so introduce "selection bias." My preference is to use predominantly modern-day reports of mystical experiences that occur "spontaneously" and are relatively "unattached" or "unchurched," that is, not deeply entrenched within traditions of belief and practice. In the main, these reports are more descriptive, less metaphorical, and less doctrinally loaded than the reports furnished by mystics situated within traditions. To use Smart's (1962) term, the modern accounts tend not to be so laden with *ramified* language, with expressions and concepts that derive their meanings from the belief systems in which they are embedded. It is true that the testimonies of mystical virtuosi in the religious traditions, whose long-term training may have led them on several occasions to profound mystical states, could be very informative indeed, more so than those of untrained moderns, who may report just one or two experiences, and lack the contemplative techniques and interpretative resources that immersion in a tradition can give. However, if their mystical writings are appreciably ramified, it will be difficult or impossible to gauge the extent to which the writings express mystical experience or indeed whether they have a basis in experience at all. For

example, in the absence of autobiographical evidence, it has been debated whether Meister Eckhart's mystical writings derive from learning alone or draw on personal mystical experience too (e.g., Tobin, 1984).

As a methodological strategy, it will therefore pay to give primary attention, at least in the early stages of inquiry, to the more descriptive, less obviously ramified reports, whether located in traditions of practice and belief, or more likely, spontaneous and unattached. With some basic phenomenological details established from these unadorned reports, recourse can then be made to the religious traditions for testimonies, formal schematizations of contemplative experiences, and metaphysical doctrines. My use of these traditions here is necessarily restricted, but more detailed consideration of three examples is given in Part II (Shaw, Chapter 8; Kelly & Whicher, Chapter 9; Biernacki, Chapter 10).

A consequence of this approach is that one particular type of mystical experience will be emphasized in the following, for it is common among the spontaneous cases and can be rich in descriptive detail, namely the "extrovertive" (Stace, 1960) or "natural" (Zaehner, 1957) mystical type. In these, experience of the world is transformed by some combination of *unity, reality, knowledge, heightened perception, self-transcendence, altered time-experience, luminosity, love, joy,* and *peace*, to mention the more commonly reported features, although most experiences exhibit just a selection (Marshall, 2005, pp. 26–27, 59–81). A bias toward the extrovertive type is in fact advantageous in the present context, for this mystical type is closest to the psi perceptions, both seeming to afford "paranormal" cognitions of the world, cognitions that should not be possible according to present-day, mainstream science and epistemology (Marshall, 2011, pp. 5–7).

It might be objected that extrovertive experience is an inferior, undeveloped type of mystical experience, as some have asserted, and is therefore of limited metaphysical interest. While extrovertive experiences can involve fairly modest extensions of consciousness, with transformed perceptions largely confined to the immediate surroundings, some have a much greater reach, appearing to confer knowledge and perception on a vast, even cosmic scale. Stace assumed that extrovertive experiences always take place through the bodily senses, but they also occur when the senses are off duty, when the "eyes are closed," as in sleep, near-death crises, meditative withdrawals, and anesthesia. In fact, loss of sensory contact with the world can precipitate the more expansive, cosmic experi-

ences, as if the loss of sensory input brings into the open a mode of perception more penetrating and inclusive than the everyday kind. If I give emphasis to the cosmic type of mystical experience here and neglect less inclusive ones, it is because of its potential significance. If truly what it seems to be, this type of experience will have far-reaching implications for the philosophy of perception and for epistemology and metaphysics more generally.

Although it is no easy matter to establish the objectivity of mystical experience, we can still pose and attempt to answer "what if" questions: what do mystical experiences, including mystical NDEs, tell us if they are indeed revelatory of reality? Here I shall focus on the implications of some mystical characteristics directly relevant to psi: altered time-experience, knowing, unity, self-transcendence, and luminosity.

NO TIME/ALL TIME

Mystical experiences often begin suddenly and can be of a duration that is hard to judge, but are generally brief, often lasting no more than a few seconds or minutes of clock time. It can feel as if time is unimportant or no longer relevant, or even that it has stopped. Indeed, one of the more intriguing time-related characteristics is *temporal cessation*. Time or the sense of it seems to stop: "Eventually, the sense of time passing stopped entirely. It is difficult to describe this feeling, but perhaps it would be better to say that there was no time, or no sense of time. Only the present moment existed" (Smith & Tart, 1998, p. 100). It is not surprising that mystical transformations of time-experience should be hard to describe. Even in ordinary circumstances, the temporal qualities of experience are difficult to pin down, and the language of time is unhelpfully abstract and metaphorical, based as it often is on the questionable reification of time into a thing that flows or passes, as if it were a river rather than a quality of experience. Those who try to describe the changes to time-experience often resort to such phrases as "time stopped," "out of time," "it was eternal," "a timeless moment," which certainly indicate that something curious happened but are not very informative. Recollecting a childhood experience, Yvonne Lubbock (1961) strove to express the change thus:

> I was in the garden, muddling about alone. A cuckoo flew over, calling. Suddenly I experienced a sensation that I can only describe as an effect that might follow the rotating of a mental kaleidoscope. It was a feeling of timelessness, not only that time stood still, that duration had ceased, but that I was myself outside time altogether. Somehow I knew that I was part of eternity. And there was also a feeling of spacelessness. I lost all awareness of my surroundings. With this detachment I felt the intensest joy I had ever known, and yet with so great a longing—for what I did not know—that it was scarcely distinguishable from suffering. (p. 21)

When applied to various kinds of mystical experiences, "timeless" or "eternal" may indicate that the "fleeting" or "transient" quality was absent, or, as in the above example, that time was completely left behind, as if a condition entirely beyond time and space had been reached. Nevertheless, a "timeless" experience may have some kind of time-related quality, such as the sense of living in the "now."

Some descriptions indicate more concretely how the timelessness was experienced. It can involve a cessation of motion and sound. Objects in the visual field stop moving, and a silence or "hush" descends: "Suddenly, everything stopped. I stopped. The birds were no longer singing. The distant traffic sounds from the village ceased. Nothing moved. Utter silence, utter stillness. The May sunlight was transformed into a white radiance" (RERC No. 004415,[4] in Maxwell & Tschudin, 1996, p. 53). Yet timelessness does not preclude a dynamic or rhythmic quality. The above account continues: "When first trying to describe the experience I said it was as if I were hearing music and *knew* I was one of the notes" (p. 54). Despite the cessation, this description perhaps suggests a sense of unity with, of being part of, a harmonious flow. Timelessness can be vibrant, pulsating with "suspended animation":

> I was walking, alone, downhill, and the prospect before me was a wide expanse of sky and sea shimmering under the afternoon sun. Again, all sensation of time disappeared—or rather I felt that time had become frozen. There was also a feeling of the cessation of all sound. The shimmering of the water was extended to a quivering and throbbing of the whole physical universe, but this quivering seemed to be frozen in the sense of not taking part in time. (RERC No. 003401, in Maxwell & Tschudin, 1996, p. 135)

Changes to time-experience occur in a variety of situations, ranging from the commonplace, such as the "dragging of time" due to boredom and clock watching, to the dramatic transformations in mystical states (e.g., Flaherty, 1999; Taylor, 2007). It is well known that some psychoactive drugs alter time-experience, bringing slowing-down, speeding-up, and standing-still effects, and more bizarre ones too, such as reversal, repetition, and disjointedness (e.g., Shanon, 2001). Pahnke and Richards (1966) were of the opinion that while slowing down and speeding up may precede or follow the mystical phases of psychedelic experiences they should not be considered mystical in themselves. Certainly, it would be hasty to assume that all transformations of time-experience have great metaphysical significance. The underestimation and overestimation of elapsed time have received plausible neurological and psychological explanations (Grondin, 2010), such as the cognitive, information-processing approaches that emphasize the role of attention and changes to the perceptual registration of contents, more registration in a given period leading to overestimation, less leading to underestimation. While "time estimation" explanations may be applicable to speeding-up and slowing-down effects in a variety of circumstances, it is debatable whether they could be extended to the complete temporal cessation in mystical experience, except perhaps for those states that are empty of discriminable contents or involve absorptive concentration on a static object. In these cases, there is no registered change of contents and therefore nothing on which to base estimates of elapsed time. But it is not obvious why experiences rich in transforming contents, such as those that occur in a natural environment, should "freeze."

Perhaps time-effects such as cessation may be explicable if ordinary experience is dependent on the construction of the so-called specious, psychological, sensible, or phenomenal present, to note just a few of its many names. As William James (1890) famously pointed out, there is reason to think that moments of experience are not pure instants but durations or intervals that encapsulate a temporal range of contents with different degrees of prominence (Vol. 1, pp. 605–610), as exemplified by the after-image trails of moving objects. The phenomenal present was termed "specious" by E. Robert Kelly (James's "E. R. Clay") because its temporal span of perceptual contents derives from the immediate past, and so it has to be distinguished from the instantaneous "real" present of clock time (Andersen & Grush, 2009).[5] This extended, phenomenal

able that Traherne arrived at the idea through theological reflection alone, his autobiographical remarks confirm that he was personally familiar with mystical expansions. Traherne (1908) observed that infinite space is made even more infinite because it exists in a greater space "wherein all moments are infinitely exhibited" and in which "all ages appear together, all occurrences stand up at once," visible to "all comprehensors and enjoyers" (pp. 323–324). It is an eternal moment, an "immovable duration" that contains all "moving durations" (p. 324), a space that contains all spaces and times.

It is difficult to imagine how purely neuroscientific theories would go about explaining the experience of far-reaching spatial and temporal inclusiveness, other than to dismiss the claims of mystics as misinterpretations of their experiences. Zaehner supposed that when mystics believe they are conscious of the entire universe they are merely experiencing the ordinarily unconscious contents of their own minds and misinterpret the expansion of awareness as genuine experience of the universe (Marshall, 2005, pp. 213–216). But it is not obvious that an experience of the contents of one's own mind that are normally below the threshold of awareness, understood as a rather limited, psychological image of the world in the way that Zaehner does, would be at all like the cosmic inclusiveness reported by mystics, or indeed would exhibit the order, harmony, luminosity, bliss, and intellectual clarity that mystical experiences do, an inclusiveness not just of past states but, it would seem, of future ones too. Experience of the normally subconscious contents of one's own mind, understood in a limited way as purely personal in extent or enlarged by inherited collective contents, might well be a rather patchy, murky, chaotic, and backward-looking affair, very much focused on the past.

There is, then, reason to entertain the possibility that the mystic's eternal moment is metaphysically significant and to make the following two-part conjecture: (1) the universe exists as a spatiotemporal whole in which all concurrent and successive states of things exist together; (2) the full spatiotemporal range of contents is open to inspection in certain mystical states, and information about specific contents can be accessed in retrocognitive, clairvoyant, and precognitive psi. Furthermore, the mystical data suggest that this spatiotemporal whole is not some lifeless repository of events but is vibrant with animation.

The first part of the conjecture is not without independent support, given developments in twentieth-century physics, although the physi-

cist's concept of spacetime is open to a variety of interpretations, some of which reject the idea of a block universe in which all events are laid out. The second part needs further attention: it is not enough to posit the existence of a spatiotemporal substratum that contains all events, for it remains to be explained how something so vast and full of detail can be known in mystical states, and how very specific items of information about events can be extracted from it and find their way into psi cognitions. It is therefore appropriate to turn now to the question of mystical knowing.

KNOWING, UNITY, SELF-TRANSCENDENCE

As James (1902) observed, "noetic quality" is a key feature of mystical experiences: they are "states of knowledge . . . states of insight into depths of truth unplumbed by the discursive intellect" (p. 380). They bring what seems to be an immediate, effortless kind of knowing very different from everyday cognition, with its indirect, piecemeal ways. One man, finding himself surrounded by light, realized that he possessed an intrinsic power of knowing that was different from the usual kind: "There was also an amazing 'knowingness' rather than knowledgeableness, that is, I knew, not by application to study, but because it was in my mind from the beginning and had so existed as an attribute, a primary possession" (RERC No. 000189, in Beardsworth, 1977, pp. 15–16). The observation that the "knowingness" is an original possession echoes the oft-reported feeling that mystical experience is not a completely novel condition but a "coming home." The condition had been known before but was lost, or it has been there all along but was concealed. R. H. Ward (1957) expressed it thus, recounting an episode of progressively deepening consciousness under the dentist's nitrous oxide:

> I had no impression of suddenly receiving new knowledge, understanding and being. Rather I felt that I was rediscovering these things, which had once been mine, but which I had lost many years before. While it was altogether strange, this new condition was also familiar; it was even in some sense my rightful condition. (p. 27)

Mystical intuition can be a comprehensive knowing of the world, an omniscience that is "simultaneous knowledge of the universe and all it

contains," as Ward put it (p. 28). The experiences can also bring understanding and meaning, including insights into the puzzle of existence, the true nature of self, the meaning of suffering, the ultimate "all-rightness" of the world, the impossibility of absolute death, and the supreme importance of love. There can be specific insights too. Some are personal, involving reappraisal of one's conduct and priorities. Others relate to the natural world, to structures and processes of nature, from the microphysical to the cosmic. It can seem as if any question posed instantly receives an answer, a phenomenon also described in accounts of near-death experience: "I was my own questioner and answerer, and fast as the questions came, out trundled the answer, so easy to comprehend and always, always right, the only possible answer" (RERC No. 000189, in Beardsworth, 1977, p. 16).

While specific details are sometimes brought back into ordinary consciousness, the knowledge gained often fades as the experience comes to an end, leaving only the impression that everything was known and understood. That this should happen in the case of all-encompassing knowing is not surprising, for it is unlikely that a vast field of knowledge could be taken in and stored for later recall by the limited discriminative abilities and memory capacity of the human brain/mind in its ordinary state. However, the fact that specific understandings and insights are possible during the experiences suggests that the comprehensive knowing has an intrinsic discriminative capability of its own attuned to details, and it can be speculated that this capability supports the psi cognitions (see below).

There appears to be a link between mystical knowing and *unity*. Poet and scholar Kathleen Raine (1975) was gazing at a hyacinth on her writing desk when the following occurred:

> I found that I was no longer looking *at* it, but *was* it; a distinct, indescribable, but in no way vague, still less emotional, shift of consciousness into the plant itself. Or rather I and the plant were one and indistinguishable; as if the plant were a part of my consciousness. I dared scarcely to breathe, held in a kind of fine attention in which I could sense the very flow of life in the cells. I was not perceiving the flower but living it. I was aware of the life of the plant as a slow flow or circulation of a vital current of liquid light of the utmost purity. (p. 119)

Although reminiscent of some clairvoyant perceptions, the experience has a mystical feel as a result of its unitive quality, and, interestingly, the insights into structure and process are associated with the unity, the plant being a "part" of Raine's consciousness. Raine has a special awareness of the plant by being or living it, not by perceiving it as an external observer. It is mystical *knowledge by identity* (Forman, 1999, pp. 109–127). Special knowledge by virtue of unity is explicitly recognized in the teachings of Patañjali's *Yoga Sūtras* and associated texts, as discussed by Kelly and Whicher in Chapter 9 below.

Several kinds of unity are described in reports of extrovertive mystical experience (Marshall, 2005, pp. 60–64). For example, things normally understood to exist in isolation are now felt to be parts of the whole (*integral unity*). One aspect of this integrality can be the "solidification" of space: the gaps that ordinarily seem to keep things apart are now experienced as filled, and so the world presents itself as a continuum. Other common unities are those in which one seems part of the world (*immersive unity*), identified with the world (*identificatory unity*), or inclusive of the world (*incorporative unity*). All three are mentioned in the following account, which describes a progression through the unities:

> I suddenly realized that I was conscious of everything that is, and that I was part of it all. Then I became aware of it from a different aspect. I was everything that is. It seemed curious at first, but then turned into a feeling of being very much alone. I thought surely there must be something or somebody outside of me, but I searched and searched and could find nothing that was not a part of me. (RERC No. 004764, in Maxwell & Tschudin, 1996, p. 171)

Conscious of everything, one is united with everything, as a part of the whole, as the whole itself, and as inclusive of all that the whole contains.

It is no surprise to find that feelings of unity with objects, plants, animals, human beings, or the entire universe, are accompanied by a transformed sense of *self*, for the unity brings a redefinition of self-boundaries. In fact, mystical experiences are sometimes triggered when the everyday, tightly focused sense of self is relaxed or destabilized, for example through a peaceful state of mind, love, compassion, absorption in beauty, or suffering. Relaxation of the habitual self-focus and return to one's "home" condition can be quite a relief, as the medium Mrs. Willett nicely observed: "Don't you ever walk out of yourself? Aren't you tired

of being always yourself? It's so heavenly to be out of myself—when I am everything, and everything else is me" (Tyrrell, 1947, p. 160).

The conventional self-concept is undermined by mystical experience, but this is not to say that there is a complete annihilation of self or that distinctions between things vanish, at least not in extrovertive mystical experience, for here the multiplicity remains but is now unified as a "multiplicity-in-unity." Warner Allen (1946) was absorbed in Reality but "without ceasing to be one and myself, merged like a drop of quicksilver in the Whole, yet still separate as a grain of sand in the desert" (p. 33). The self persists but is put in its place, seen for what it is in the greater scheme of things, which can be humbling but also liberating. Unity with others can bring inclusive feelings of love and the realization that all beings are equal and joined in kinship (*communal unity*). It may even seem that love is integral to the deeper reality.

With the everyday self no longer foremost, it can seem as if a higher dimension of self has emerged. It can be asked whether this greater self has a reality of its own or merely consists of self-identifications projected upon the newly discovered realities. The former alternative is suggested by Allen's case: he found that he was not the "I" he had thought he was but an immortal Self, a truth he had always known but had forgotten (p. 31). Allen was drawn to the idea of the "twofold self" expressed by the philosopher and mystic Plotinus (ca. 205–270 CE), founder of Neoplatonism, who located a higher self at the level of Intellect, the penultimate reality of his metaphysics. But there is no unanimity among the mystical traditions on whether a higher self truly exists or how deeply selfhood is rooted in reality, with attitudes ranging from early Buddhism, which steered clear of the idea of an essential self, to nondual Kashmir Śaivism, which takes even the everyday ego-sense to be rooted in the selfhood of God.

Mystical unity can also be an awareness of connections between things (*interconnective unity*). The most remarkable kind is mentioned only rarely in modern-day accounts, perhaps because it is encountered at a depth of experience that is difficult to reach or comprehend. This form of interconnection depends on each basic unit of reality being in a sense the whole of reality. If these units are understood to be living beings, the interconnective unity is a form of communal unity too. It is a feature of Neoplatonic metaphysics, having been portrayed by Plotinus in his discussions of the realm of Intellect, which is populated by beings who

for example documented in the lives of the Catholic saints (Kelly & Whicher, present volume; Murphy, 1992, pp. 478–526; Thurston, 1952). However, they do not seem to be common in spontaneous cases of mystical experience, perhaps because these do not arise from focused prayer or concentrative practice intentionally directed toward particular objects, spiritual figures, ideas, or outcomes. Rather, the experiences overwhelm the ordinary self and any impulses it may have to act: the experiences are ones of "passivity," as James (1902) observed, with the mystic feeling "as if his own will were in abeyance" (p. 381). However, passivity of the ordinary self will be supplemented by all-inclusive activity if the mystic finds a center of identity that has the universe as its field of activity. In theistic mysticism, assimilation to the divinity can be understood to bring participation not only in the divine knowledge and love but also in the divine will, power, and cosmic body.

MYSTICAL LUMINOSITIES

It would be difficult to overstate the prominence of light in the mystical literature (Arbman, 1963; Eliade, 1965; Fox, 2008; Kapstein, 2004). Although references to light can be metaphorical, there is no doubt that special luminosities are a common feature of mystical experiences, including those that occur in near-death circumstances, and they are met elsewhere too, for example, in meditative, out-of-body, psychedelic, and apparitional experiences. In the case of extrovertive mystical experiences, luminous phenomena include a bright light that completely obscures perception of the surroundings but brings special intuitions of the world, or which first obscures and then subsides to leave enhanced perceptions (Marshall, 2005, pp. 68–71). The environment may look clear but unusually bright, or there can be a hazy brightness. Objects may appear to glow from the inside, and vision may seem to reach into them, as if they have become luminously transparent. In extreme cases, it can seem as if the universe has become translucent and open to view. The light may seem interior to the experiencer, exterior, or both, and it is sometimes associated with a "presence" or "being." The light is very often white or golden, but other colors are reported too, especially in the early stages. Rainbow hues are occasionally experienced, and there can be sparkling effects.

Although blackness and darkness are rarely mentioned in reports of extrovertive mystical experience, they do have a place in the mystical literature, and are described in some accounts of inward experience, mystical, meditative, psychedelic, and near-death. The language of darkness entered Christian mystical literature with "apophatic" or "negative" theology, which puts the divine beyond positive description and resorts to statements about what it is not. The "dazzling darkness" (and the "black light" of Sufism too) can therefore have a metaphorical sense, expressive of the inaccessibility of the divine essence and the limitations of affirmative language, and is not necessarily indicative of a mystic's experience (e.g., Sells, 1994). In modern accounts, references to "dazzling darkness" and the like can be intended literally, as for example the "shining darkness" that followed John Wren-Lewis's (1988) near-death experience, an "aliveness" that "seemed to contain everything that ever was or could be, all space and all time," but without division (p. 112), James Austin's (1998) infinite, glistening void of "crystalline, jet blackness" during Zen meditation (p. 479), and Eben Alexander's (2012) mystical "Core" in near-death coma, which was infinite and "pitch black" but "brimming over with light" (pp. 47–48).

Luminosity and knowing are frequently mentioned together in mystical testimonies, which can suggest that the two have a basic connection and are not really distinct:

> I lost all normal consciousness and became engulfed as it were in a great cloud of light and an ecstasy of knowing and understanding all the secrets of the Universe, and a sense of the utmost bliss in the absolute certainty of the perfection and piercing purity of goodness in the Being in whom it seemed all were finally enclosed, and yet in that enclosure utterly liberated. (RERC No. 000514, in Beardsworth, 1977, p. 32)

The connection can be made explicitly too. Irina Starr (1991) experienced a light in the objects around her, a light that was "intelligent" in some way:

> There was the luminous quality—a light which contained color in the way that a brilliant diamond refracts color, only this color seemed an integral part of the essential substance and not a form of refracted light. The one thing which was, above all, significant was that every-

> thing was literally *alive*; the light was living, pulsating, and in some way I could not quite grasp, *intelligent*. The true substance of all I could see was this living light, beautiful beyond words. (p. 9)

It is not just knowing that is inseparable from the light. There can be a fusion of qualities in which light, knowing, love, bliss, life, and timelessness come together. A mystical experience in natural surroundings brought a luminosity that united everything within itself: "we flowed into, became, the great Golden Light—the rocks, trees, etc. and this 'I' were no longer just kindred separatenesses. We disappeared. We became the Light which is Love, Bliss. This Light was neither hot nor cold; but Love, Consciousness, Eternity, It" (J. P. W., in Johnson, 1959, p. 66). It seems that luminosity, knowing, love, and bliss are so integral to the mystical consciousness that they are inseparable from it and one another.

What observations can be made on the above? If mystical experiences truly are metaphysical windows, then the reports suggest that luminous quality is fundamental to reality, an intrinsic characteristic of the world at large and of consciousness at its deeper levels. Some mystical accounts indicate that the world was not only flooded with luminosity but seemed to be *made* of it. While the ascription of experiential light qualities to the external world goes against common scientific and philosophical opinion, there is good reason to suppose that luminosity is no mere epiphenomenal "glow" generated by and confined to brain activity. Ever since early modern thinkers revived ancient atomism and banished "secondary qualities" from the universe, including color qualities, it has become a great mystery how the brain can support experience. However, if the brain is itself an intrinsically luminous structure, part of a luminous world, there is no puzzling mind–body gap between visual experience and the brain, and the problematic dualist split of mind and matter is eased in this regard.

Although contemporary philosophers have asked whether objects in the external world are colored, they do not usually mean to ask if external objects really have color qualia, except those philosophers who subscribe to some form of "Primitivism," such as the view that objects have the colors we take them to have (Byrne & Hilbert, 2007). Rather, they typically debate whether the physical properties of external objects can rightly be called "color," or whether colors are the "dispositions" of the subjects who view the objects. Mystical experiences, if windows on reality,

suggest that color qualia are indeed intrinsic to objects, filling in their extended geometries. However, unlike Primitivists, we should not expect the intrinsic color qualia of objects to correspond closely or indeed at all to those experienced in sensory vision (Marshall, 2001). For one thing, visionary and mystical experiences can bring translucency, with objects divested of their opacity and the world now crystalline or gem-like in appearance. This phenomenon inspired Aldous Huxley (1999) to inquire "Why are precious stones precious?" in his talks on visionary experience (pp. 190–209). Translucency is to be expected if objects are known directly, for there would be no obstruction to vision and no opaque surfaces. It follows that opaque colors will be absent, and hues, if present, will have a transparent quality, like colored crystals and beams of spectral light. As Starr (1991) observed, the luminosity out of which objects were made "contained color in the way that a brilliant diamond refracts color" (p. 9).

However, it should not be assumed that all mystical experiences of the natural world provide direct access to objects as they are in themselves. For example, when a mystic perceives a tree as luminously transfigured, it is possible that the transfigured object is not the tree itself but a sensory representation of the tree. In philosophy of perception, a distinction is traditionally made between direct and indirect theories: *direct realists* naively assume or openly conjecture that we perceive objects directly, while *indirect realists* suppose that we perceive them indirectly through mental representations, through the so-called sense-data with which we are directly acquainted. For direct realists, ordinary perceptions of a tree show the tree itself; for indirect realists, perceptions of the tree are mediated through sensory representations of it. What happens, then, when a tree is luminously transfigured in a mystical experience? The direct realist will suppose that the tree itself has been transfigured, while the indirect realist will say that the perceptual representations of the tree have been transfigured, not the tree itself. In the first case, nature itself is transfigured; in the second, the sensory representations. It is the burden of the direct realist to explain how nature itself has been transfigured and why only the mystic perceives the change. The indirect realist need only explain the changes to the mystic's representations.

But extrovertive mystical experiences can go beyond perceptions of the immediate environment, reaching through the surfaces of things, and bringing unifying vision of the world at large, even of the entire universe.

How might direct and indirect realists account for such perceptual expansions, assuming them to be genuine? The direct realist can call upon filter theory and suppose that the universe of objects consists of unperceived percepts ("unsensed sensa," "sensibilia"). Our ordinary percepts are selections from this universal reservoir of percepts. In normal circumstances, only those of immediate relevance are selected for inclusion in consciousness, but psi and mystical experiences occur when more extensive selection from the subliminal reservoir takes place. However, direct theories of perception, whether conventional or extended to accommodate psi, have significant difficulties. For one thing, direct perception should be infallible because it presents its objects directly. But ordinary perception is known for its illusions, and psi perception for its errors and disguises. Indirect theories have an advantage here because they take perception to be mediated via representations, and the process of representation can be held responsible for introducing illusions, errors, and disguises. Indirect realism is advantageous in this regard, but can it be adapted to accommodate the direct perceptions that the deeper mystical experiences seem to bring? I believe it can, as I explain in Chapter 11.

TOWARD THE LIGHT: ALTERED STATES AND MYSTICAL TYPES

Mystical experiences are sometimes preceded by stages that are not themselves mystical or only incipiently so, and it is these earlier stages that are most likely to have mediated contents and show evidence of biological, psychological, and religious/cultural contributions. The stages can bring psychical and visionary experiences, but at their most basic they consist of simple lights and patterns of varying complexity. Some meditative traditions have at their disposal techniques that encourage a succession of light experiences, such as the death-transition practices of Tibetan Buddhism (e.g., Wangyal, 1993). Modern-day accounts of near-death experience also describe stages of visual phenomena. These include out-of-body experience with psi perceptions, passage toward a light through darkness (or through a tunnel or scenery of some kind), meetings with deceased relatives and other beings in paradise-like locales, and mystical luminosities. For example, Reinee Pasarow (1981) described a near-death experience, brought on by an allergic reaction, in which mystical unity

serve to remind us that biological, psychological, and religious/cultural factors contribute to altered states of consciousness, they ignore the possibility that transpersonal contributions may inform some or all of the stages. Siegel (1980) later applied his hallucination theory to NDEs, but because the theory was again purely biological and psychological, with no recognition that transpersonal contents might find their way through the gate, the NDE was reduced to entoptics and hallucination.

However, it should not be assumed that all geometric forms and imagery encountered in altered states are simply expressions of brain architecture and psychological construction. With regard to entoptics, Luke (2010) has questioned whether neurological structures, as commonly understood, can really produce the startlingly complex and seemingly "multidimensional" geometries encountered in psychedelic states. As for the later stages, in which entoptics are said to be elaborated into imagery informed by personal and cultural material, application of the term "hallucination" is likely to obstruct unprejudiced evaluation of what they involve. Just as dreams can be venues for inspirations, meaningful revelations, numinous encounters, and psi cognitions, so too the complex visual experiences of altered states in general, for all their personal and cultural specificity, may sometimes be informed by transpersonal factors and involve contact, if only mediated, with objective realities. The ontological status of the strange entities and fabulous realms of visionary experiences, such as the little folk of "Lilliputian hallucinations," remains open to debate (Luke, 2011), many rejecting the entities and realms as hallucinatory, some taking them to be symbolic and meaningful in the manner of dreams, and others understanding them to be as real as ourselves and the world we inhabit (e.g., Weiss, 2012, and present volume). Certainly, it would be premature to reject them as mere hallucinations constructed by the imagination from biological and contextual sources alone, for visionary beings and realms encountered in the more exotic dreams, lucid dreams/OBEs, NDEs, and psychedelic experiences can seem in their intelligence, autonomy, beauty, horror, peculiarity, and complexity to go beyond anything that memory and imagination, as understood by present-day, mainstream psychology, would be able to conjure up.

It is apposite here to mention Henry Corbin's (1972) distinction between "imaginary" and "imaginal": the former term all too easily implies that the objects of imagination are unreal fabrications, whereas the latter allows them to be very real indeed but apprehended by a special faculty

of "imaginative perception" rather than by the senses.[6] The Islamic texts studied by Corbin interpose a realm of imagination between the realms of the senses and intellectual intuition, a *mundus imaginalis* as existent as the sensory and intellectual worlds (see Shaw, Chapter 8 below). Many centuries later, among Romantics such as Blake, Wordsworth, Coleridge, and Shelley, the imagination was valued as a creative, transformative, visionary faculty that goes beyond sensory appearances and habitual ways of perceiving things. Far more than the empiricist's associative linking and combining of sense-derived images, the imagination of the Romantics was a higher power of the mind and a pathway to reality (e.g., Kelly & Grosso, 2007a). While imagination is sometimes shallow or delusory "fancy," it can be informed by genuine sources of knowledge beyond the sensory given.

But even more seriously, the neuropsychological models noted above fail to recognize a mystical denouement as altered states of consciousness achieve greater depth. Warner Allen's experience developed from a simple luminosity (silver light) and geometric form (circle), through a more complicated form (tunnel), to complex visual imagery (the coastal scene), but became a full-blown, cosmic mystical experience that was of a different order from the stages that preceded it. The lesson seems to be that the unfolding of altered states and their luminous phenomena, whether in hypnagogia, psychedelic intoxication, out-of-body jaunts/lucid dreams, and near-death trauma, can end in profound mystical experiences and so bring a metaphysical depth that purely neuropsychological models of altered states are ill-equipped to handle.

Mystical experiences themselves can develop through stages. For example, Ward's (1957) upward flight under nitrous oxide brought him to a "region of ideas" in which everything in the universe was found to be interconnected and known directly, and to exist within himself. But the flight culminated in a luminosity of "utterly indescribable purity and lucency," a "final and perfect unity" that was the "still centre of the universal unity" (p. 30). The "region of ideas" stage appears to have been a mystical experience of cosmic reach, while the subsequent stage is difficult to categorize with any confidence. It may have been a yet deeper level of cosmic experience, for it had what appear to be discriminable contents. Ward says that everything there was alive but motionless, yet he puts the experience beyond eternity as well as time. It does not seem to have been the pure, undifferentiated consciousness that Stace took to be

the ultimate. However, Stace's pure consciousness, which constitutes his introvertive type of mystical experience, is obscure to say the least, for he thought it was beyond logic and could be expressed only in paradox, by asserting a paradoxical identity of creative source and created world, and of an ultimate with and without qualities (Marshall, 2005, pp. 162–163).

The extrovertive type has been prominent in my discussion because it is the type of mystical experience most obviously related to psi cognitions, but a more ambitious project would look further afield to a variety of mystical types and attempt a more extensive cartography of reality, including the ultimate reality that Stace tried to capture in his paradoxes. According to some thinkers, including naturalists and pantheists, there is no ultimate reality beyond the universe—the universe is all there is. For others, including classical theists and panentheists, there are realities that transcend the universe, even though they may be immanent too. If there are indeed such transcendent realities, then study of mystical accounts may provide some clues, and recourse can also be made to the mystical traditions. For example, Christian theology has recognized, in addition to Benedict's *visio mundi* or vision of the entire created world, a *visio mundi archetypi* or vision of the archetypal ideas in the divine mind, and the unclouded *visio dei*, the unmediated vision of God's essential nature (Bell, 1977). Plotinus has "the One" as his ultimate, the supreme reality that is encountered at the apex of the mystical ascent but which is ineffable in itself, although describable up to a point in relation to its luminous products (Bussanich, 1996; Shaw, present volume). Nondual Kashmir Śaivism has a pulsating, self-reflexive light of consciousness, *prakāśa-vimarśa*, as its primordial reality (Biernacki, present volume; Muller-Ortega, 2004) and sets out a number of derivative levels of cosmic experience. While it may be unnecessary to explore the farthest reaches of mystical experience in order to understand psi perception, they cannot be ignored if reality is to be mapped out in full, and they will be important for understanding some experiences, such as NDEs that go all the way into the light, and perhaps synchronistic "meaningful coincidences" between inner states and the outer world, if these are informed by archetypes rooted at a deep level of reality (Atmanspacher & Fach, present volume).

CONCLUDING REMARKS

In the above, I followed up the idea that the study of mystical experience has much to contribute to the understanding of psi, NDE, and other extraordinary experiences, in the first place by expanding the range of data that theorists need to take into account, and more speculatively by furnishing insights into the nature of reality. Several characteristics of mystical experience were identified, primarily in connection with the extrovertive type:

- temporal cessation and inclusiveness
- intuitive knowing, both comprehensive and specific, seemingly one's natural possession ("coming home") but ordinarily concealed
- various kinds of unity, from integral to interconnective and communal, including all-embracing love
- shift away from the centrality of the usual sense of self, sometimes to what appears to be a higher self
- special luminosities in mystical experience and the stages that precede and follow it
- intimate association of light, consciousness, knowing, love, bliss

Given the close connections between psi and mystical experience, theorists of psi will have to address these and other mystical characteristics. There was the hope that such theoretical efforts would be considerably aided if mystical experiences, as "windows on reality," furnish metaphysical pointers, and some tentative conjectures were put forward:

- The universe exists as a spatiotemporal whole, vibrant with animation.
- The universe is knowable in mystical states, psi cognitions, and ordinary experience because knowing is intrinsic to the constitution of universe and ourselves in some profound way.
- More specifically, mystical intuitions are possible by virtue of "knowledge by identity": the object of knowledge, whether the entire universe, the immediate environment, or some domain in between, is knowable directly because it exists as the known of a knower.
- The knower at its most inclusive constitutes a "higher self."

- Psi cognitions, which are very specific, depend on a discriminative capacity intrinsic to the all-inclusive knowing.
- Psi actions are rooted in "action by identity": through unity with the object, the object becomes part of one's field of activity.
- The universe is thoroughly unified: it is a seamless whole, and its parts are deeply interconnected.
- Luminosity is intrinsic to reality, and so it is a mistake to think that color qualia are absent from the world at large.
- Luminosity and intuitive knowing are inseparable from each other, constituting luminous cognition or "intelligent light."

If brought to bear on filter theory, these conjectures sketch out a subliminal consciousness of cosmic reach, a global consciousness with an inbuilt discriminative capacity that supports the psi cognitions. James (1909/1986), in his final thoughts on psychical research, concluded that there is a "continuum of cosmic consciousness, against which our individuality builds but accidental fences, and into which our several minds plunge as into a mother-sea or reservoir" (p. 374). While some phenomena, abnormal, normal, and supernormal, throw light on the shallower regions of the reservoir, on its personal and collective contents, the deeper extrovertive mystical experiences would appear to confirm that the reservoir in its fullness is indeed a consciousness of cosmic extent, temporally as well as spatially, and even to suggest that a "Subliminal Self" (upper case) of the kind postulated by F. W. H. Myers is best understood as cosmically inclusive (see Kelly et al., 2007; Kelly, Chapter 14 below). I have speculated that consciousness can have such a reach because the universe exists as the known of the knower, or, expressed otherwise, as the contents of mind, experience, or consciousness. The speculation requires elaboration, of course, for in this bare form it is not yet a full-grown theory, and can be taken in various directions. There are suggestions too that the subliminal reality has a dimension transcendent to the universe, accessible in the deepest mystical experiences, a dimension that is the source of the cosmic multiplicity and its holistic unity, although I have only touched on the matter here. If this transcendent reality is understood to be "in" the world in some sense, and the world "in" it, then a panentheistic vision is in the making (Murphy, Chapter 15 below).

Also relevant to filter theory are questions about the directness or indirectness of various kinds of perceptions, ordinary, psychical, and

Arbman, E. (1963). *Ecstasy or Religious Trance: Vol. 1. Vision and Ecstasy*. Stockholm: Svenska Bokförlaget.
Armstrong, A. H. (Trans.). (1966–1988). *Plotinus: Enneads I–VI* (Vols. 1–7). Loeb Classical Library. Cambridge, MA: Harvard University Press.
Austin, J. H. (1998). *Zen and the Brain: Toward an Understanding of Meditation and Consciousness*. Cambridge, MA: MIT Press.
Barnard, G. W. (1997). *Exploring Unseen Worlds: William James and the Philosophy of Mysticism*. Albany: State University of New York Press.
Barnard, G. W., & Kripal, J. J. (Eds.). (2002). *Crossing Boundaries: Essays on the Ethical Status of Mysticism*. New York: Seven Bridges Press.
Beardsworth, T. (1977). *A Sense of Presence: The Phenomenology of Certain Kinds of Visionary and Ecstatic Experience*. Oxford: Religious Experience Research Unit.
Bell, D. N. (1977). The vision of the world and of the archetypes in the Latin spirituality of the Middle Ages. *Archives d'Histoire Doctrinale et Littéraire du Moyen Âge, 44*, 7–31.
Broad, C. D. (1949). The relevance of psychical research to philosophy. *Philosophy, 24*, 291–309.
Broad, C. D. (1962). *Lectures on Psychical Research*. London: Routledge & Kegan Paul.
Bussanich, J. (1996). Plotinus's metaphysics of the One. In L. P. Gerson (Ed.), *The Cambridge Companion to Plotinus* (pp. 38–65). Cambridge: Cambridge University Press.
Byrne, A., & Hilbert, D. R. (2007). Color primitivism. *Erkenntnis, 66*, 73–105. doi:10.1007/s10670-006-9028-8
Capra, F. (1975). *The Tao of Physics: An Exploration of the Parallels between Modern Physics and Eastern Mysticism*. London: Wildwood House.
Carmody, D. L., & Carmody, J. T. (1996). *Mysticism: Holiness East and West*. Oxford: Oxford University Press.
Carr, B. (2007). Parapsychology as a bridge between science and religion. *Christian Parapsychologist, 18*, 134–148.
Corbin, H. (1972). *Mundus imaginalis* or the imaginary and the imaginal. *Spring* (1972), 1–19.
Crookall, R. (1969). *The Interpretation of Cosmic and Mystical Experiences*. Cambridge: James Clarke.
Deikman, A. J. (1966). De-automatization and the mystic experience. *Psychiatry, 29*, 324–338.
Eliade, M. (1965). Experiences of the mystic light. In *The Two and the One* (pp. 19–77). London: Harvill Press.
Flaherty, M. G. (1999). *A Watched Pot: How We Experience Time*. New York: New York University Press.
Fodor, N. (1963). At-oneness: A new phenomenon for parapsychology. *Research Journal of Philosophy and Social Sciences, 1*, 57–64.
Forman, R. K. C. (1999). *Mysticism, Mind, Consciousness*. Albany: State University of New York Press.
Forman, R. K. C. (Ed.). (1990). *The Problem of Pure Consciousness: Mysticism and Philosophy*. New York: Oxford University Press.
Fox, M. (2008). *Spiritual Encounters with Unusual Light Phenomena: Lightforms*. Cardiff: University of Wales Press.
Grey, M. (1985). *Return from Death: An Exploration of the Near-Death Experience*. London: Arkana.
Grondin, S. (2010). Timing and time perception: A review of recent behavioral and neuroscience findings and theoretical directions. *Attention, Perception, & Psychophysics, 72*, 561–582. doi:10.3758/APP.72.3.561
Hollenback, J. B. (1996). *Mysticism: Experience, Response, and Empowerment*. University Park: Pennsylvania State University Press.
Hood, R. W., Jr. (2008). Mysticism and the paranormal. In J. H. Ellens (Ed.), *Miracles: God, Science, and Psychology in the Paranormal: Vol. 3. Parapsychological Perspectives* (pp. 16–37). Westport, CT: Praeger.
Huxley, A. (1999). *Moksha: Aldous Huxley's Classic Writings on Psychedelics and the Visionary Experience* (M. Horowitz & C. Palmer, Eds.). Rochester, VT: Park Street Press.
James, W. (1890). *The Principles of Psychology* (Vols. 1–2). New York: Henry Holt.

James, W. (1902). *The Varieties of Religious Experience: A Study in Human Nature*. New York: Longmans, Green.

James, W. (1986). The confidences of a "psychical researcher." In F. H. Burkhardt (Ed.), *Essays in Psychical Research* (pp. 361–375). Cambridge, MA: Harvard University Press. (Original work published 1909)

Johnson, R. C. (1953). *The Imprisoned Splendour*. London: Hodder & Stoughton.

Johnson, R. C. (1959). *Watcher on the Hills*. London: Hodder & Stoughton.

Johnson, R. C. (1984). *Light of All Life*. Tasburgh, England: Pilgrims Book Services.

Jones, R. H. (1986). *Science and Mysticism: A Comparative Study of Western Natural Science, Theravāda Buddhism, and Advaita Vedānta*. Lewisburg, PA: Bucknell University Press.

Jones, R. H. (2010). *Piercing the Veil: Comparing Science and Mysticism as Ways of Knowing Reality*. New York: Jackson Square Books.

Kapstein, M. T. (Ed.). (2004). *The Presence of Light: Divine Radiance and Religious Experience*. Chicago: University of Chicago Press.

Kelly, E. F., & Grosso, M. (2007a). Genius. In E. F. Kelly, E. W. Kelly, A. Crabtree, A. Gauld, M. Grosso, & B. Greyson, *Irreducible Mind: Toward a Psychology for the 21st Century* (pp. 423–493). Lanham, MD: Rowman & Littlefield.

Kelly, E. F., & Grosso, M. (2007b). Mystical Experience. In E. F. Kelly, E. W. Kelly, A. Crabtree, A. Gauld, M. Grosso, & B. Greyson, *Irreducible Mind: Toward a Psychology for the 21st Century* (pp. 495–575). Lanham, MD: Rowman & Littlefield.

Kelly, E. F., Kelly, E. W., Crabtree, A., Gauld, A., Grosso, M., & Greyson, B. (2007). *Irreducible Mind: Toward a Psychology for the 21st Century*. Lanham, MD: Rowman & Littlefield.

Kelly, E. F., & Locke, R. G. (2009). *Altered States of Consciousness and Psi: An Historical Survey and Research Prospectus* (2nd ed.). New York: Parapsychology Foundation. (1st ed. published 1981)

Knauer, A., & Maloney, W. J. M. A. (1913). A preliminary note on the psychic action of mescalin, with special reference to the mechanism of visual hallucinations. *Journal of Nervous and Mental Disease, 40*, 425–436.

Kripal, J. J. (2010). *Authors of the Impossible: The Paranormal and the Sacred*. Chicago: University of Chicago Press.

Kripal, J. J. (2011). *Mutants and Mystics: Science Fiction, Superhero Comics, and the Paranormal*. Chicago: University of Chicago Press.

Lewis-Williams, J. D., & Dowson, T. A. (1988). The signs of all times: Entoptic phenomena in Upper Palaeolithic art. *Current Anthropology, 29*, 201–245. doi:10.1086/203629

Lubbock, Y. (1961). *Return to Belief*. London: Collins.

Luke, D. P. (2010). Rock art or Rorschach: Is there more to entoptics than meets the eye? *Time and Mind, 3*, 9–28. doi:10.2752/175169710X12549020810371

Luke, D. P. (2011). Discarnate entities and dimethyltryptamine (DMT): Psychopharmacology, phenomenology and ontology. *Journal of the Society for Psychical Research, 75*, 26–42.

Marshall, P. (1997). *Mysticism and Physics* (Unpublished master's thesis). Lancaster University, Lancaster, England.

Marshall, P. (2001). Transforming the world into experience: An idealist experiment. *Journal of Consciousness Studies, 8*(1), 59–76. Available at http://www.esalen.org/ctr-archive/bp

Marshall, P. (2005). *Mystical Encounters with the Natural World: Experiences and Explanations*. Oxford: Oxford University Press.

Marshall, P. (2006). *The Living Mirror: Images of Reality in Science and Mysticism* (Rev. ed.). London: Samphire Press.

Marshall, P. (2011). The psychical and the mystical: Boundaries, connections, common origins. *Journal of the Society for Psychical Research, 75*, 1–13.

Mavromatis, A. (1987). *Hypnagogia: The Unique State of Consciousness between Wakefulness and Sleep*. London: Routledge.

Maxwell, M., & Tschudin, V. (Eds.). (1996). *Seeing the Invisible: Modern Religious and Other Transcendent Experiences*. Oxford: Religious Experience Research Centre.

Muller-Ortega, P. E. (2004). Luminous consciousness: Light in the tantric mysticism of Abhinavagupta. In M. T. Kapstein (Ed.), *The Presence of Light: Divine Radiance and Religious Experience* (pp. 45–79). Chicago: University of Chicago Press.
Murphy, M. (1992). *The Future of the Body: Explorations into the Further Evolution of Human Nature*. New York: Jeremy P. Tarcher/Putnam.
Pahnke, W. N., & Richards, W. A. (1966). Implications of LSD and experimental research. *Journal of Religion and Health, 5*, 175–208.
Pasarow, R. (1981). A personal account of an NDE. *Vital Signs, 1*(3), 11, 14.
Price, H. H. (1962). W. T. Stace's *Mysticism and Philosophy*. *Proceedings of the Society for Psychical Research, 41*, 299–312.
Price, H. H. (1965). Survival and the idea of "another world." In J. R. Smythies (Ed.), *Brain and Mind: Modern Concepts of the Nature of Mind* (pp. 1–24). London: Routledge & Kegan Paul. (Original work published 1953)
Radin, D. (2006). *Entangled Minds*. New York: Paraview.
Raine, K. (1975). *The Land Unknown*. London: Hamish Hamilton.
Sells, M. A. (1994). *Mystical Languages of Unsaying*. Chicago: University of Chicago Press.
Shanon, B. (2001). Altered Temporality. *Journal of Consciousness Studies, 8*(1), 35–58.
Siegel, R. K. (1977). Hallucinations. *Scientific American, 237*(4), 132–140.
Siegel, R. K. (1980). The psychology of life after death. *American Psychologist, 35*, 911–931.
Smart, N. (1962). Mystical experience. *Sophia, 1*(1), 19–26.
Smith, A. L., & Tart, C. T. (1998). Cosmic consciousness experience and psychedelic experiences: A first person comparison. *Journal of Consciousness Studies, 5*(1), 97–107.
Sprigge, T. L. S. (1993). *James and Bradley: American Truth and British Reality*. Chicago: Open Court.
Stace, W. T. (1960). *Mysticism and Philosophy*. Philadelphia: Lippincott.
Starr, I. (1991). *The Sound of Light: Experiencing the Transcendental* (3rd ed.). Ojai, CA: Pilgrim's Path.
Stevenson, I., & Cook [Kelly], E. W. (1995). Involuntary memories during severe physical illness or injury. *Journal of Nervous and Mental Disease, 183*, 452–458.
Studstill, R. (2005). *The Unity of Mystical Traditions: The Transformation of Consciousness in Tibetan and German Mysticism*. Leiden, The Netherlands: Brill.
Tart, C. T. (Ed.). (1969). *Altered States of Consciousness: A Book of Readings*. New York: Wiley.
Taylor, S. (2007). *Making Time: Why Time Seems to Pass at Different Speeds and How to Control It*. Cambridge: Icon Books.
Thurston, H. (1952). *The Physical Phenomena of Mysticism*. London: Burns Oates.
Tobin, F. (1984). Mysticism and Meister Eckhart. *Mystics Quarterly, 10*, 17–24.
Traherne, T. (1908). *Centuries of Meditations* (B. Dobell, Ed.). London: Bertram Dobell.
Tyrrell, G. N. M. (1947). *The Personality of Man: New Facts and Their Significance*. Harmondsworth, England: Penguin.
Wangyal, T. (1993). *Wonders of the Natural Mind: The Essence of Dzogchen in the Native Bon Tradition of Tibet*. Barrytown, NY: Station Hill Press.
Ward, R. H. (1957). *A Drug-Taker's Notes*. London: Victor Gollancz.
Weiss, Eric M. (2012). *The Long Trajectory: The Metaphysics of Reincarnation and Life After Death*. Bloomington, IN: iUniverse.
Wilber, K. (Ed.). (1982). *The Holographic Paradigm and Other Paradoxes*. Boston: New Science Library.
Wren-Lewis, J. (1988). The darkness of God: A personal report on consciousness transformation through an encounter with death. *Journal of Humanistic Psychology, 28*(2), 105–122.
Wulff, D. M. (2000). Mystical experience. In E. Cardeña, S. J. Lynn, & S. Krippner (Eds.), *Varieties of Anomalous Experience: Examining the Scientific Evidence* (pp. 397–440). Washington, DC: American Psychological Association.
Zaehner, R. C. (1957). *Mysticism Sacred and Profane: An Inquiry into Some Varieties of Præternatural Experience*. Oxford: Clarendon Press.

II

Old and New Worldviews That Accommodate the Targeted Phenomena

Menelaus wrestling with Proteus we can induce this god to yield its secrets remains to be seen.

This must be an abbreviated history: beginning with a small group of philosophers and psychologists (James, Myers, Bergson, Schiller) who were the first to articulate it in the modern context, we will fan out backward and forward in time to other accounts of efforts to frame this view. What emerges is a picture, deeply embedded in the historical psyche, of an intuition of mind as primordial and transcendent, mind interactively interwoven with and essentially pervading physical nature. It is an intuition at odds with currently prevailing outlooks that lean en masse toward physicalism.

There are, however, many outstanding exceptions. Neuroscientist John Eccles (1965) wrote:

> Contrary to the physicalist creed, I believe that the prime reality of my experiencing self cannot with propriety be *identified* with . . . brains and neurones and nerve impulses and even complex spatio-temporal patterns of impulses. . . . I cannot believe that this wonderful divine gift of a conscious existence has no further future, no possibility of another existence under some other unimaginable conditions. At least I would maintain that this possibility of a future existence cannot be denied on scientific grounds. (pp. 42–43)

Still, compared with most workers in the field, Eccles and others of like mind remain a minority of outliers. One aim of this chapter is to indicate the longevity and recurrent appeal of the intuition of mind as transcendent.

JAMES, TRANSMISSION, IMMORTALITY

In 1897, William James (1842–1910) gave the Ingersoll Lecture at Harvard University, titled *Human Immortality: Two Supposed Objections to the Doctrine*. We pass over the second objection, which addresses the inability of the imagination to cope with the supposed "overpopulation" problem of immortality, for example, when it applies to our social and biological inferiors; the problem, James argues, is caused by a deficiency in imaginative power. Our concern is with the first objection, which is logical, and concerns the mind–brain problem.

James was speaking to an educated Harvard University audience, people very much aware of the growing triumphs of the physical sciences. Educated people were beginning to find it difficult to imagine life after death, and James needed a theory that could handle the data collected by psychical researchers, especially the data produced by mental mediums, which did suggest human survival. Conscious of the emotional and metaphysical needs of his audience, he used philosophy as therapy to mentally uncramp and lead his listeners toward a wider view of the possibilities. James was temperamentally opposed to ideas that suggest the premature closure of human experience. Arguing for the possibility of immortality, he said: "My words ought consequently already to exert a releasing function on your hopes" (James, 1898/1961, p. 293).

His task was to furnish a theory that would at least permit his audience to rationally entertain the hypothesis of some form of afterlife. He begins by fully granting that minds are indeed a *function* of brains. But the notion of function is ambiguous, and mind can be a function of brain in two very different ways, (1) as a *product* of the brain, something that has somehow *emerged from the physical structures* of the brain, its causal root clearly physical, or (2) in a different sense of function, the brain would *not produce* mind, but would serve as a vehicle that detects, deflects, screens, filters, transduces, or, to use James's terms, *transmits* or *permits* expressions of mind, consciousness, feelings, willings, imaginings, and so forth. In the second sense of function, mind interacts with the material brain but in a way that preserves its separate reality. According to this model, the mental factor, as James wrote, "preexists" the brain that it operates upon and through.

Positing the preexistence of mind is a metaphysical game changer. It may at first seem like an extreme position, but the idea that mind "emerges" from brain is really no less extreme and fantastic. This question about the *emergence* of consciousness with all its qualitative properties is the famous "hard problem"; science is clueless about how to get consciousness out of physical reality. Thus, in a recent book by Alva Noë (2009), praised by Oliver Sacks and Daniel Dennett, we read in the Preface: "After decades of concerted effort on the part of neuroscientists, psychologists, and philosophers, only one proposition about how the brain makes us conscious—how it gives rise to sensation, feeling, subjectivity—has emerged unchallenged: we don't have a clue" (p. xi). If so, I would then say we are as entitled to take mind as our basic starting point

as we are to assume that physical science will someday explain the origins of mind; after a prolonged period of fruitless promissory materialism, the nonemergent option seems perfectly valid.

But it's more than logically valid; it has explanatory and experimental potential, completely lacking in the rival view. The transmission model has the advantage of being consistent with, and may serve to explain, a host of vitally interesting phenomena of human experience. Writes James (1898/1961):

> The transmission theory also puts itself in touch with a whole class of experiences that are with difficulty explained by the production theory. I refer to those obscure and exceptional phenomena reported at all times throughout human history, which the "psychical researchers," with Mr. Frederic Myers at their head, are doing so much to rehabilitate; such phenomena, namely, as religious conversions, providential leadings in answer to prayer, instantaneous healings, premonitions, apparitions at time of death, clairvoyant visions or impressions, and the whole range of mediumistic capacities, to say nothing of still more exceptional and incomprehensible things. (p. 298)

None of these things would be remotely intelligible if the productive-materialistic view of consciousness were true. Suppose you saw the ghostly phantom of a person you knew who at that moment was dying miles away. Such a so-called crisis apparition would be unthinkable on the productive view because there would be no known way the dying brain could produce the correct, information-bearing apparition and transmit it across space. But on James's model, the brain does not have to "produce" anything. The information is "ready-made in the transcendental world, and all that is needed is an abnormal lowering of the brain-threshold to let them through" (James, 1898/1961, p. 299). In other words, the person dying at a distance is clairvoyantly present to the subliminal mind of the percipient; in a vision you might have of this sort, the subliminal perception you already own becomes supraliminal—the shutter, as it were, is opened, and you can glimpse what is present.

Two ideas are crucial to James's model. The first concerns the "transcendental world." Myers would call it the metetherial environment or World-Soul; Emerson, the Over-Soul; Aldous Huxley, Mind at Large; Carl du Prel, the Transcendental Ego, etc. Our individual minds are surface growths that appear separate and distinct but whose roots lie in a

deeper psychic underground; there we are mutually entangled and part of a more extended mental system.

The second idea is one that James owes to Gustav Fechner, concerning the notion of a *psychophysical threshold* (see James, 1898/1961, pp. 295–298, long footnote). It is the mobility of this threshold upon which turns the explanatory and the experimental potential of the transmission model. Lower the threshold and the contents of the subliminal mind become more accessible; this can come about by deliberate shamanic or mystical practice or by chance, blows to the head, or near-death experiences. In the normal struggle to adapt to the physical world, consciousness is confined and colored by contingent, body-mediated experience; we therefore mostly live our lives oblivious to any hint of our deep interior selves.

Technically, James's move in this work is to posit substance dualism, a step beyond property dualism. According to the latter, mind is an irreducible property of living brains but is causally inert and supervenes on brain activity. Hence property dualism is not strong enough to carry the burden of survival or of any paranormal or mystical phenomena. It is a feckless philosophical position deeply at odds with human experience. According to the transmission model, however, mind is not a property of the brain but a user of the brain, indeed a person who enjoys autonomous self-existence. Few academically trained people are prepared to entertain substance dualism nowadays;[2] but few of them pay much attention to experiences characterized as supernormal, mystical, and the like, experiences that challenge mainline views of mind and body.

Summarizing the main points of James's theory:

1. The brain *transmits*—it does not *produce*—consciousness.
2. Consciousness preexists the brain; it does not emerge from the brain.
3. There is a *transpersonal* mind, i.e., a mind at large, a cosmic consciousness, James's "mother-sea" of consciousness. The first and second view strongly suggest the third: the notion of a *trans*personal mind, the existence of which is an intuition had or entertained by many (if not most) cultures in one form or another throughout history. As we'll see, it often appears in the guise of different religious metaphors—God, Brahman, Nirvana, etc.

4. James, drawing on Fechner, stresses as crucial the ever-fluctuating threshold that separates subliminal from supraliminal mental life. The notion of a threshold serves as an explanatory principle and as a broad framework for pursuing various experimental procedures, often discovered and described by native peoples, yogis, shamans, saints, and mystics of the great traditions. James says that his idea helps to explain experiences like telepathy or clairvoyance, for in the "mother-sea" of consciousness the boundaries between our minds are more permeable.

James's model has applications. In light of it, we can understand why yogis, mystics, and shamans sometimes harshly discipline their minds and bodies, striving to subdue distractions that screen or "filter" the influx of potentially higher perceptions. To gain receptivity to the transpersonal realities of consciousness, blocked by normal brain activity, is often likened to a "death" in shamanism and mysticism. In the *Phaedo* (81a), Plato said that a *meletē thanatou* ("practice of death") was the way to enlightenment; in short, methods of freeing the soul from bodily influence. Also implicit in the general model is the suggestion that at death we may be overwhelmed by consciousness, as described in *The Tibetan Book of the Dead,* which offers instruction on how to prepare for the experience. The model takes on added value in light of the near-death experience, especially during cardiac arrest when brain function is suspended, and consciousness reportedly expands dramatically (Van Lommel, 2010, p. 20).

James (1898/1961) quotes from Emerson's essay "Self-Reliance," linking his model with Transcendentalism:[3] "We lie in the lap of immense intelligence, which makes us receivers of its truth and organs of its activity" (p. 295). Our full cognitive and motor capacities reside in something deeper than our apparent selves. James holds back from identifying the "immense intelligence" with the "Absolute Mind of transcendental Idealism," which he regarded as too rigid a construction. "All that the transmission theory absolutely requires," he states, "is that they [the higher truths] should transcend *our* minds,—which thus come from *something* mental that pre-exists, and is larger than themselves" (p. 295).

There are two other essays by Emerson (1883) full of statements that bear witness to the intuition of the greater mind, "The Over-Soul" and "Circles." From "The Over-Soul": "Man is a stream whose source is

> capacity—always latent, perhaps, and now gradually emergent in the human race. (Vol. 2, p. 251)

Myers had a vision of a new normality, which he defined in terms of a more perfect integration of subliminal and supraliminal mental life. This marriage of the two spheres of our mental life was his conception of genius, a conception perhaps anticipated by William Blake when he wrote more paradoxically of the "Marriage of Heaven and Hell." As with many of the writers touched on here who have so much to say about our theme, we have to move on.

HENRI BERGSON

Around the same time as James and Myers, the younger Henri Bergson (1859–1941) was giving shape to his own version of the theory. For Bergson the key to understanding the spiritual dimension of human experience was memory, a phenomenon he regarded as irreducible to any brain substrate. In 1913, he gave the Presidential Address to the English Society for Psychical Research; in discussing the possibility of surviving death, he produced his version of the transmission theory. Study of aphasia led him to infer the resilience and irreducibility of mind. Aphasia, he observed, is an effect of cerebral lesion, but the lesion does not destroy the memory of the word. What is lost is the capacity to evoke the memories; the memories themselves remain intact.

Consider the common experience of feeling something on the "tip of your tongue"; you know but can't recall it to full awareness. There is a barrier preventing the recall—the specter of Fechner's threshold. You try but fail to recall the name of the author of a book you read so you quit trying and think about something else. Then, in a flash, the memory comes back. This is a common experience. The effort of trying to remember gets in the way of recall; once you cease making an effort, the memory pops into consciousness. The brain doesn't create the memory; it creates "the frame," Bergson says, that allows the memory to slip into awareness. Nothing is added; something is removed.

In a recently reported phenomenon, sufferers from Alzheimer's, stroke, or other brain lesion are reported to regain their lost memories just before death. In such cases of *terminal lucidity*, nearing death apparently

restores access to memories (Grosso, 2004, pp. 41–43; Nahm & Greyson, 2009, pp. 942–944). This seems to confirm Bergson's argument that memories are not destroyed by brain lesions, but rendered inaccessible. Terminal lucidity deserves careful study; as it appears, in dying, consciousness begins to disengage from the damaged brain and regains memories that had become inaccessible. We might expect terminal lucidity to occur, if the transmission model were correct; the phenomena are unintelligible on the production theory.

Like James, Bergson rejected emergentism, the doctrine that consciousness is a brain creation; his views, expressed in *Matter and Memory* (1896), complement the basics of James's transmission theory. "The truth is that my nervous system, interposed between the objects which affect my body and those which I can influence, is a mere conductor, transmitting, sending back, or inhibiting movement" (Bergson, 1908/1911, p. 40).

Far from identifying consciousness with the brain or any brain derivative, he says, "Speaking generally, the psychical state seems to us to be, in most cases, immensely wider than the cerebral state. I mean that the brain state indicates only a very small part of the mental state, that part which is capable of translating itself into movements" (p. xiii). Brains "store" patterns of motor behavior, but memory images, cognitions, and the sense of self are not brain-localized. If so, there is no reason to suppose that brain death automatically implies memory-and-consciousness death.

Bergson's formulation is dynamic. In the struggle for existence, our attention is riveted to the "plane of life." But sometimes the "whole personality, which, normally narrowed down by action, expands with the unscrewing of the vice in which it has allowed itself to be squeezed" (p. xiv). This corresponds to what James calls the "obstruction" that we erect against lowering our psychic defenses, lest we be swamped by waves from the "mother-sea." Once we take note of this obstruction—the natural tendency to "screw ourselves down"—we can see why it is natural to recoil from the possibly disorienting excesses of consciousness.

Like James, Bergson strikes a therapeutic chord when he encourages readers to be aware of how mental activity continually seems to "overflow" the boundaries of our brains and bodies: feelings, memory images, intendings, reasonings, judgments of various sorts, none of which seem strictly localized in the brain. More dramatic yet are supernormal mental functions like ESP and PK that overflow the neural substrate by defini-

tion. The more we reflect on the fact that our mental life overflows our bodily life, Bergson wrote, the easier and more natural to entertain the idea of life after death.

According to this French thinker, all our memories are intact, despite the apparent blanket of oblivion that covers us most of the time; hard-wired to focus on the steady onrush of our local future, it is difficult to project consciousness backward in time. But freed from fixation on the plane of life, whatever the proximate cause, we may see and feel everything quite differently.[4]

Anticipating Bergson's idea of "duration," Boethius was in prison in Pavia in 524 CE when he wrote *The Consolation of Philosophy* (see Boethius, 1962, p. 15). He describes an experience he calls the *nunc stans* or eternal now, the *totum simul* or simultaneity of everything. For the Roman thinker this rare experience was "the whole, perfect, and simultaneous possession of endless life" (V.6). Boethius tells of a visitation on death row of the goddess of philosophy who instructs him to dwell on the idea of eternity. Bergson's theory of brain-liberated mind renders such strange talk somewhat more intelligible. According to Boethius, one's mind may be "in full possession of itself, always present to itself, and [able to] hold the infinity of moving time present before itself" (V.6). If there is a greater consciousness and we can under certain conditions experience it more fully, our ordinary sense of time is bound to be drastically altered.

F. C. S. SCHILLER

The English philosopher F. C. S. Schiller (1864–1937) was an early formulator of the transmission theory. James recalled Schiller (1891/1910), who argued that "our ordinary selves are neither our whole selves nor our true selves" (p. 278). Describing how he did philosophy, he wrote, "The fatal flaw in almost all these metaphysics of the past was their abstractness, their inability to come down to concrete fact" (p. 157).

Philosophers who discuss the mind–body problem often focus on itches, pains, and afterimages as examples of mental life. Far less attention is given to features of mental life that express the depths and originality of human personality, such as reason, morality, dreams, imagination, creative inspiration, mystical and paranormal events, and so forth.

Doing philosophy of mind without recourse to the latter would be like claiming to study English literature but systematically excluding Shakespeare, Blake, and Yeats. Schiller is true to his word and deals with the concrete facts of psychical research.

In *Riddles of the Sphinx* (1891), he describes his own progressive theory of evolution that includes the possibility of immortality and the evolutionary perfection of humanity. Human and divine reality gradually merge, according to Schiller, who forms his theory from various empirical observations and phenomenologies. In particular, he contends, Darwin failed to account for the rise of consciousness in nature. More recently, Thomas Nagel (2012) made the same point, seriously upsetting some devoted physicalists.

Schiller's concept of evolution has several points in common with the writers so far discussed: (1) unlike materialists, transmissionists are prepared to extend and expand the concept of mind, if the empirical data demand it; (2) the extended concept is based on a large database of psychophysical phenomena; (3) the extended concept represents latent though largely ignored potentials of normal human beings. The distinction crucial to our discussion "may be marked by calling the self as it appears, the *phenomenal self*, and the self as the ultimate reality, the *Transcendental Ego*. By the latter name it is intended to suggest its extension beyond the limits of our ordinary consciousness . . . and yet to emphasize its fundamental kinship with our normal self" (Schiller, 1891/1910, pp. 274–275).

In Schiller's discussion, the brain is a labor-saving device; suppose we had to learn to use knife and fork or to drive our car every time, without having stored the necessary motor routines. In one sense, the brain is the enemy of consciousness; for its main job is to negotiate the business of mundane survival, which too often becomes all-consuming and mind-narrowing. Signs of the wider reality—Schiller's Transcendental Ego—show up in extraordinary experience. "These curious phenomena forcibly bring home to us what a partial and imperfect thing our ordinary consciousness is, how much goes on within us of which we know nothing, how far the phenomenal falls short of being co-extensive with our whole nature" (p. 277).

According to Schiller, the brain enables us to use our bodies efficiently and automatically; but in fact much greater control over the body is possible: "it may perhaps be suspected that our direct control of our

bodily organism, though an obscured, is not an extinct power, that under favorable circumstances we possess what appears to be a supernatural and is certainly a supernormal power over our bodies, and this is the true source of the perennial accounts of miracles of healing and extraordinary faculties" (pp. 286–287). The model helps us understand the "favorable circumstances" conducive to heightened psychophysical causality; as noted, they seem to be whatever lowers Fechner's psychophysical threshold.

When we look at the relationship between our apparent self and our "Transcendental Ego," Schiller writes, "we shall perceive that matter is an admirably calculated machinery for regulating, limiting, and restraining the consciousness which it encases" (p. 287). Further on he says:

> Herein lies the final answer to Materialism: it consists in showing in detail what was asserted at the outset, viz., that Materialism is a hysteron proteron, a putting of the cart before the horse, which may be rectified by just *inverting* the connexion between Matter and consciousness. Matter is not that which *produces* consciousness, but that which *limits* it and confines its intensity within certain limits: material organization does not construct consciousness out of arrangements of atoms, but contracts its manifestation within the sphere which it permits. (p. 289)

Schiller's ideas are often striking and deserve more attention; he was one of the earliest modern formulators of the transmission model.

James, Myers, Bergson, and Schiller were roughly contemporary; they read and influenced each other, each phrasing the core ideas slightly differently. They formed this theoretical redoubt in reaction to Darwinism and the growth of nineteenth-century materialism; and their resistance to materialism was motivated by experience: encounters with the superordinary, or with reports, narratives, and biographies detailing the superordinary. Allied to these four we may now turn to a selection of some more recent writers who formulated the model in related terms from their own perspective.

> what needs to be accounted for is not only *that* hallucinations then occur, but also *what* specifically their content—which in fact varies greatly—happens to be. That is, do these drugs cause *what* they cause one to see in a sense comparable to that in which a painter's action causes *the picture* he paints and sees; or, on the contrary, do they cause one only *to see* what one then sees, in a manner analogous to that in which the raising of the blind of a window on a train causes a passenger in the train to see the landscape which happens to be outside at the time? (p. 80)

Clearly, it is the latter for Ducasse: the brain is like a window blind on a moving train, opening and shutting, enabling glimpses of what is out there. The brain doesn't create the passing scenery; it makes it possible to see what is there.

In Chapter XI, Ducasse lays out his counter-reductionistic theory, titled "Hypophenomenalism: The Life of the Organism as Product of Mind." The term and the concept, *hypophenomenalism*, are meant to upend epiphenomenalism, the doctrine that mental and psychic things are ontologically derivative, causally nugatory, and so on. Then, as now, hypophenomenalism would rank as pure heresy for it holds that biological and physical reality are the epiphenomena, the outward manifestations of more primary, more causally potent mental factors at work in nature.

Ducasse cites two canonical philosophers he thought were hypophenomenalists, Plotinus and Schopenhauer. Like James and other transmissionists, they posit a fundamental, nonemergent mind (or "will"), conceived as the creative agency of the manifest physical world. For Plotinus, the body is an emanation of mind; for Schopenhauer, objectified will. Ducasse's argument is based on the purposive, goal-oriented nature of life. From that angle, the body would be a tool of the mind, and the brain would be the epiphenomenon, a necessary by-product of the mind's evolutionary nisus. Ducasse (1961) was deeply acquainted with psychical research, and claims to have witnessed extraordinary materialization phenomena (pp. 164–170). Anyone, I would guess, who had actually witnessed (and believed in) something as striking as the materialization of a physical entity, living or dead, might well be tempted to place mind at the center of his scheme of nature. Passing over the various arguments Ducasse uses to make his case, enough to say that he arrived at a philosophy of mind resembling transmission theory, with a large emphasis on the creativity and the teleology of mental life.

SOME GERMAN TRANSMISSIONISTS

I want now to turn back in time and consider several German writers who anticipated the transmission model. In James's Ingersoll Lecture, for example, we find a related reference to Kant's *Critique of Pure Reason*. Kant's motive is not to prove that the soul survives death but to show how we may conceive it *as possible*. This, as James did, offers therapy for those suffering spiritual malaise caused by the rising tide of materialism. According to Kant, we cannot *know* the truth about God, freedom, and immortality; but we can believe and act *as if* our beliefs were grounded in such truth. Kant is at pains to prove that the belief in immortality is neither impossible nor self-contradictory.

We may admit that our mental powers are affected by the "diverse modifications of our organs," but this would not imply that the body is "the cause of thought, but merely a restrictive condition of it" (Kant, 1781/1956, p. 618). The body would merely be a "hindrance to the pure and spiritual life" (pp. 618–19). This may be argued as a theoretical possibility, Kant believed, but not as in any way empirically verifiable. It is a "concept *devised* merely for the purposes of self-defence" against dogmatic materialism (p. 619).

The move is similar to the one James made in his Ingersoll Lecture. There is, however, a difference. *Immortality* for Kant was merely thinkable (*noumenal*); he thought it cannot be proved by any conceivable experience, and he was probably right about that. James used the word *immortality* too but meant something more modest like *survival*. The empirical researchers were not as sweeping as Kant; they collected factual evidence supporting the modest claim that some people survive death for some time. Not exactly the Good News, but neither entirely bad news. Kant was like most philosophers, who rarely bother to ask if there is anything factual to all the lore about ghosts, mediumship, reincarnation memories, and the like.

Now consider a philosopher who admired Kant greatly, but who did bother to study the real data and in fact wrote an early classic on psychical research (see the epigraph for this chapter). Arthur Schopenhauer (1788–1860) published a treatise with the ungainly title "Essay on Spirit Seeing and Everything Connected Therewith" (1851/1974, pp. 227–309). The empirical data that he relied on to make his case against materialism came from the records of mesmerism and spiritualism, and from classical

literature. Lacking the terminology and history of modern research, he invented his own terminology.

Schopenhauer forged a model of mind and body in tune with the intuition we're tracking; I will discuss his "transmission" affinities, but must pass over a wealth of his ideas worthy of study. The raw materials he focused on were dreams, visions, apparitions, ghostly phantoms, and hallucinations. "For the notion of a spirit or spectre really consists in its presence becoming known to us in a way quite different from that in which we know the presence of a body" (p. 227).

Schopenhauer discussed the facts that struck him as important; that such *were* facts he treated as given. "Whoever at the present time doubts the facts of animal magnetism and its clairvoyance should be called not a sceptic but an ignoramus" (1851/1974, p. 229). He was impressed by the creativity of the dream, which nightly produces alternate phenomenologies, simulations of physical worlds, new forms of time and space. "[W]hile dreaming everyone is a Shakespeare," he wrote (p. 231). Every dreamer creates dramas, whole casts of personae on makeshift mental stages. Like the external world, the dream forces itself on our consciousness, appearing as something totally unexpected, as we can verify by observing our own hypnagogic imagery.

Schopenhauer posits a "dream organ," his name for the faculty of intuition. During dreamlike altered states, consciousness extends beyond its normal sensory-rational range:

> It is incontestable that, when the state of somnambulism is complete, the external senses have entirely suspended their functions; for even the most subjective of these, namely bodily feeling, has so completely disappeared that the most painful surgical operations have been performed during magnetic sleep without the patient's having betrayed any sensation of them. Here the brain appears to be in a state of the deepest sleep and thus of complete inactivity. (p. 242)

Normal brain activity contracts consciousness; the inactive somnambulist brain may facilitate episodes of clairvoyance, visionary, or mystical experience. Schopenhauer held that "the objective world is a mere phenomenon of the brain. For the order and conformity to law thereof which are based on space, time, and causality . . . are to some extent set aside in somnambulist clairvoyance" (p. 263).

Schopenhauer would grant the human mind a certain godlike potential, thanks to "that mysterious faculty of knowledge which is concealed within us and is not restricted by relations of space and time" (p. 279). This faculty, which he supposes is virtually "omniscient," is normally veiled by ordinary consciousness. It can, however, cast "off its veil in magnetic clairvoyance." *Veil* here refers to the brain understood as "filter," "gate," or "reducing valve." The brains of the multitude are devoted to the needs of their bellies and their genitals, Schopenhauer believed; the artist or somnambulist breaks free and opens his mental shutters to new sights, forms, and modes of consciousness.

The writings of Kant and Schopenhauer bore fruit in another German philosopher, who likewise drew on the phenomena of somnambulism, dreams, and memory, in the resistance to autocratic materialism. Carl du Prel (1839–1899) developed a theory of human personality that rivaled Myers's in scope, and which is also permeated by transmission ideas.[5] Du Prel (1889) wrote:

> Because the mind acts through its organ, Materialism says that it is developed from the organ. Mental activity is normal with the healthy brain, and morbid in brain diseases; from which Materialism infers the identity of mind and brain activity. But if the violin player plays well or ill according to the character of his instrument, the identity of artist and instrument is not thence to be inferred. Psychology has therefore never found a better expression for the relation between mind and cerebral-system, senses and brain, than that of Plato [*Theaetetus* 185]: "We know *through* the senses *with* the soul." (Vol. 1, p. 170)

Like James, du Prel deployed Fechner's psychophysical threshold to explain and systematize a range of phenomena, and to suggest various experimental procedures conducive to psi occurrences. For example, the traditional methods, techniques, and disciplines of yoga, mysticism, shamanism, etc., are ways of interfering with the brain's normal functions, thus attempting to force open the barriers that normally clog the flow of consciousness and block access to the subliminal mind.

Du Prel distinguished ordinary consciousness from the greater entity he called the Transcendental Ego, a term and notion Schiller adopted. Du Prel also believed in irreducible, nonemergent mind, and thought it was possible to experiment with the "veil" that screens the everyday from the transcendental. As with all the rest, experimentation was based on Fech-

ner's mobile threshold of sensibility. Apply the requisite stimulus, said William James, and new worlds of consciousness spring forth. Not unlike Myers, du Prel believed it should be possible to accelerate mental evolution by experimenting with one's psychophysical threshold.

According to du Prel, "two persons" inhabit the whole or complete self; the everyday conscious personality and the relatively unknown transcendental self whose ways are obscure. Each of us then is rooted in a much larger mental reality than what is known to our waking, rational perspective. Du Prel and Schopenhauer were struck by the unpredictability and incommensurability of dream life in relationship to waking life. The images that come while falling asleep are typically discontinuous with our last waking thoughts, although hidden connections may later emerge. For du Prel the unexpected uprushes of hypnagogia were portents of the Transcendental Ego.

Two other features of dream life struck him as important. The first is the amazing creativity of dreams, a fact we take for granted because it is so common. It is hard to elucidate how the material brain nightly creates scenes, worlds, dramas, which to the dreamer can be totally absorbing and convincing in their phenomenal reality. Not only are dreams partial replicas of the sensory world, they are sometimes more vivid, more awe-inspiring and beautiful, more packed with meaning—and sometimes more prescient—than our waking states. The creativity of dreams is cause for philosophical wonder. I wonder about that old conceit that each of our minds is, or has, a spark of divinity—if by divinity we mean something like super-creativity. Dreams are a serious challenge to reductive views of mind.

The other big point about dreams: they demonstrate the power of "self-sundering," a tendency to create secondary personalities, to im-personate and trans-personate; to personify "controls"; and to generate spirit guides, daimons, fairies, guardian angels, and probably diabolic adversaries. Myers embraced the "multiplex" human personality as a potential benefit, as well, of course, as a force not to trifle with. In dreams we encounter beings, lower or perhaps higher aspects of our transcendental personality. Some rare souls extend their "dream organ" into lofty transcendental domains; for example, Socrates and Joan of Arc (Myers, 1889). Du Prel moves on to visionary experience, somnambulism, inspired states, from detail to detail, arguing for a much expanded conception of human personality.

disembodied reality. If we survive death, it will be a change of consciousness, not a change of physical location. Direct encounters with the "next" world seems to be what mystics and near-death experiencers have had.

This emphasis on direct experience provides a model for research. There is also research based on evidence that permits us to infer, with some measure of probability, that there is an afterlife. The direct encounters are more powerful and transformative. But also the slow, cumulative, inference-based approach may lead to momentous conclusions. The two kinds of evidence are compatible and complementary. I believe there is enough knowledge by inference to encourage the more dramatic, transformative model of research.

Porphyry (ca. 232–305 CE) studied with Plotinus and edited and published his teacher's writings; he was also an author in his own right. One work we have of his, *On Abstinence from Animal Food*, clearly suggests an account of the mind–brain relationship consistent with our model. The idea of a diet or way of life that purifies consciousness by fasting fits the model. One breaks the fetters of what Bergson called the "plane of life" and thus may experience "the One." Porphyry rings many changes on this theme in the four books of his treatise on abstinence; it not only clarifies the model but shows how it may be applied. Porphyry (1823) writes:

> it is necessary, if we intend to return to things which are truly our own, that we should divest ourselves of every thing of a mortal nature which we have assumed, together with an adhering affection towards it, . . . and that we should excite our recollection of that blessed and eternal essence, . . . which is without colour and without quality. . . . (p. 22)

The goal is to divest ourselves of all the "adhering" contents of our minds so we can "return" to our "eternal essence," our pure preexisting consciousness. A telltale sign of the transmission model is the emphasis on *subtraction* as the key to spiritual method. One seeks to divest, not to invest; to subtract and simplify, not to add or complicate.

In passing, and still on the theme of fasting (an idea inherently hateful to a consumer society), we should note that the Greek Eleusinian mystery rites were a two-thousand-year-old repeatable experiment that, with the help of a nine-day fast plus a psychoactive *kukeōn* (brew), induced experiences in celebrants that convinced them of the reality of another world and of their own immortality (Wasson, Hofmann, & Ruck, 1978). It is possible to imagine experimental procedures that in ways yet to be de-

vised will be the psychospiritual equivalent of the Eleusinian mysteries. We have the entheogenic technology; what's missing is a living mythology and viable protocols.

According to the Hellenistic philosopher, Philo Judaeus (ca. 20 BCE–ca. 50 CE), God is the mind of the universe just as each of us is the god of our bodies. A wonderful piece of analogical thinking! Philo interpreted the Biblical statement that man is made in the image and likeness of God as a figurative way of talking about our personal minds being parts of a greater mind, an entity we could intelligibly call subliminal or superconscious, transpersonal or transcendent. There is a striking passage marking the process of return to the divine mind by means of introspection: "for the mind which exists in each individual has been created after the likeness of that one mind which is in the universe as its primitive model" (Clark, 1940, p. 171). The individual mind, like the divine mind, is "invisible, though it sees everything itself; and it has an essence which is undiscernible, though it can discern the essences of all other things, and making for itself by art and science all sorts of roads . . . investigating everything" (p. 171). The individual mind by degrees expands in its quest to explore the universe until it

> yields to enthusiasm, becoming filled with another desire, and a more excellent longing, by which it is conducted onwards to the very summit . . . till it appears to be reaching the great King himself. And while it is eagerly longing to behold him pure and unmingled, rays of divine light are poured forth upon it like a torrent, so as to bewilder the eyes of its intelligence by their splendor. (p. 171)

Or, for the "transmissive" coloring of Hellenistic philosophy, consider some remarks from Sallustius' *Concerning the Gods and the Universe*, written during the last quarter of the fourth century CE. Our interest is with Section 8, "Concerning mind and soul," where we read that the rational soul "despises human affairs as not affecting itself" (Sallustius, 1926, p. 17). This is not narcissism, just practical metaphysics. Thus we learn that "every good soul has employed mind, and mind is created by no body; how indeed could things lacking in mind create mind?" (p. 17).

Yes, how indeed! This remains an unanswerable question, posed by William James and company and more recently by philosophers such as Jerry Fodor, Thomas Nagel, Colin McGinn, and many others. Sallustius (1926) grasped transmission theory: "The soul uses the body as an instru-

ment, but is not within it, just as the engineer is not within the engine" (p. 17). Nowadays, instead of an engine, we make the analogy with a TV set or a radio; the image is coming through the TV set, and the voice is not in the radio. Neoplatonists, like other transmissionists, claim extraordinary experience they prefer not to dismiss on ideological grounds.

Neoplatonic transmissionism, a climax of many trends of classical Greek philosophy, strongly influenced Western thought. Neoplatonic motifs shaped the ideas of St. Augustine, Dionysius the Areopagite, Meister Eckhart, St. Bonaventure, and—as I can attest—the thought of St. Joseph of Copertino, a seventeenth-century mystic noted for his abundant charisms (Grosso, in press). With appropriate variations in metaphor, symbol, and existential crisis, the intuition of body as instrumental to spirit is an archetypal idea.

For example, in a short work by Bonaventure (1221–1274), *Retracing the Arts to Theology*, the central image is "light," a term by which he clearly means *consciousness*. The opening sentence is from the epistle of St. James: "Every good gift and every perfect gift is from above, coming down from the Father of Lights." All the riches of consciousness are "gifts from above" that must "come down" or, in Myers's metaphor, "uprush." In Bonaventure's Neoplatonic project, the universe is a process of different modes of being, all pursuing the root of their true being, all converging toward the ineffable One. In this work that retraces not only the arts but all human faculties to a single unifying source, Bonaventure offers a phenomenology of consciousness: the different functions of the soul—sensory, imaginative, intellectual (*intuitive*, we say)—all embody a form of "light," a mode of consciousness that converges toward the One, the "simultaneous endless life" that consoled Boethius on death row.

ON THE THRESHOLD OF THE MODERN WORLD: RENAISSANCE NEOPLATONISM

The Neoplatonic spirit was reborn during the Renaissance when Marsilio Ficino translated Plato, Plotinus, Hermes Trismegistus, Porphyry, and other Neoplatonic writings into Latin, and a humanistic Christian Neoplatonism became a powerful creative influence, the intellectual inspiration of new art, music, and ways of thought (Panofsky, 1972, p. 9). Ficino, Pico della Mirandola, and others created a scholarly dialogue between

Neoplatonic philosophy, Kabbala, and Arabian, Egyptian, and Christian thought and imagination. The great assumption: the Supreme Reality dispensed its insights universally; philosophy was to blaze a dialectical trail to the unifying, harmonizing core of all the traditions.

The Renaissance humanists forged a conception of human personality as free, mobile, multiple (Pico) and transcendent (Ficino), concerned with defending the rights of *human* potential against the dogmas of the Church. Overall, Renaissance thinkers sought, in the words of Charles Trinkaus (1970), "ways in which a new and more positive evaluation of human experience and human capacity . . . was assimilated into the religious preconceptions and practices of the age" (Vol. 2, p. 461). Trinkaus's study of Renaissance thought is entitled *In Our Image and Likeness*. The title is a phrase from a passage in the Book of Genesis (1:26) stating that man is made in the image and likeness of God—*Et Deus dixit:* "*Faciamus Hominem ad imaginem et similitudinem nostram.*"

The title is clue to the book's main theme: Renaissance thinkers and artists used this Biblical passage to justify the liberation of human potential. Instead of directing spiritual energies toward mystical introversion, the Genesis statement was construed as license for launching a renaissance of the arts, science, biography, history, and letters. The extraordinary statement of the Hebrew Bible was taken as an invitation to perfect our divine potentials *here on earth*.

As part of this raising up of humanity, Giovanni Pico della Mirandola (1463–1494), an exponent of what Leibniz called *philosophia perennis*, sought to harmonize Christian, Pagan, Jewish, and Arabic traditions. The *Oration on the Dignity of Man*, published in 1486, portrays the human being as a "creature of indeterminate image," one who is the "free and proud shaper of his own being" (Pico della Mirandola, 1956). In Pico's image of multipotential man, whatever seeds of possibility we cultivate we become; we can "descend to the lower, brutish forms of life" or "rise again to the superior orders whose life is divine" (p. 8).

Invoking the *Phaedrus*, he exhorts his scholarly audience: "Let us be driven, Oh Fathers, by those Socratic frenzies which lift us to such ecstasy that our intellects and our very selves are united to God" (p. 26). This is a most unusual way to address a convention of scholars. Rephrasing the point more like Plotinus, he speaks of love that takes us "outside ourselves, filled with godhead, we shall be, no longer ourselves, but the very One who made us" (p. 27). Pico's Plotinian philosophy of mind is based

on the assumption that an altered state of consciousness—frenzy, ecstasy, possession—is a negotiable path to experience the transcendent One.

Marsilio Ficino (1433–1499), James Hillman (1975) believed, was a pioneer of archetypal psychology. Ficino's conception of the soul was in the Neoplatonic "transmission" mode. In his philosophy of human immortality (see Trinkaus, 1970, Vol. 2, pp. 461–504), the first step is to recognize that the soul cannot know itself when attention is identified with anything sensory and mundane. We must go, Ficino declares, "Where no spatial limits are imposed. . . . Therefore seek yourself outside the material world. But in order to seek and find yourself beyond the world, fly beyond, indeed look beyond; for you are outside the world when you regard the entire world" (Trinkaus, 1970, Vol. 2, p. 470).

If immersed in the sensory, we identify ourselves with material things; if in spiritual ideas, we feel our spirituality. Philosophers, Ficino wrote, should become so immersed in corporeal experience that they end by fully identifying themselves with their corporeal existence. However, it is open to them to "learn that the unique way not only of attaining but of possessing the incorporeal is to render themselves incorporeal, that is to withdraw the mind from movement, sense, affect, and corporeal imagination as far as they are able" (pp. 472–473).

Ficino as physician needed to demonstrate the soul's immortality (once again) for therapeutic reasons. His method was pluralistic, using rational demonstration, analogy, metaphor, intuition, and mystical practice. His theory of immortality shades into a theory of mystical experience, for the mystic seeks to demonstrate the reality of the immortal One, not by argument but by experience.

Nevertheless, his approach to experiment was not exclusively otherworldly. In the *Theologia Platonica*, he argues for immortality by describing "the greatness of human nature as manifested in its this-worldly capacities and achievements" (p. 476). "Psychic dominance" of the lower mental and physical functions is a step in his argument for immortality; the soul is no mere epiphenomenon; it can dominate the body, and it creates its own world and culture; this proves it is godlike and therefore immortal. The exploration of the "afterlife" should begin with a renaissance of *this* life. Ficino said: "In these industrial arts it may be observed how man everywhere utilizes all the materials of the universe as though all were subject to man" (p. 483). Power over nature was part of a many-sided argument that the human soul, not reducible to anything material,

ness, it leaves room for tinkering with the various filters and transmitters; we might be able to learn how to "open the valve" or "raise the shutter" onto novel landscapes of experience. The theory provides a naturalistic framework for modeling our mental evolution and for making sense of the extraordinary experiences regularly reported in the context of religious, spiritual, and magical experience.

The stunning achievements of modern technology have created in many the illusion that materialism must be true. On the other hand, the alternate conception has deep roots in the history of thought. And the core intuition endures, I believe, because it is experience-driven. Whatever the reigning metaphysical dogmas of the day, a significant minority always seem to come out with reports of some form of transcendent experience. These individuals will continue to find themselves at odds with the established view on fundamental issues. The transmission model has a perennial attraction precisely because people keep having the kinds of experiences that demand a model of its open type. Physicalism will continue to fail to account for the full spectrum of human experience; for this reason it is grossly inadequate, and should once and for all be tossed on the ash heap of history.

The transmission model has explanatory value. This is clear from our review of the various exponents of the idea. In almost every instance, the expansion of the concept of mind was driven by the need to account for some anomalous experience. James had afterlife phenomena worthy of consideration that forced him to posit his enlarged conception of mind. Bergson kept noticing how mental life spills over the boundaries of the body (e.g., in telepathy), from which he, like James, inferred the existence of a wider mental environment. Myers likewise was immersed in whole spectra of extended mental performance, which drove him to enlarge his theoretical apparatus, and led him to posit concepts like the "subliminal self" and the "World-Soul."

Contrary to most reductive, i.e., destructive, approaches to supernormal phenomena, the transmission view helps us understand how individual experience can arise from a subliminal mental matrix, thus permitting a spectrum of extraordinary phenomena. With a nonemergent, subliminal mental dimension as a starting point, we can begin to make sense of certain extraordinary experiences recurrently reported in history.

The explanatory wedge also provides an experimental wedge. There are various ways the model can be tried, tested, and used experimentally.

One is the traditional way, using established spiritual practices like prayer, fasting, meditation, and so on, all widely employed to induce experiences associated with spiritual enlightenment and creative inspiration. Many of the techniques are designed to reduce resistance to the subliminal influx; they lower Fechner's threshold, allowing what is present to present itself with minimal impediment. Many ascetic practices and extreme beliefs refer at the bottom to procedures designed to remove the inner and outer obstructions to transcendent experience.

A second way of experimentation, unlike the traditional, is more varied, ad hoc, improvisational. The outcomes here are typically unpredictable and perhaps difficult even to identify as what they are. At all times, and probably to an intensified degree today, there are large classes of spiritual loners and outliers; a motley world, a cultural underground, so to speak, of unclassifiable seekers. There are people, in short, whom fate has forced to feel the need to break through their ordinary lives to new modes of existence; however, their idiosyncratic stories may more readily be found in literature than in science. An iconic example of anarchic psychospiritual experimentation is brilliantly evident in the case of the poet Arthur Rimbaud (1954, pp. 269–273).

The third type of experimentation is the conventionally scientific, using controls, suitable technology, and statistics. There are different ways of translating the model into something that works according to the rules of quantitative science. Take one example: Charles Honorton (1977) reported that evidence linking psi performance with altered states of consciousness supported Bergson's filter theory. Honorton meta-analyzed eighty experimental studies that establish the connection. Results proved that during internal attention states like hypnosis or meditation subjects *detect* psi impressions more readily.

Experiments are built around reducing sensori-somatic noise, with the key idea of *deafferentation*: cutting off sensory input by using techniques of meditation, hypnosis, sensory deprivation, progressive muscular relaxation, induced hypnagogia, and Ganzfeld (uniform sensory input). Experimental strategies are designed to lower the psychosomatic noise level. With consciousness detached from external reality, one becomes more aware of internal states such as images, feelings, and intuitions. The rule: lower the internal barriers, and remove the obstructions to subliminal agency.

Kelly and Locke's monograph (1981/2009) on psi and altered states looks at this more broadly in light of historical and anthropological evidence, underscoring the need for new, richer participatory epistemologies. Here we find a wealth of untrod paths for exploration, especially where experimenters learn to partake of the reality they're investigating. Such an emphasis on direct experience would constitute a paradigm shift in the methodology of the human sciences.

In general, whether by methods of shamans, vision questors, Indian yogis, Sufis, Christian, Kabbalistic, or Eleusinian mystics, or by stories of the lightning-struck, the brain-injured, the cardiac arrested, or the psychoactively altered, we invariably find there is a disruption of the "filtering" brain mechanisms. Attention is more or less violently diverted from its usual functions, consciousness from its habitual interests and obsessions. The model offers a basis for exploring life-changing experimental approaches to the evolution of consciousness. The next chapter will further explore the psychobiology of this type of experimentation.

Finally, I believe the mind–brain model we have looked at is compatible with panentheism (see Murphy, Chapter 15 below), and I can imagine science and spirituality coming together in a creative coincidence of opposites—probably a tertium quid that is neither like religion nor like science as we normally think of them today. It may come in the guise of new art forms of the spirit, works of para-science fiction, collective adventures of active imagination. Another Axial Age may be in the offing, clarified by science and accelerated by technology: new forms of experience, perhaps of life itself, may arise from our perennial mystical urges.

NOTES

1. Cited in du Prel (1889, Vol. 1, p. 189).
2. "Substance dualism" need not be the final way of describing the relationship between mind and matter; for the moment it will serve to mark the contrast with epiphenomenalism. Later, we will briefly consider *panentheism* as a possible label for this position.
3. See Frothingham (1972).
4. For a fresh and more detailed account of Bergson's thought, see Barnard (2011).
5. Sommer (2009) provides an overview of du Prel's life and thought.

REFERENCES

Barnard, G. W. (2011). *Living Consciousness: The Metaphysical Vision of Henri Bergson*. Albany: State University of New York Press.

Bergson, H. (1913). Presidential address (H. W. Carr, Trans.). *Proceedings of the Society for Psychical Research, 27*, 157–175.

Bergson, H. (1911). *Matter and Memory* (N. M. Paul & W. S. Palmer, Trans.). New York: Macmillan. (Original 5th ed. published 1908)

Boethius (1962). *The Consolation of Philosophy* (R. Green, Trans.). New York: Bobbs-Merrill.

Broad, C. D. (1949). The relevance of psychical research to philosophy. *Philosophy, 24*, 291–309.

Burt, C. (1975). *ESP and Psychology* (A. Gregory, Ed.). London: Weidenfeld and Nicolson.

Clark, G. H. (Ed.). (1940). *Selections from Hellenistic Philosophy*. New York: Appleton-Century-Crofts.

Crabtree, A. (1993). *From Mesmer to Freud: Magnetic Sleep and the Roots of Psychological Healing*. New Haven, CT: Yale University Press.

Ducasse, C. J. (1961). *A Critical Examination of the Belief in a Life After Death*. Springfield, IL: Charles C. Thomas.

Du Prel, C. (1889). *The Philosophy of Mysticism* (C. C. Massey, Trans., Vols. 1–2). London: George Redway. (Original work in German published 1885)

Emerson, R. W. (1883). *Essays: First and Second Series*. Boston: Houghton Mifflin.

Eccles, J. (1965). *The Brain and the Unity of Conscious Experience*. Cambridge: Cambridge University Press.

Frothingham, O. B. (1972). *Transcendentalism in New England: A History*. Philadelphia: University of Pennsylvania Press. (Original work published 1876)

Grosso, M. (2004). *Experiencing the Next World Now*. New York: Simon & Schuster.

Grosso, M. (in press). *The Strange Case of St. Joseph of Copertino: Ecstasy and the Mind–Body Problem*. New York: Oxford University Press.

Hillman, J. (1975). *Re-Visioning Psychology*. New York: Harper & Row.

Honorton, C. (1977). Psi and internal attention states. In B. B. Wolman (Ed.), *Handbook of Parapsychology* (pp. 435–472). New York: Van Nostrand Reinhold.

Huxley, A. (1990). *The Doors of Perception*. In *The Doors of Perception, and, Heaven and Hell* (pp. 7–79). New York: Perennial Library, Harper & Row. (Original work published 1954)

James, W. (1961). Human immortality: Two supposed objections to the doctrine. In G. Murphy & R. O. Ballou (Eds.), *William James on Psychical Research* (pp. 279–308). London: Chatto and Windus. (Original work published 1898)

Jaspers, K. (1953). *The Origin and Goal of History* (M. Bullock, Trans.). London: Routledge & Kegan Paul. (Original work in German published 1949)

Kant, I. (1956). *Critique of Pure Reason* (N. K. Smith, Trans.). London: Macmillan. (Original work published 1781)

Kelly, E. F., & Locke, R. G. (2009). *Altered States of Consciousness and Psi: An Historical Survey and Research Prospectus* (2nd ed.). New York: Parapsychology Foundation. (1st ed. published 1981)

Kirk, G. S., & Raven, J. E. (1957). *The Presocratic Philosophers*. Cambridge: Cambridge University Press.

Myers, F. W. H. (1889). Automatic writing—IV. The daemon of Socrates. *Proceedings of the Society for Psychical Research, 5*, 522–547.

Myers, F. W. H. (1903). *Human Personality and Its Survival of Bodily Death* (Vols. 1–2). London: Longmans, Green. (Available on CTR website, http://www.esalen.org/ctr/scholarly-resources)

Nagel, T. (2012). *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False*. New York: Oxford University Press.

Nahm, M., & Greyson, B. (2009). Terminal lucidity in patients with chronic schizophrenia and dementia: A survey of the literature. *Journal of Nervous and Mental Disease, 197*, 942–944. doi:10.1097/NMD.0b013e3181c22583

Noë, A. (2009). *Out of Our Heads: Why You Are Not Your Brain, and Other Lessons from the Biology of Consciousness*. New York: Hill and Wang.

Panofsky, E. (1972). *Studies in Iconology: Humanistic Themes in the Art of the Renaissance*. New York: Harper & Row. (Original work published 1939)

Pico della Mirandola, G. (1956). *Oration on the Dignity of Man* (A. R. Caponigri, Trans.). Chicago: Henry Regnery.

Porphyry (1823). *Abstinence from Animal Food*. In T. Taylor (Trans.), *Select Works of Porphyry* (pp. 1–170). London: Thomas Rodd.

Rimbaud, A. (1954). *Oeuvres Complètes*. Bibliothèque de la Pléiade. Paris: Gallimard.

Sallustius (1926). *Concerning the Gods and the Universe* (A. D. Nock, Trans.). Cambridge: Cambridge University Press.

Schiller, F. C. S. (1910). *Riddles of the Sphinx: A Study in the Philosophy of Humanism* (3rd ed.). New York: Macmillan. (1st ed. published 1891)

Schopenhauer, A. (1974). *Parerga and Paralipomena: Short Philosophical Essays* (E. F. G. Payne, Trans., Vols. 1–2). Oxford: Clarendon Press. (Original work published 1851)

Sommer, A. (2009). From astronomy to transcendental Darwinism: Carl du Prel (1839–1899). *Journal of Scientific Exploration, 23*, 59–68. Retrieved from http://www.scientific-exploration.org/journal/jse_23_1_sommer.pdf

Trinkaus, C. (1970). *In Our Image and Likeness: Humanity and Divinity in Italian Humanist Thought* (Vols. 1–2). Chicago: University of Chicago Press.

Van Lommel, P. (2010). *Consciousness Beyond Life: The Science of the Near-Death Experience*. New York: HarperCollins.

Wasson, R. G., Hofmann, A., & Ruck, C. A. P. (1978). *The Road to Eleusis: Unveiling the Secret of the Mysteries*. New York: Harcourt Brace Jovanovich.

and Albert Hofmann, inspired chiefly by their experiences with psychedelics. They have also been taken seriously by the eminent modern philosophers C. J. Ducasse, H. H. Price, and C. D. Broad, as well as physicist/engineer G. N. M. Tyrrell and psychologist Cyril Burt. The latter two individuals, significantly, were steeped in both psychical research and physical science, with Burt (1968) in particular pointing out affinities with twentieth-century developments in physics. Our Sursem group is attempting to carry this modern lineage forward while remaining anchored in science.

In identifying all these persons as members of a family, we certainly do not mean to suggest that they held identical views, for in fact they represent a broad spectrum of related but distinctive visions of human nature and our place in the world. What they do all have in common, however, is an insistence—in stark contrast with current physicalist orthodoxy—that there is far more to us human beings than just our biology, our bodies. In the concluding chapter of *Irreducible Mind* (*IM*, pp. 603–643), we tentatively bracketed a range of theoretical positions which maps reasonably well onto this historical diversity, extending from some sort of post-Cartesian interactive dualism at one end to metaphysically more radical neutral or dual-aspect monisms or perhaps even some form of idealism at the other, and we attempted to show in some detail how such views might be reconcilable with modern developments in neuroscience and physics. That material forms useful background for the present theory-oriented book, and we encourage readers who have not already done so to familiarize themselves with it (for convenience, we have placed that entire section of *IM* on the Center for Theory and Research (CTR) website as supplemental material for this chapter).[2]

We will next begin to explore this theoretical territory in greater depth, drawing upon a wide variety of modern and historical sources in hopes of identifying recurring themes and eliciting potentially useful theoretical ideas. In the current chapter we intend to focus mainly at the point closest to current mainstream science, taking the views of F. W. H. Myers and the early William James as representative of post-Cartesian interactive dualism.

Everyone recognizes that mental states and brain states are somehow intimately related: we see this for example in evolution, in human development, in everyday life, and in the consequences of brain injury and disease. All of the traditional philosophical positions on the mind–body

problem arise from different ways of interpreting this undisputed fact of correlation. The current mainstream consensus, of course, is that brain processes *generate* or *constitute* mind and consciousness, but that is not the only way of viewing the matter. Even if the correlation were perfect—which it manifestly is not, as sketched in Chapter 1 and detailed in *IM*—this would not *entail* the production model. It remains conceivable that minds and brains are ontologically distinct, however closely linked they may be functionally.

This logical possibility was explored with particular clarity by William James in his 1897 Ingersoll Lecture on Human Immortality, as already indicated by Mike Grosso in Chapter 3. Especially in his forward to the second edition of *Human Immortality*, James (1899) makes clear that one can think of the mental side as a finite mind or personality or soul in some way functionally coupled to the brain but different from it. This is essentially the same position James (1890) had sketched a few years earlier, in *The Principles of Psychology*:

> If there be such entities [souls] . . . they may possibly be affected by the manifold occurrences that go on in the nervous centres. To the state of the entire brain at a given moment they may respond by inward modifications of their own. These changes of state may be pulses of consciousness, cognitive of objects few or many, simple or complex. . . . I confess, therefore, that to posit a soul influenced in some mysterious way by the brain-states and responding to them by conscious affections of its own, seems to me the line of least logical resistance, so far as we yet have attained. (Vol. 1, p. 181)

The basic picture here is that of a conscious mind which normally operates in close conjunction with its associated brain in a manner strongly dependent on that brain's functional state. This would be illustrated, for example, by ordinary perceptual synthesis conceived in the "inverted" manner suggested in the section on the unity of consciousness in Chapter 1 above. On such a view the mind is in part a sort of virtual-reality system, constantly updating its conscious experience of the surroundings by somehow taking into account the brain's momentary global state in response to current input. Dreaming can be reimagined in parallel fashion, with its characteristic phenomenal properties resulting from the fact that the overall pattern of brain activity during sleep periodically approaches but does not quite attain its functional proficiency in waking

life, and is less constrained by cross-modal consistencies of ongoing sensory input. We believe that all known neuropsychological phenomena can in principle be interpreted in similar inverted fashion—i.e., as disturbances, due to loss of function on the brain side, of the normal construction and shaping of conscious experience by cooperative interactions between a conscious mind and its associated brain. More generally, there seems to us no insuperable conceptual barrier to conceiving of the normal brain/mind connection in dualistic terms (and see *IM*, Chapter 9, or the supplemental material for numerous further details).

Before proceeding further we pause to take note of a relevant development within mainstream neuroscience itself. In his autobiographical book on *Consciousness*, neuroscientist Christof Koch (2012) confesses that after a protracted struggle he has given up on the idea that consciousness is somehow manufactured by brain processes:

> I used to be a proponent of the idea of consciousness emerging out of complex nervous networks. Just read my earlier *Quest*. But over the years, my thinking has changed. Subjectivity is too radically different from anything physical for it to be an emergent phenomenon. . . . The phenomenal hails from a different kingdom than the physical and is subject to different laws. I see no way for the divide between unconscious and conscious creatures to be bridged by more neurons. (p. 119)

Koch goes on to embrace tentatively a panpsychist view deriving from Leibniz, and links that to the widely heralded "integrated information" theory of his colleague and friend Giulio Tononi (2012), who has said that "consciousness is a fundamental part of the universe—just as fundamental as mass, charge, and so forth" (Rothman, 2012), associated with but not produced by material structures and processes.

These are significant defections from the orthodox production model, on the part of leading representatives of the lineages of contemporary neurobiology deriving from Francis Crick and Gerald Edelman respectively. Koch and Tononi have moved a crucial step closer to pictures like those advanced in *IM* and the present book, and their view of ordinary perceptual synthesis in particular now comes within a hair's breadth of the quantum-theoretic account offered by Henry Stapp in the following chapter.

The Myers–James picture itself, however, goes much further. The central concept of Myers's dynamic psychology is that of the Subliminal

Self—briefly, the totality of the psyche, soul, or Individuality, a wider consciousness encompassing both supraliminal and subliminal contents and capacities. The supraliminal or everyday self represents only that small portion of the psyche adapted by biological evolution to addressing the demands of the everyday world, with the brain as its "organ of attention to life" in the terminology of Bergson (1913). One or more "subliminal selves" (lower case) may sometimes also be associated with a given organism, displacing the supraliminal or primary self under special conditions such as cases of multiple personality or dissociative identity disorder. But the Subliminal Self—the underlying, more comprehensive Self—is the centerpiece of Myers's theoretical construct, for it is at this level that he sought to reconcile the then prevailing "colonial" (Ribot) vs. "unitary" (Reid) accounts of human personality in terms of a unity more profound than that of the everyday self or ego (see *IM*, Chapters 2, 5, and 9, for further details and analysis, plus Braude, 1995, who independently arrives at a similar picture).

James was thoroughly familiar with Myers's model, and deliberately and approvingly applied it to his later studies of religious experience and metaphysics (James, 1902, 1909/1971). That influence is already apparent in the Ingersoll lecture, where he suggests that the mental reality behind the brain might conceivably take a wide variety of forms, from that of a finite mind or personality to some sort of "World Soul" or mother-sea of consciousness. Within this basic framework James goes on to describe the brain variously as straining, sifting, canalizing, limiting, and perhaps individualizing that larger mental reality existing behind the scenes, whatever it may ultimately be. He also quotes approvingly Schiller's (1891, pp. 293, 295) characterization of matter as "an admirably calculated machinery for regulating, limiting, and restraining the consciousness which it encases. . . . Matter is not that which *produces* Consciousness, but that which *limits* it, and confines its intensity within certain limits" (James, 1899, pp. 66–67; italics in the original). James also explicitly portrays the brain as exerting these effects in a manner dependent on its own functional status, and links this idea to Gustav Fechner's conception of a fluctuating psychophysical threshold (pp. 24, 59–66). The parallels are clear with Myers's purely psychological conception of a subliminal region of the mind which includes capacities inherently greater than those normally accessible to us, plus an intrapsychic barrier of some sort which constrains and shapes their supraliminal expression.

James's later work demonstrated that Myers's model of human personality can extend naturally in the overall direction suggested by the mystical traditions, and we will pursue that theoretical possibility further in Chapter 14. In the present chapter, however, we wish to focus more narrowly on the original Myers–James interactive-dualist "transmission," "permission," or "filter" picture itself, in its neurobiological aspects.

Like any other scientific model or theory, the Myers–James interactive-dualist picture must ultimately stand or fall on its empirical merits, and so far its prospects look good. Having established the bare logical possibility of "transmission" or "permission" interpretations of brain/mind correlation as alternatives to the standard "production" view, James (1899) himself went on to argue in their favor. In the first place they are in principle compatible with all of the facts conventionally interpreted in terms of the production model (as also indicated above), and however metaphorical and incomprehensible they may at first seem, they are in reality no worse off in that respect than their physicalist rivals (as now grudgingly admitted by neuroscientist Christof Koch, philosopher Galen Strawson, and a number of other prominent contemporary physicalists). In addition, they appeared to James to have definite positive *superiorities*—in particular, the potential to explain aspects of religious experience and the various kinds of facts being unearthed by Myers and his colleagues in psychical research.

IM has already reinforced the Myers–James empirical argument at numerous points, and Paul Marshall (2005) has pointed out several further potential advantages in the specific context of his studies of extrovertive mystical experience: for example, not only can such models provide a role for neurophysiological processes (without making them causally productive of the experiences), they may help us explain why wildly diverse circumstances or "triggers" can lead to strikingly similar experiences, they may prove useful in explaining the various types and stages of mystical experiences, and they provide possible means for integrating all of the various sorts of neurological, psychological, sociological, and doctrinal or situational factors currently recognized as contributory (pp. 274–275, and Chapter 2 above). Much further work remains to be done, of course, to flesh out more details of this general picture and its metaphysical requirements or implications, and that is the central purpose of the present book.

> dance with fairly simple laws. Until quite recently this has also been the conception of the universe adopted by the scientist. (p. 58)

In this light it is perhaps not surprising that despite all of our genuine scientific knowledge and technical expertise, patiently accumulated over centuries of systematic and disciplined effort, we had apparently overlooked until the past decade or so something like 95% of the *physical* content of the universe—its so-called dark matter and energy. This chastening discovery should certainly encourage humility, and perhaps a sense of excitement as well, regarding what may remain to be discovered about the human mind!

As many previous authors have noted, everyday forms of attention, memory, thinking, and speech—as characteristically informed by culturally deposited expectations as well as our abiding intellectual interests, likes and dislikes, motivations, and so on—clearly involve additional layers of selective or filtering action that are constantly at work in service of our supraliminal conscious purposes, shaping what we experience. What we are really searching for in this chapter, however, is something quite different—specifically, physiological conditions which permit or encourage emergence of capacities and materials originating in deeper subliminal regions of the mind. These threads are clearly interconnected, however. Indeed, an important clue guiding our search resides in the fact that one bedrock component of the world's transformational or spiritual practices—meditation in its various forms—aims specifically at silencing the everyday "mental chatter" that for most of us seems to go on incessantly within our heads, even when we are sitting alone in a dark and quiet room. More generally, the conditions we are looking for—conditions which remove or circumvent mental limitations associated with ordinary conscious states and/or create conditions conducive to expression of extraordinary ones—seem to involve various ways of undoing or replacing those that typically accompany ordinary wakeful embodiment: in the terminology of Myers, the subliminal appears to manifest roughly in proportion to abeyance of the supraliminal. What sorts of conditions might these be, physiologically speaking?

To begin, they seem likely in general to involve large-scale patterns of brain activity. Myers himself, for example, spoke of altered patterns of "dynamogeny and inhibition" among multiple interacting brain regions as the likely correlate of deep hypnosis, based on its phenomenology, and

recent neuroimaging research appears to be confirming that expectation (Jamieson, 2007). The human sleep–waking cycle provides another example, in that hypnagogic ("twilight zone") and dreaming states, which are physiologically distinctive on a global scale, are also known to be more conducive to psi effects than the waking state (Gurney, Myers, & Podmore, 1886; Rhine, 1962a, 1962b). Even in cases of "paradoxical functional facilitation" caused by localized brain injury or degeneration, such as the emergence of artistic skills in elderly patients suffering from fronto-temporal dementia, the facilitation appears to involve plastic reorganization of large-scale patterns of brain activity rather than release of area-specific capacities previously dammed up by inhibition (Kapur, 2011). Small changes in attentional set have also recently been shown to alter systematically the global pattern of brain response to identical film stimuli (Çukur, Nishimoto, Huth, & Gallant, 2013), again confirming the holism embraced in Chapter 9 of *IM* as against strong forms of modularity (see the supplemental material for this chapter on the CTR website).

In the abstract at least, the modern conception of the brain as a gigantic network of coupled oscillators already at some level naturally accommodates or even entails filter-like properties, and the possibilities for dynamic readjustment of its operating characteristics are almost inconceivably vast. A useful conceptual framework is that provided by physicist and brain researcher Paul Nunez (2010), who portrays the brain as a complex adaptive system made up of subunits operating at multiple spatial and temporal scales, with nonlinear dynamics emerging from circular causal interactions including bottom-up, top-down, and even resonant interactions among nonoverlapping neural networks embedded in global synaptic fields. The sorts of resonant interactions Nunez portrays as definitely capable of occurring *within* the brain could also conceivably link brains somehow to the wider environment, and Nunez himself playfully advances, without explicitly adopting it, the possibility that we might be immersed in an ocean of "Ultra-Information" to which we gain selective access by virtue of some sort of resonance between that source and our changing brain-states (see Davies & Gregersen, 2010, and Jahn & Dunne, 2011, for related ideas).

As of today, unfortunately, there really is no solid basis either in brain theory itself or in a theory of what might be "out there," for firm expectations about what form(s) the relevant brain conditions might take. We must look to actual data instead. Some mild "tuning" of our exceedingly

complicated brain/mind system certainly occurs during the waking state through influences exerted by circadian rhythms, global fluctuations in activation level or arousal, nonspecific modulatory neurotransmission, and the like, together with the ongoing operations of normal everyday consciousness, but these kinds of excursions from the normal baseline are generally insufficient to produce "openings" of the sort that interest us here. Current mainstream consciousness research, unfortunately, doesn't help very much either, because most of this work too revolves around mind–brain correlations occurring under ordinary or everyday conditions. As already indicated in Chapter 1, the key result of this decades-long effort has been the emergence of "global neuronal workspace" theories according to which everyday human conscious experience *requires* a brain capable of producing synchronous neuroelectric activity reciprocally linking large parts of a spatially extended thalamocortical network across a spectrum of frequencies extending into the gamma range (30–80 Hz). Much additional work currently focuses on systematic *degradations* of mind and consciousness that occur as a result of functional disruption of the global workspace, whether spontaneously in connection with brain injury or disease, or deliberately in conjunction with general anesthesia (Laureys & Tononi, 2009). Very little of the current research effort—except for that on "twilight" states plus sleep and dreaming, as indicated above—involves physiological conditions and states of consciousness associated with psi, creativity, and/or mystical experience.

Our intention here, by contrast, is to focus particularly on phenomena of these latter, more extreme sorts, which we believe take us much closer to the heart of our theoretical problems as described in the Introduction to this book. Previous attempts to conceive altered states of consciousness and associated supernormal phenomena in systematic relation to changing conditions in the brain, body, and psychosocial environment include Kelly and Locke (1981/2009), Tart (1975), and Winkelman (2010), all of which go beyond the more conventional approaches by deliberately taking into account a wider-than-customary range of altered states and associated supernormal phenomena, but here we will try to push this approach still further.

Two main lines of research are available which can potentially yield neurobiological insight, both presently underdeveloped but lending themselves to systematic further elaboration: first, *between-subject* studies, which try to identify the relevant characteristics of persons who conspicu-

ously and consistently display targeted forms of supernormal functioning; and second, *within-subject* studies, which try to correlate manifestations of such functioning with changing psychophysiological conditions and corresponding states of consciousness in the individual persons under study. These are not entirely independent, of course, since there can be interactions between trait-like predispositions and the states that result from precipitating practices or circumstances of sorts we will identify below. For each of the three main groups of targeted phenomena we will next briefly and selectively survey existing studies of both kinds, but we must warn readers in advance that at present there is a considerable disparity of available information in favor of the within-subject type, and not nearly enough information even there.

PSYCHOBIOLOGICAL STUDIES OF PSI, CREATIVITY, AND MYSTICAL-TYPE EXPERIENCES

We will begin by pointing out that there has already been considerable work on development of self-report scales that connect more or less directly with Myers's central concept of "permeability" in whatever barrier exists between supraliminal and subliminal strata of the mind, a psychological characteristic presumed to be deeply implicated in all three groups of phenomena. This includes research on "positive schizotypy" (Claridge, 1997), "boundary thinness" (Hartmann, 1991), "absorption" (Tellegen & Atkinson, 1974), "fantasy-prone personality" (Wilson & Barber, 1983), hypnotic susceptibility as measured in various ways, and paranormal experiences and beliefs. Although unaware of Myers, apparently, psychologist Michael Thalbourne produced a 29-item "transliminality" scale which appears to tap into Myers's original construct rather well and which correlates strongly and positively with all of these other instruments and with a single underlying factor common to all. This scale has also undergone purification using Rasch scaling techniques, and in its revised form, the RTS (Houran, Thalbourne, & Lange, 2003; Lange, Thalbourne, Houran, & Storm, 2000), it provides an interval-level measurement that is free of age and gender bias and displays excellent reliability and validity. A useful recent summary of most of these interconnections, with abundant references, can be found in Kelley (2010).

Some preliminary work has also been carried out to explore possible physiological correlates of transliminality itself. Thalbourne, Houran, Alias, and Brugger (2001) reported two studies in which they found significant positive correlations between transliminality and experiences of synesthesia, interpreting this as support for their hypothesis that high transliminality must involve some sort of "hyperconnectivity" (or perhaps defects of normal inhibition) in the brain. Something more complicated, however, is suggested by a preliminary study from Fleck et al. (2008), who compared resting electroencephalographic (EEG) patterns of persons high vs. low on the RTS. In brief, they found that these groups differed significantly, but did so in different ways in different scalp regions and frequency bands, indicating that high transliminality involves altered *patterning* of cortical behavior rather than some simple global shift. More work along these lines is surely warranted, and it would likely profit from a wider range of RTS scores, better control over what subjects do while "resting," and more appropriate EEG analysis techniques. Meanwhile, deployment of the RTS itself to further studies of all three main topics of this section seems highly desirable.

Psychobiology of Psi

Between-Subject Studies

Exceptional psi subjects have produced a disproportionate share of the field's best results (sometimes no doubt in the role of experimenters), but there have so far been few meaningful psychobiologically oriented studies, and practically nothing is currently known about possible sources of their abilities. Personality theorist Cyril Burt (1968) long ago issued a call for gifted subjects to be "put through the whole routine of ability and personality tests, with a thorough clinical, physiological, and neurological examination, and a case-history" (p. 32), but his advice has yet to be taken seriously. We still need a standardized special-subject protocol along these lines, one that could be applied in studies of genius and mystical experience as well!

There has, however, been substantial work on personality correlates of performance by (mostly) unselected subjects in controlled psi tasks, good recent summaries of which can be found in Carpenter (2012). One point of interest concerns the possible role of extraversion, which Eysenck has

around decreased dorsolateral prefrontal activation, perhaps implying degradation of associated cognitive functions such as executive control, planning and decision making, working memory and the like, and increased activity in medial prefrontal cortex and associated limbic structures, perhaps implying heightened involvement of emotion.

Mainstream cognitive neuroscientists committed to the "modularity" thesis of strong connections between cognitive processes and activity in specific neural structures were quick in attempting to map the phenomenological properties of dreaming directly onto these and other observed changes in neural activation, but things are certainly not that tidy: in particular, the association between dreaming and REM sleep is not nearly so precise and exclusive as once thought, and more detailed characterization of the cognitive properties of dreaming reveals that normal functional capacities of the waking mind are much more in evidence than previously recognized (Dawson & Conduit, 2011; Kahan & LaBerge, 2011). We would not go so far as to say that this situation amounts to a compelling further argument *against* conventional production models and *for* the Myers–James view of brain/mind relations, but it definitely seems headed in that direction. The basic idea of studying cognitive changes in relation to changes in patterns of brain activation of course remains sound, but working it out in the context of dreaming is going to take a lot more scientific effort, and better integration of its first-person ("subjective," or view-from-within) and third-person ("objective," or view-from-without) aspects. Precisely what aspects of the physiological changes that accompany dreaming are relevant to its psi-conducive character remain for now unclear, but the subject is definitely researchable.

Hypnosis has also long been known to be psi-conducive—somewhat so even in unselected subjects—and deep hypnotic states in susceptible persons clearly merit special attention in regard both to the states themselves and to the unusual capacities of various sorts that sometimes accompany them (Honorton, 1977; Kelly & Locke, 1981/2009; *IM*, Chapter 3). The neurophysiology of hypnosis is even more complicated and confusing than that of sleep and dreaming, unfortunately, and the whole subject remains somewhat mired in a long-standing debate as to whether any such thing as a "hypnotic state" even exists. That debate goes on even now, mainly between behaviorist social psychologists who prefer to work with convenience samples of unselected or mildly selected subjects and undemanding tasks, and who insist that hypnosis involves nothing but

role-playing and conformance behavior, and those who pay greater attention to individual differences and subjective reports, and who work with more extreme phenomena such as hypnotic control of experimental or surgical pain.

Until recently there was little direct evidence of unusual physiological accompaniments of hypnosis, and indeed the absence of such evidence was one of the principal factors permitting the debate to continue. In early EEG studies, for example, one typically saw under hypnosis more or less the same patterns that would be expected to occur in conjunction with the same task in the ordinary waking state. Kelly and Locke (1981/2009), relying mainly on behavioral and phenomenological evidence, argued in favor of a qualified altered-state view which pictures hypnosis not as a single, homogeneous state that is likely to have a unique physiological correlate but as a family of related altered states extending beyond the normal range and stratified in depth. More recent functional neuroimaging research, especially research using appropriate tasks and individuals selected for high or extreme hypnotizability, has in our opinion strongly confirmed this picture (see, e.g., Jamieson, 2007; Nash & Barnier, 2008, Chapters 13 and 14). There still does not appear to be any *single* physiological condition or marker that is unique to hypnosis and common to all of its manifestations, but there have been numerous demonstrations of unusual physiological patterns that appear only in highly susceptible subjects, and only when they are hypnotized. These findings are far too complicated to go into here in any detail, but they generally revolve around altered patterns of large-scale functional connectivity among the brain areas normally involved in the tasks under study, possibly mediated by altered top-down influence of executive-type monitoring and control functions conventionally associated with prefrontal cortex (Fuster, 2008). The altered patterns of prefrontal control seem likely to be closely connected with the vivid imagery and narrowed attention in response to suggestions that seem to mediate many hypnotic effects psychologically, but precisely what sorts of hypnotic instructions and associated physiological conditions are optimally psi-conducive—and why—remains to be elucidated. These again are clearly researchable questions.

Large amounts of historical and cross-cultural testimony also affirm the psi-conduciveness of *meditation* in various forms, and modern experimental results supporting the existence of such a connection have gradually accumulated (Honorton, 1977; Kelly & Locke, 1981/2009; Radin,

2013). The physiological picture, however, remains cloudy, despite the explosion of meditation research that has occurred in recent decades, fueled by its marriage with behavioral medicine and public health and hence access to conventional funding mechanisms. A valuable resource here is the searchable online bibliography maintained by the Institute of Noetic Sciences, based on that of Murphy and Donovan (1997), which now contains upward of 6,000 entries.

Research to date has remained for the most part at a very superficial level, unfortunately, relying upon brief practice with meditation techniques of diverse and often questionable sorts to demonstrate modest albeit clinically significant improvements in various behavioral, psychological, and/or physiological indices of well-being. Most obviously relevant to the concerns of this chapter is the fact that progress in meditation involves, by definition, stilling of the chattering supraliminal mind, which requires mastery of partly dissociable neurophysiological mechanisms of selective and sustained attention, controlled primarily by "executive" prefrontal cortex (Fuster, 2008), that have been extensively studied in recent years. Lutz, Slagter, Dunne, and Davidson (2008) have provided a useful framework for ongoing research by showing how two principal forms of Buddhist meditation—focused attention and open monitoring—engage these mechanisms in differing ways, leading to a variety of testable behavioral and neurobiological predictions that have already been partly confirmed.

Especially important from our point of view, however, are the few existing physiologically oriented studies involving advanced meditation practitioners of various sorts. Important context for such work is provided by the modern demonstration of plasticity in the adult brain, which has made clear that it is premature and unwise to attempt to understand what goes on in advanced meditators by loosely extrapolating from neuropsychological and neurophysiological data obtained from ordinary persons operating under more or less ordinary conditions. The brains of advanced meditators are likely to differ from those of ordinary persons and novice meditators in surprising ways, both in anatomical structure and in functional organization, and we need to investigate these differences *directly*, with minimal presuppositions regarding their possible form. Things seem now to be slowly moving in this direction: for example, Lutz, Greischar, Rawlings, Ricard, and Davidson (2004), in their work with highly experienced Buddhist meditators, have confirmed and

extended the startling early findings of Das and Gastaut (1955) pointing to high-frequency (gamma) EEG rhythms as a possible marker of deeply focused meditative states, and additional work is underway in various places along similar lines (see the online bibliography noted above). It is already clear that in advanced meditators, as in hypnotic virtuosos, physiologically unusual things happen that we do not otherwise see. We do not yet have anything like a solid cartography of deep meditative states and their associated physiological profiles, or a good understanding of how they facilitate psi, but we certainly know how to work in these directions (see also *IM*, pp. 567–573, and Chapter 9 below).

Mediumistic "trances" constitute another family of psi-conducive states with wide historical and cross-cultural distribution, and as already indicated in Chapter 1 the early history of psychical research was dominated by studies of great mediums such as Mrs. Piper, Mrs. Leonard, and Mrs. Willett, who produced much of the best evidence we have for postmortem survival. Regrettably, essentially nothing is presently known about these or any other such persons that casts any light on possible psychobiological underpinnings of their unusual abilities. Good contemporary mediums would certainly be prime candidates for application of the special-subjects protocol called for above, if they can be found.

The situation is hardly any better at present regarding physiological correlates of the trance states themselves, but there are good reasons for thinking that research along these lines would be productive. We should point out first that the relevant states are again somewhat heterogeneous in type, both within and among mediums: good material was sometimes produced in relaxed states of reverie within or near the normal range (as in contemporary "channelers"), but the most significant results emerged in conjunction with a variety of states characterized by deepening dissociation—that is, by increasing control of the medium's body from sites lying outside normal awareness. At the most superficial level this might involve the appearance of automatic writing or other automatisms in the context of more or less full ordinary consciousness, as in Mrs. Willett's "lone scripts." Mrs. Willett in particular also manifested progressively a range of states characterized by increasing sensory automatism, from the nonsensory awareness of her "daylight impressions" through a deeper kind of trance in which she experienced full-fledged hallucinatory figures of the ostensible communicators. Even in the case of her deep trances, however, Mrs. Willett remained in control of her body, although she was

generally amnesic after the event. Mrs. Piper and Mrs. Leonard, on the other hand, generally underwent much deeper dissociations, with the normal supraliminal consciousness entirely displaced during periods in which "spirit guides," or sometimes ostensible communicators such as "GP" (Chapter 1), appeared to gain more or less complete control of the body. In some particularly spectacular cases, further dissociations of control appeared, permitting the medium to interact with multiple sitters concurrently, speaking with one and simultaneously writing to others about different matters with one or both hands. Entry into trance, like transitions between "alters" in dissociative identity ("multiple personality") cases, is typically well-marked and often dramatic, with drastic changes of posture, demeanor, physiognomy, voice, diction, and so on accompanying the appearance of successive communicators. Although some of these features could certainly be faked, others cannot: Mrs. Piper, for example, became profoundly isolated from her sensory environment and did not respond to intense stimuli such as pinpricks and open bottles of ammonia held under her nose (Gauld, 1968, p. 256).

In sum, this topic again seems eminently researchable, mainly requiring identification of suitable participants, and could quickly lead to better physiological characterization of these poorly understood but basically benign and psi-conducive states and their differences from pathological relatives such as multiple personality disorder. Trance mediumship is alive and well in many parts of the world including for example Brazil, and intimations of what may be possible can be found in a neuroimaging study of automatic writing by Peres, Moreira-Almeida, Caixeta, Leao, and Newberg (2012), who report reductions of activity (relative to similar but voluntary writing) in several cortical areas specifically associated with the task, including cortex belonging to the frontal attention system. This could well be a reflection of the dissociative aspect of the performance, which clearly must involve some sort of altered behavior of that system.

Altered states of consciousness and psi also come together in the worldwide complex of *shamanism*, found in varying forms in a large proportion of preliterate societies (Kelly & Locke, 1981/2009; Walsh, 2007; Winkelman, 2010). The essential point here is that literally thousands of such societies have discovered, often independently, procedures for inducing special states of consciousness including trance and possession trance that are expected to provide access to socially desirable skills

impulse to reduce intuition without residue to "unconscious cerebration," as discussed in Chapter 1.

Dietrich's general picture is neurobiologically more sophisticated than anything we've seen before, and in many respects it is certainly on target. Creativity is a hugely complicated business in which many parts of the brain are involved at all times, *not* some single monolithic process operating out of a dedicated module or "creativity spot" located in the right hemisphere or anywhere else. But what might be different about brains that are unusually proficient at producing creative products? Shelley Carson (2011) addresses this issue in the context of the recognized partially heritable linkage between high levels of creativity and certain forms of psychopathology (especially schizophrenia, bipolar disorder, and alcoholism). Her analysis of this overlap strongly confirms the general picture originally expressed by Myers (1903) and expanded in *IM* (pp. 470–476), but she also attempts to identify specific aspects of brain function in these groups that could potentially explain their "shared vulnerability" of unusual access to subliminal products and capacities. One is a phenomenon of "latent inhibition" (LI), widely present among mammalian species, which amounts to an automatic tendency to ignore repeated inconsequential stimuli. Carson, Peterson, and Higgins (2003) showed that reduced LI, known to be characteristic of highly schizotypal or psychosis-prone persons and the acute phase of schizophrenia, is also associated with creative achievement and the personality trait of openness to experience (which correlates with both transliminality and psi performance). Both creative and psychosis-prone individuals have also been shown to habituate more slowly than normal to various kinds of repetitive stimulation. The general picture thus seems to be that automatic inhibitory or filtering mechanisms of various sorts which for most of us improve the efficiency of our dealings with the everyday world are somehow weakened in these groups, rendering them more open to information coming at them from whatever direction.

Carson also points to the possible existence of *hyperconnectivity*, both anatomical and functional, as characteristic of creative and psychosis-prone brains. Unusual patterns of anatomical hyperconnectivity, thought to result from failures of the synaptic pruning that normally occurs during development, have long been suspected of contributing to the unusual associations and metaphors produced by such persons. They may also play a role in synesthesia, which runs in families and is far more preva-

lent among creative persons than in the general population (Ramachandran & Hubbard, 2001). Recent neuroimaging research has also revealed the presence of abnormal functional connectivity within the default or resting-mode network of early-stage schizophrenics and their first-degree relatives (Whitfield-Gabrieli et al., 2009).

There seem to be many possible genetic contributors to these mechanisms of cognitive disinhibition, the far-reaching effects of which remain to be sorted out, and additional such contributors undoubtedly remain to be discovered (Carson, 2011). Intriguingly, several of the current candidates are involved with regulation of serotonin neurotransmission, which also figures prominently in altered states induced by psychedelics such as LSD and psilocybin (on psychedelics, see below). One especially promising candidate seems to be a variant of the Neuregulin 1 gene, which is definitely associated both with creativity and with increased risk of psychosis, and which is thought to exert these effects through reduction of inhibitory actions normally originating in the frontal lobes (Kéri, 2009).

Within-Subject Studies

The central question here is whether modern functional neuroimaging methods have yielded insight into what is going on in the brain in connection with moments of creative inspiration, or "subliminal uprush" in Myers's terms. The answer, unfortunately, is "not much" (Dietrich & Kanso, 2010; Sawyer, 2011). The reasons for this are apparent: to do such studies effectively, one needs to create conditions in which significant creative insights repeatedly and detectably occur, with temporal and spatial properties well matched to those of the imaging methods in use, and these enormous experimental challenges have rarely been met in even the most approximate fashion. Instead one mostly finds convenience samples of undergraduates, whose "creativity" is measured in a wide variety of ways, performing low-level cognitive tasks thought to require "insight" for their solution, with imaging results derived from a profusion of modalities and analysis methods and averaged over most or all of the task performance. Dietrich and Kanso (2010) conclude from their exhaustive review of existing neuroimaging studies, appropriately in our judgment, that "not a single currently circulating notion on the possible neural mechanisms underlying creative thinking survives close scrutiny" (p. 845).

A possible additional slant on this subject concerns bipolar disorder and its cyclic within-subject connections with genius. In this case, mentation produced during the hypomanic phase of the illness cycle often conspicuously displays properties of the sort used by Myers to describe subliminal uprushes, such as extreme fluency, speed, and flexibility as well as automaticity and incommensurabilty. It should be possible, using appropriate physiological and neuroimaging methods, to determine what sorts of brain conditions transiently accompany its cyclic emergence, but to our knowledge this important possibility remains to be pursued in depth (see *IM*, pp. 472–476).

Psychobiology of Mystical Experience

Between-Subject Studies

It is essentially unknown at present whether there are physiologically grounded predispositions to mystical experience, including those that occur in connection with deep near-death experiences (NDEs). We normally only discover such persons after their experiences have occurred, and this makes it difficult to disentangle predispositions from consequences. It would still be highly desirable, of course, to systematically collect new cases and apply special-subject protocols of the sort called for above. Previous neurobiological speculations have mainly revolved around claims of a special linkage between mystical experiences and epilepsy, especially temporal-lobe or temporo-limbic epilepsy (TLE), but these claims were carefully reviewed in *IM* (pp. 531–534) and found to be unwarranted. A new study led by our Sursem colleague Bruce Greyson confirms that conclusion: among ninety-eight epilepsy patients, fifty-five of whom recalled one or more experiences surrounding their (typically recurrent) seizures, not one reported anything resembling a genuine mystical experience (Greyson, Broshek, Derr, & Fountain, 2014).

Within-Subject Studies

From a physiological point of view, the single most striking fact about spontaneously occurring mystical experiences and NDEs is the extreme diversity of circumstances under which they occur. To make this more concrete, a composite listing would include at least the following: experiences of great beauty in nature, art, music, poetry, etc.; feelings of con-

cern, compassion, or love for other beings; solitude, quiet, and peaceful inwardly directed states of mind; meditative or spiritual practices of various kinds; success in creative tasks; sexual orgasm; protracted exercise and extreme sports situations; altered-state induction measures of the sorts found in preliterate societies; confinements, as in illness, childbirth, jail, or shipwreck; states of depression, suffering, despair, bereavement; high fevers, systemic infections, loss of blood, dehydration, hypothermia, sleep deprivation; life-threatening situations such as near-accidents and mountaineering falls that do not in fact result in physical injury; actual life-threatening injuries including direct damage to the brain; lightning strike, and electrocution; surgical procedures involving general anesthesia; and cardiac arrest and coma resulting from diverse circumstances. The fact that similar types of experiences can result from situations varying this widely suggests to us that their common underpinning involves some sort of overall alteration of the normal brain/mind relationship, achievable in many ways, rather than engagement of specific neural structures or mechanisms of the sorts typically studied in cognitive neuroscience.

If we could bring the relevant states and phenomena into the laboratory, of course, we could study them using all the psychobiological tools at our disposal, and that would undoubtedly provide the most efficient way forward. Two such approaches stand out as the current best prospects. The first, already discussed above (and see also *IM*, pp. 563–573, and Chapter 9 below), would focus primarily on advanced practitioners of meditation.

The other, which we will emphasize here, focuses on classical psychedelic or "mind-manifesting" agents.[4] In their plant and fungal forms, and under the guidance of shamans, such agents have been used for millennia to evoke mystical-type connections with nature and to access associated capacities such as healing and divination. Shamanic practices have included ritual use of *Psilocybe* mushrooms, peyote and San Pedro cacti, African iboga, Amazonian snuffs, ayahuasca preparations, and *Salvia divinorum*, to name just a few. Both William James and F. W. H. Myers had powerful experiences with nitrous oxide, and both recognized the potential of such substances to support empirical investigations of mystical experience. However, it was perhaps Aldous Huxley who first forged the link between psychedelics and mysticism in Western popular culture. His encounter with mescaline led to his writing *The Doors of Perception*

in 1954, a little book that became one of the primary ways by which knowledge of these powerful substances reached the general populace. In that book Huxley advanced the idea that psychedelics may work in large part by impacting a filtering capacity of the brain: "According to such a theory, each one of us is potentially Mind at Large. But in so far as we are animals, our business is at all costs to survive. To make biological survival possible, Mind at Large has to be funneled through the reducing valve of the brain and nervous system. What comes out at the other end is a measly trickle of the kind of consciousness which will help us to stay alive on the surface of this particular planet" (Huxley, 1954, p. 23). The discoverer of LSD, Albert Hofmann (1988), proposed a similar picture, driven by his own experiences with that powerful agent.

Philosopher C. D. Broad (1949), on whom Huxley relied, had already come to a similar picture based more generally upon the results of psychical research:

> I have the impression that we should do well to consider much more seriously than we have hitherto been inclined to do the type of theory which Bergson put forward in connection with *normal* memory and sense-perception. The suggestion is that the function of the brain and nervous system and sense-organs is in the main *eliminative* and not productive. Each person is at each moment potentially capable of remembering all that has ever happened to him and of perceiving everything that is happening anywhere in the universe. The function of the brain and nervous system is to protect us from being overwhelmed and confused by this mass of largely useless and irrelevant knowledge, by shutting out most of what we should otherwise perceive or remember at any moment, and leaving only that very small and special selection which is likely to be practically useful. An extension or modification of this type of theory seems to offer better hopes of a coherent synthesis of normal and paranormal cognition than is offered by attempts to tinker with the orthodox notion of events in the brain and nervous system *generating sense-data*. (p. 306; italics in the original)

Substances that have such powerful potential to open up the psyche also inevitably carry with them great complexity. During the 1950s and 1960s literally millions of people experienced their powerful effects, and the impact of psychedelics on the history of that era is enormous—on music, on art, on political thought and action, on innovation and technology. Many stories are yet to be told. But the complexity of these sub-

more importantly with the sort of "filter" models advanced in this book. The apparent conflict with those earlier results remains to be resolved in detail, but to us the Carhart-Harris picture seems likely to be closer to the physiological truth of the matter, in that the temporal and spatial resolution of fMRI is far better than that of PET, and the fMRI scans were carried out in close temporal coordination with the span of the intense but short-lasting psychedelic states produced by venous injection of the drug.

The bottom line here is that it is now possible to conduct carefully controlled human studies with psychedelics in laboratory settings, bringing to bear all the sophisticated tools of contemporary functional neuroimaging and phenomenological inquiry in order to find out what is going on as these agents "open the filter" by modifying the activity of the brain. As the pioneer psychedelic researcher and therapist Stanislav Grof wrote in the reissue of his classic book on *LSD Psychotherapy*: "it does not seem to be an exaggeration to say that psychedelics, used responsibly and with proper caution, would be for psychiatry what the microscope is for biology and medicine or the telescope is for astronomy. These tools make it possible to study important processes that under normal circumstances are not available for direct observation" (Grof, 2001, p. 12).

GENERAL DISCUSSION

Having now briefly sketched the current very patchy state of research on neurobiological conditions associated with our targeted phenomena, we must try to make sense of it all. One way of approaching this task was set forth by Kelly and Locke (1981/2009) in their "Research Prospectus," which we have placed on the CTR website as additional supplemental material for this chapter. Their basic plan was threefold: (1) try to create a principled cartography of the altered states of consciousness that are specifically known to facilitate expression of subliminal resources including high-grade psi, uprushes of genius, and mystical experiences, together with various pathological and nonpathological relatives; (2) identify and characterize more precisely the main phenomenological features or dimensions underlying this array of altered states; and then (3) interpret these dimensions individually and neurobiologically in the context of a Myers–James filter-type model. After discussing various general features of the problem space, such as the interesting family resemblances linking

various classes of phenomena, Kelly and Locke (1981/2009) recorded their fundamental intuition:

> [T]he true diversity of these ASC phenomena may actually be substantially less than appears on the surface; that is, we have the distinct impression that the great diversity of observed phenomena is generated by socially conditioned processes playing upon a relatively small number of underlying psychobiological themes. Identification of the critical dimensions of these basic themes, if they exist, could lead ultimately to an elegant conceptual and practical reorganization of the entire domain. (p. 45)

Kelly and Locke could get no further at that time and not much of relevance has happened since. Most other theoretical approaches to ASCs have taken a similar phenomenology-driven path, and in addition most of the resulting cartographies or models have been impoverished by failing to take into account a sufficiently comprehensive range of states and/or up-to-date neurophysiology. The range issue applies for example to the well-known Activation/Input/Modulation (AIM) model of Alan Hobson (2007), which deals mostly with conventional topics such as the sleep–waking cycle, plus hallucinations, and which has also been criticized even within its narrow sphere of intended application by Dawson and Conduit (2011). This limitation also applies with somewhat lesser force to the four-dimensional descriptive system of Vaitl et al. (2005), and similar comments apply to the textbook by Farthing (1992) and to Clark's (1983) "map of mental states," which specifically attempts to include mystical states but provides nothing in the way of biological insight.

A rather different situation is presented by the work of anthropologist Michael Winkelman (2010), who shares the fundamental intuition stated above but thinks he has already solved the problem. Specifically, Winkelman claims to have discovered and physiologically characterized what he calls an "Integrative Mode of Consciousness" (IMC), embracing not only "shamanic flight" but OBEs and NDEs, possession trance, hypnosis, meditation, and mystical experience, all of which he claims rest on an archaic neurobiological foundation that we share to a considerable extent with lower species. His central claim is that shamanic rituals and the various other relevant circumstances all lead to states of parasympathetic dominance in which high-amplitude slow-wave neuroelectric activity

originating in limbic and subcortical structures propagates into frontal cortex, disrupting normal patterns of executive control. Quite apart from the perversity of assimilating all of these highly diverse ASCs to a single meta-state and attempting to interpret even the highest flights of human consciousness in regressive terms, his largely speculative account relies heavily on antiquated neuroscience and is replete with dubious factual assertions not supported by evidence based on direct observation of the relevant states. Note also that it rests squarely on the production model and therefore collapses completely under the weight of phenomena such as NDEs occurring under extreme physiological conditions (Chapter 1).

The value of Winkelman's book lies more in his descriptions of shamanism than his speculative neurobiology, but in one important respect, as we will now explain, we think he may be on target. An alternative approach to analysis of ASCs that now seems more promising parallels our earlier move to an "inverted" interpretation of the brain/mind correlation: that is, instead of viewing the problem as one of identifying distinctive physiological conditions that are associated individually with distinctive phenomenological dimensions of these altered states of consciousness—*and that produce those qualities, in accord with physicalist orthodoxy*—we should instead think of the various precipitating circumstances as different ways of reducing or eliminating some more general normal barrier to expression of the relevant states and capacities.

The main common ingredient here, psychologically, amounts to "abeyance of the supraliminal" in Myers's terms, or withdrawal of the mind/brain system from its customary "attention to life," in those of Bergson (1913). From this point of view it seems natural to start by taking deep mystical-type NDEs occurring under extreme physiological conditions as the limiting case, and viewing various other conditions as approaching that limit from different directions. A recurring element from our survey above which seems to make sense in this light is the feature of variously altering, disabling, or intensifying executive functions normally associated with frontal cortex, which appears common to psi performance, creative activity, and mystical experiences induced by psychedelics, along with sleep and dreams, hypnosis, meditation, mediumistic trance, the acute phases of psychosis, and altered states induced by shamanic rituals. Note that this alternative conceptualization also potentially helps us understand the diversity of "triggers" for the ASCs of interest, for as pointed out by Paul Marshall (2005), doors can be

opened by sledgehammers as well as keys, with results that are both similar and different in various ways (p. 275), and to vary the metaphor a bit, one can perhaps open a given door a little or lot depending on the amount one applies of whatever is opening it.

Here we also make contact with a major modern development in systems neuroscience. Specifically, it has only recently become clear that overall patterns of brain activity typically reflect the operation of not one but two, anti-correlated, large-scale functional systems. Most previous functional neuroimaging research has ignored intrinsic activity, focusing instead on how the brain responds to various stimuli or tasks. However, it was eventually noticed that when a "resting" state was used as the control condition for the targeted tasks, the small and widely distributed *activations* that had long been the primary focus (Raichle, 2006; Raichle et al., 2001) were consistently accompanied by *de-activations* of a network of midline regions including in particular medial portions of prefrontal cortex, parts of temporal and parietal cortex, and posterior cingulate cortex (PCC). Further work has shown that these and a few additional "hub" areas, now collectively known as the default-mode network (DMN), are strongly linked both anatomically and functionally. The DMN accounts for nearly all of the brain's ongoing energy consumption under all conditions, matures, and then declines with chronological age, and under waking conditions is involved especially in self-related activities such as autobiographical memory, imagining possible futures, engaging neural resources needed for performing stimulus-processing and other external tasks, and "mind-wandering" from such tasks (Buckner, Andrews-Hanna, & Schacter, 2008; Raichle, 2009; Raichle et al., 2001; Raichle & Snyder, 2007). Note that this is the same system the major nodes of which have recently been shown by Carhart-Harris et al. (2012) to be deactivated and decoupled by psilocybin.

Building on the emerging picture of the DMN, Carhart-Harris and Friston (2010) have pointed out that it theoretically opens a path toward explaining in contemporary neurobiological terms Freud's fundamental contrast between "primary" and "secondary" process. Secondary process here means, roughly, the sorts of mental activity that go on in normal everyday conscious life, while primary process, conceived as originating in the Freudian unconscious, drives the unusual forms of mentation found in dreams, psychedelic experiences, and the early or acute stages of psychosis. Carhart-Harris and Friston attempt to show how this pheno-

menological distinction can be mapped neurophysiologically and computationally onto the operations of the DMN conceived as a hierarchically organized Helmholtzian inference machine. Their basic move is to equate the normally functioning DMN with the Freudian ego and secondary process, while primary-process material emerges when cortical nodes of the DMN lose control of limbic and subcortical nodes the activity of which they can normally predict and hence control. In making these proposals they specifically characterize themselves as "addressing topics which have hitherto been considered incompatible with the cognitive paradigm" (2010, p. 1275; see also Carhart-Harris et al., 2014).

We genuinely applaud these important efforts, but with caveats: First, it is unfortunate that these authors pathologize primary process throughout their paper as something inevitably *degrading* ordinary waking consciousness, which for them apparently represents the highest possible form of consciousness. They do not even mention the important role that primary process has long been recognized to play in the creative process, for example, and for them the only value of psychedelics is apparently to provide models of psychotic states. Second, they do not fully come to grips with the difficulties of accounting in their terms for the striking qualitative differences between primary-process mentation and everyday forms of thought—the "incommensurability" of subliminal uprushes, as conceived by Myers in his account of genius (see *IM*, pp. 451–470).

Most fundamentally, for Carhart-Harris and Friston as for all other reductive physicalists it is simply axiomatic that anything unusual that enters the mind during these altered states of consciousness *must* come from somewhere else in the brain. But that axiom is falsified, we submit, by the existence of psi phenomena and mystical-type NDEs occurring under physiologically extreme conditions, among other things (Chapter 1). Our alternative view is therefore that at least some of the relevant properties and capacities actually must come from somewhere else—Myers's subliminal or James's B-region of the mind—and that what Carhart-Harris and Friston and other mainstream workers are really doing is to help to elucidate the brain conditions under which these openings occur. It is interesting in this respect that their model comes close to those of Dietrich (2003, 2004) and Carson (2011) for creativity and altered states, in pointing to the DMN and especially its termination zone in medial prefrontal cortex as playing a crucial role in these phenomena.

carbogen, salvinorin A, delta-9-tetrahydrocannabinol (THC), and ketamine are examples of chemicals that can be called psychedelic, but are definitely not considered "classical psychedelics." Although these substances also have "mind-manifesting" characteristics, the experiences they produce are qualitatively different from those of the classical psychedelics, and their known interactions with the nervous system also differ from 5-HT2A receptor agonism.

REFERENCES

Bergson, H. (1913). Presidential address (H. W. Carr, Trans.). *Proceedings of the Society for Psychical Research, 27*, 157–175.

Braud, W. G. (1978). Psi conducive conditions: Explorations and interpretations. In B. Shapin & L. Coly (Eds.), *Psi and States of Awareness* (pp. 1–41). New York: Parapsychology Foundation.

Braude, S. E. (1995). *First Person Plural: Multiple Personality and the Philosophy of Mind* (Rev. ed.). Lanham, MD: Rowman & Littlefield.

Braun, A. R., Balkin, T. J., Wesensten, N. J., Carson, R. E., Varga, M., Baldwin, P., . . . Herscovitch, P. (1997). Regional cerebral blood flow throughout the sleep–wake cycle: An $H_2{}^{15}O$ PET study. *Brain, 120*, 1173–1197. doi:10.1093/brain/120.7.1173

Broad, C. D. (1949). The relevance of psychical research to philosophy. *Philosophy, 24*, 291–309.

Buckner, R. L., Andrews-Hanna, J. R., & Schacter, D. L. (2008). The brain's default network: Anatomy, function, and relevance to disease. *Annals of the New York Academy of Sciences, 1124*, 1–38. doi:10.1196/annals.1440.011

Burt, C. (1968). *Psychology and Psychical Research*. London: Society for Psychical Research.

Carhart-Harris, R. L., Erritzoe, D., Williams, T., Stone, J. M., Reed, L. J., Colasanti, A., . . . Nutt, D. J. (2012). Neural correlates of the psychedelic state as determined by fMRI studies with psilocybin. *Proceedings of the National Academy of Sciences USA, 109*, 2138–2143. doi:10.1073/pnas.1119598109

Carhart-Harris, R. L., & Friston, K. J. (2010). The default-mode, ego-functions and free-energy: A neurobiological account of Freudian ideas. *Brain, 133*, 1265–1283. doi:10.1093/brain/awq010

Carhart-Harris R. L., Leech, R., Hellyer, P. J., Shanahan, M., Feilding, A., Tagliazucchi, E., . . . Nutt, D. (2014). The entropic brain: A theory of conscious states informed by neuroimaging research with psychedelic drugs. *Frontiers in Human Neuroscience, 8*, article 20. doi:10.3389/fnhum.2014.00020

Carpenter, J. C. (2012). *First Sight: ESP and Parapsychology in Everyday Life*. Lanham, MD: Rowman & Littlefield.

Carson, S. H. (2011). Creativity and psychopathology: A shared vulnerability model. *La Revue canadienne de psychiatrie, 56*, 144–153.

Carson, S. H., Peterson, J. B., & Higgins, D. M. (2003). Decreased latent inhibition is associated with increased creative achievement in high-functioning individuals. *Journal of Personality and Social Psychology, 85*, 499–506. doi:10.1037/0022-3514.85.3.499

Child, I. L. (1985). Psychology and anomalous observations: The question of ESP in dreams. *American Psychologist, 40*, 1219–1230.

Claridge, G. (Ed.). (1997). *Schizotypy: Implications for Illness and Health*. Oxford: Oxford University Press.

Clark, J. H. (1983). *A Map of Mental States*. London: Routledge & Kegan Paul.

Çukur, T., Nishimoto, S., Huth, A. G., & Gallant, J. L. (2013). Attention during natural vision warps semantic representation across the human brain. *Nature Neuroscience, 16*, 763–770.

Das, N. N., & Gastaut, H. (1955). Variations de l'activité électrique du cerveau, du coeur et des muscles squelletiques au cours de la meditation et de l'extase yogique. *Electroencephalography and Clinical Neurophysiology*, Suppl. 6, 211–219.

Davidson, J. (1976). The physiology of meditation and mystical states of consciousness. *Perspectives in Biology and Medicine, 19*, 345–379.

Davies, P., & Gregersen, N. H. (Eds.). (2010). *Information and the Nature of Reality: From Physics to Metaphysics*. Cambridge: Cambridge University Press.

Dawson, J. L., & Conduit, R. (2011). The substrate that dreams are made on: An evaluation of current neurobiological theories of dreaming. In D. Cvetkovic & I. Cosic (Eds.), *States of Consciousness: Experimental Insights into Meditation, Waking, Sleep and Dreams* (pp. 133–156). Berlin: Springer.

Dietrich, A. (2003). Functional neuroanatomy of altered states of consciousness: The transient hypofrontality hypothesis. *Consciousness and Cognition, 12*, 231–256.

Dietrich, A. (2004). The cognitive neuroscience of creativity. *Psychonomic Bulletin & Review, 11*, 1011–1026.

Dietrich, A. (2007). Who's afraid of a cognitive neuroscience of creativity? *Methods, 42*, 22–27. doi:10.1016/j.ymeth.2006.12.009

Dietrich, A., & Kanso, R. (2010). A review of EEG, ERP, and neuroimaging studies of creativity and insight. *Psychological Bulletin, 136*, 822–848. doi:10.1037/a0019749

Farthing, G. W. (1992). *The Psychology of Consciousness*. Englewood Cliffs, NJ: Prentice Hall.

Fleck, J. I., Green, D. L., Stevenson, J. L., Payne, L., Bowden, E. M., Jung-Beeman, M., & Kounios, J. (2008). The transliminal brain at rest: Baseline EEG, unusual experiences, and access to unconscious mental activity. *Cortex, 44*, 1353–1363.

Freedman, M. (2010). Psi and the brain. In S. Krippner & H. L. Friedman (Eds.), *Mysterious Minds: The Neurobiology of Psychics, Mediums, and Other Extraordinary People* (pp. 151–161). Santa Barbara, CA: ABC-CLIO.

Fuster, J. M. (2008). *The Prefrontal Cortex* (4th ed.). London: Academic Press.

Gauld, A. (1968). *The Founders of Psychical Research*. London: Routledge & Kegan Paul.

Greyson, B., Broshek, D. K., Derr, L. L., & Fountain, N. B. (2014). Mystical experiences associated with seizures. *Religion, Brain & Behavior*. Advance online publication. doi:10.1080/2153599X.2014.895775

Griffiths, R. R., Richards, W. A., Johnson, M. W., McCann, U. D., & Jesse, R. (2008). Mystical-type experiences occasioned by psilocybin mediate the attribution of personal meaning and spiritual significance 14 months later. *Journal of Psychopharmacology, 22*, 621–632. doi:10.1177/0269881108094300

Griffiths, R. R., Richards, W. A., McCann, U., & Jesse, R. (2006). Psilocybin can occasion mystical-type experiences having substantial and sustained personal meaning and spiritual significance. *Psychopharmacology, 187*, 268–283. doi:10.1007/s00213-006-0457-5

Grof, S. (2001). *LSD Psychotherapy* (3rd ed.). Sarasota, FL: Multidisciplinary Association for Psychedelic Studies. (1st ed. published 1980)

Gurney, E., Myers, F. W. H., & Podmore, F. (1886). *Phantasms of the Living* (Vols. 1–2). London: Trübner. (Available on CTR website, http://www.esalen.org/ctr/scholarly-resources)

Hartmann, E. (1991). *Boundaries in the Mind: A New Psychology of Personality*. New York: Basic Books.

Hobson, J. A. (2007). States of consciousness: Normal and abnormal variation. In P. D. Zelazo, M. Moscovitch, & E. Thompson (Eds.), *The Cambridge Handbook of Consciousness* (pp. 435–444). Cambridge: Cambridge University Press.

Hofmann, A. (1988). The transmitter-receiver concept of reality. *ReVision, 10*(4), 5–11.

Honorton, C. (1977). Psi and internal attention states. In B. B. Wolman (Ed.), *Handbook of Parapsychology* (pp. 435–472). New York: Van Nostrand Reinhold.

Houran, J., Thalbourne, M. A., & Lange, R. (2003). Methodological note: Erratum and comment on the use of the Revised Transliminality Scale. *Consciousness and Cognition, 12*, 140–144. doi:10.1016/S1053-8100(02)00025-9

Huxley, A. (1954). *The Doors of Perception*. New York: Harper & Brothers.

Jahn, R. G., & Dunne, B. J. (2011). *Consciousness and the Source of Reality: The PEAR Odyssey*. Princeton, NJ: ICRL Press.

James, W. (1890). *The Principles of Psychology* (Vols. 1–2). New York: Henry Holt.

James, W. (1899). *Human Immortality: Two Supposed Objections to the Doctrine* (2nd ed.). Boston and New York: Houghton, Mifflin. (1st ed. published 1898)

James, W. (1902). *The Varieties of Religious Experience: A Study in Human Nature*. New York: Longmans, Green.

James, W. (1971). *A Pluralistic Universe*. In *Essays in Radical Empiricism and a Pluralistic Universe* (pp. 121–284). New York: E. P. Dutton. (Original work published 1909)

Jamieson, G. A. (Ed.). (2007). *Hypnosis and Conscious States: The Cognitive Neuroscience Perspective*. Oxford: Oxford University Press.

Kahan, T. L., & LaBerge, S. P. (2011). Dreaming and waking: Similarities and differences revisited. *Consciousness and Cognition, 20*, 494–514. doi:10.1016/j.concog.2010.09.002

Kapur, N. (Ed.). (2011). *The Paradoxical Brain*. Cambridge: Cambridge University Press.

Kelley, M. P. (2010). The evolution of beliefs in God, spirit, and the paranormal. II. Transliminality as the mediating factor. *Journal of Parapsychology, 74*, 359–381.

Kelly, E. F., & Locke, R. G. (2009). *Altered States of Consciousness and Psi: An Historical Survey and Research Prospectus* (2nd ed.). New York: Parapsychology Foundation. (1st ed. published 1981)

Kéri, S. (2009). Genes for psychosis and creativity: A promoter polymorphism of the *Neuregulin 1* gene is related to creativity in people with high intellectual achievement. *Psychological Science, 20*, 1070–1073. doi:10.1111/j.1467-9280.2009.02398.x

Koch, C. (2012). *Consciousness: Confessions of a Romantic Reductionist*. Cambridge, MA: MIT Press.

Kroll, J., & Bachrach, B. (2005). *The Mystic Mind: The Psychology of Medieval Mystics and Ascetics*. New York: Routledge.

Lange, R., Thalboune, M. A., Houran, J., & Storm, L. (2000). The Revised Transliminality Scale: Reliability and validity data from a Rasch top-down purification procedure. *Consciousness and Cognition, 9*, 591–617. doi:10.1006/ccog.2000.0472

Laureys, S., & Tononi, G. (Eds.). (2009). *The Neurology of Consciousness: Cognitive Neuroscience and Neuropathology*. London: Academic Press.

Locke, R. L., & Kelly, E. F. (1985). A preliminary model for the cross-cultural analysis of altered states of consciousness. *Ethos, 13*, 3–55.

Luke, D. P. (2012). Psychoactive substances and paranormal phenomena: A comprehensive review. *International Journal of Transpersonal Studies, 31*, 97–156.

Lutz, A., Greischar, L. L., Rawlings, N. B., Ricard, M., & Davidson, R. J. (2004). Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *Proceedings of the National Academy of Sciences USA, 101*, 16369–16373. doi:10.1073/pnas.0407401101

Lutz, A., Slagter, H. A., Dunne, J. D., & Davidson, R. J. (2008). Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences, 12*, 163–169. doi:10.1016/j.tics.2008.01.005

MacLean, K. A., Johnson, M. W., & Griffiths, R. R. (2011). Mystical experiences occasioned by the hallucinogen psilocybin lead to increases in the personality domain of openness. *Journal of Psychopharmacology, 25*, 1453–1461. doi:10.1177/0269881111420188

Maquet, P., Ruby, P., Maudoux, A., Albouy, G., Sterpenich, V., Dang-Vu, T., . . . Laureys, S. (2005). Human cognition during REM sleep and the activity profile within frontal and parietal cortices: A reappraisal of functional neuroimaging data. *Progress in Brain Research, 150*, 219–228. doi:10.1016/S0079-6123(05)50016-5

Marshall, P. (2005). *Mystical Encounters with the Natural World: Experiences and Explanations*. Oxford: Oxford University Press.

Morris, R. L., Roll, W. G., Klein, J., & Wheeler, G. (1972). EEG patterns and ESP results in forced-choice experiments with Lalsingh Harribance. *Journal of the American Society for Psychical Research, 66*, 253–268.