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Irreducible Mind: Toward a Psychology for the 21st Century. [With compact disk containing F.W.H. Myers's classic two-volume *Human Personality* (1903) and selected contemporary reviews of *Human Personality*.] Edward F. Kelly, Emily Williams Kelly, Adam Crabtree, Alan Gauld, Michael Grosso, and Bruce Greyson. Lanham, Maryland: Rowman & Littlefield, 2007, 800 pages, \$79.95 hardcover.

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Since the publication of Henri Ellenberger's monumental *The Discovery of the Unconscious* (Ellenberger, 1970), academic interest in the work of the British Society for Psychical Research (SPR), the first scientific body to systematically investigate reported psychic (or "psi") phenomena and altered states of consciousness, has grown slowly but steadily. Historians of science have recognized the importance of the Society's early work, particularly that of Frederic Myers (1843–1901) and Edmund Gurney (1847–1888), on hypnosis, dissociative identity disorder and other psychological phenomena (Alvarado, 2002; Gauld, 1992; Koutstaal, 1992). Frederic Myers is to be regarded as an important early depth psychologist, and his influence on colleagues like William James, Pierre Janet, and Théodore Flournoy (Crabtree, 1993; Shamdasani, 1994; Taylor, 1983, 1996), and also Carl G. Jung (Shamdasani, 2003), has been documented as significant.

The purpose of *Irreducible Mind*, which is the result of a series of seminars that commenced in 1998 at the Center for Theory and Research at Esalen Institute, is threefold: it provides an overview of Myers's model of the mind, evaluates it in the light of current psychological theories and data, and critically assesses the empirical and conceptual value of modern theories of consciousness. Regarding the latter aim, one result is already anticipated in the foreword: "By the year 2000 our discussions had advanced to the point where we believed we could demonstrate, empirically, that the materialistic consensus which undergirds practically all of current mainstream psychology, neuroscience, and philosophy of mind is fundamentally flawed" (p. xiii). Perfectly in the vein of Myers, the basic theme of *Irreducible Mind* is the question of the causal efficacy of mental processes on the physical domain, and it

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asks the age-old question: Can the complete dependence of consciousness on brain processes, as presupposed by the majority of neuroscientists, really be demonstrated conclusively? If not, are there genuine alternatives that might aid a scientific study and description of consciousness?

In the Introduction, Edward Kelly provides a concise historical overview of theoretical developments within psychology and cognitive science. By referring to William James's *Principles of Psychology*, the problem of the relationship between the first-person perspective of the mental and the third-person dimension of observable neurological and biological processes is addressed, and behaviorist and reductionistic approaches to consciousness are commented on critically. Kelly criticizes empirical and conceptual foundations of the assumption that the mental is caused and produced by the physical, which has advanced from a mere hypothesis to an absolute presupposition or axiom within the psychological and neuroscientific community. He also documents, by citing current literature, that even within mainstream scientific circles concerns about the epiphenomenological paradigm are raised occasionally. He proceeds by naming, and recommending, certain methodological basic principles and ideals, which — in this reviewer's opinion — every good scientist should heed and cultivate, namely an historically informed awareness of the inherent incompleteness of scientific knowledge, an understanding of science as a method rather than a worldview, and — in the vein of Thomas Kuhn — an appreciation of scientific anomalies which is required for science to progress. Kelly gives historical examples of scientists' sins against these virtues and addresses the problem of scientism, but also the difficulty of a decision about what kind of empirical facts should steer the scientific development of theories of the mind. As a useful guide, which is also adhered to by the authors of *Irreducible Mind*, an insight of historian Edgar Wind is recommended, according to which an important lesson of history is that the commonplace can usually be understood as a reduction of the exceptional, whereas the exceptional cannot be described as an amplification of the commonplace.

In Chapter 1, "A View from the Mainstream: Contemporary Cognitive Neuroscience and the Consciousness Debate" Edward Kelly scrutinizes current views within consciousness research, using and probing arguments and insights from the philosophy of mind, neuroscience and cognitive sciences and cognitive psychology. A particular focus is on computational theories of the mind, the most dominant approach to the problem of mind in present consciousness research. In the vein of behaviorism, computational theories of the mind attempt to reduce the human brain to a biocomputer, which is supposed to generate observable human behavior ("output") as mere processing of sensory stimuli ("input"), thus completely ignoring human experience and the domain of introspection. Kelly tells us that he used to be a proponent of computational theories of the mind himself, up to the point when his own research in psycholinguistics shook his convictions and made him realize that the approach of computational theories of the mind is flawed at its very roots. His own work and that of researchers like Hubert Dreyfuss and Joseph Weizenbaum persuaded him that computational theories of the mind dramatically fail to answer challenges posed to the reductive attitude of cognitive psychology by everyday phenomena of mental life, such as human insight, situation awareness, and representation of meaning. Kelly finds that more current developments within research into artificial intelligence such as connectionism and dynamic systems approaches fare no better, as they share the paradigmatic basis of computational theories of the mind and thus rest on the same conceptual flaws as older linear models. Kelly proceeds to summarize the basic conceptual hurdles inherent in computational theories of the mind, which in

principle are exemplified in John Searle's famous "Chinese room argument" in the philosophy of mind. Searle seeks, and obviously manages, to refute Alan Turing's claim according to which we are to hold that a computer which can fool us into believing that it is human actually has a mind similar to that of a human being. Kelly also takes issue with epiphenomenalist presuppositions adopted, but rarely critically reflected upon, by most philosophers of mind (including Searle) and concludes that there are already sufficient data and arguments on file which both demonstrate the limitations of current "production" models of consciousness and rehabilitate a view of the brain (already favored by William James, Frederic Myers, and Henri Bergson) as an organ that transmits or "filters" rather than produces consciousness. Kelly's conclusion, arguing that biological naturalism is insufficient to understand the problem of mind, consists of a summary of the subsequent chapters.

Chapter 2, "F.W.H. Myers and the Empirical Study of the Mind-Body Problem" by Emily Williams Kelly offers what I think is the most comprehensive and authoritative review of the ideas and work of Myers currently available. Historically embedded in the success stories of natural sciences and Darwinism in the late nineteenth century, and the genesis of academic psychology with its pet approach of psychophysical parallelism, the author roots the intellectual starting point of Myers in the still open question as to the actual nature of consciousness. A concise biography and a sketch of Myers's scientific ethos follows, which is perhaps best characterized as a mix of radical open-mindedness and stringent methodological awareness and cultivation of a critical spirit. Myers, like his friend and colleague William James, believed that a psychological system claiming completeness needs to integrate all aspects of mental life — conventional, pathological, and exotic — in order to pass as scientifically valid, and thus embodies perhaps the starkest and at the same time scientifically most sophisticated contrast to the experimentism of Wilhelm Wundt, which eventually implemented itself as what we know now as "psychology" (Kohls and Sommer, 2006).

Myers's model of consciousness, which is based on early empirical findings of psychology, psychopathology, and psychical research, and which bears strong resemblances to the views of German philosopher Carl du Prel (1885/1889, see also Sommer, 2009), regards our every-day empirical consciousness (the "supraliminal self" in Myers's terminology) as a pragmatic extract of a far more extensive spectrum of consciousness at large. According to Myers, the functions of the supraliminal self emerge from the actual self of man, the "subliminal self," which underlies the empirical self and whose agency can be inferred from so-called automatism (dreams, visions, inspirations, automatic writing and speaking, hypnosis, somnambulism, etc.). The epistemic limitedness of our normal waking consciousness is held to be the result of neural filtering, or focusing, steered in the course of biological evolution. Although Myers's model of mind allows for, and even centers around, the possibility of survival of bodily death, it is a secular and empirically testable model of the human psyche.

Chapter 3, "Psychophysiological Influence," again by Emily Williams Kelly, is the lengthiest contribution of the book. Emily Kelly reviews historical and current developments in medicine and shows how consciousness — and particular aspects of volition — as a physiologically efficacious principle has become taboo in medicine and psychology. It was only in the last decades, particularly in the psychosomatic and psychoneuroimmunology literature, that the role of mental acts in health and sickness has experienced a certain amount of rehabilitation. A particularly instructive lesson of this well-researched and enthralling chapter is that the taboo against

consciousness and volition seems to have come about because of a collective fear of the metaphysical consequences and implications of acknowledging the causal efficacy of mental processes.

Emily Williams Kelly discusses the causal role of the mental in bodily functions and processes by reviewing findings of research into placebo and nocebo effects, correlations between bereavement and survival rate of bereaved persons, psychogenic deaths (for example, so-called "voodoo deaths," where a person is apparently dying because he believes himself to be cursed), health-enhancing effects of meditation and spirituality, and "miracle healings" at places of pilgrimage. Particular attention is paid to the problem posed for current physiological theories by effects on specific and narrowly localized areas of the body. Dramatic instances of local selectivity and physiological specificity include well-documented reports of sudden whitening of the hair, pseudopregnancy, stigmata, temporary re-emergence of bodily effects of abuse in a psychotherapeutic setting, and physiological effects of hysteria, which are taken from the medical literature and critically reviewed, i.e., the scientific quality of the cited studies is scrutinized in light of criticisms of these studies. The author also discusses cases from the literature on dissociative identity disorder, where "split personalities" within an organism not only differ in psychological, but also in objective, physiological features, such as allergies, far- and near-sightedness, pain tolerance, and responses to medication — all of which cast grave doubts on a dominant view in psychology and psychiatry according to which multiple personalities are the result of mere role-playing.

The next section involves self-induced physiological effects, such as voluntary heart-rate modification or pupil dilation, experimental voluntary "apparent deaths" in yogis, and a thorough review of hypnotically induced sensory, analgesic, and dermatological effects, followed by a comprehensive discussion of the immense problems raised by such phenomena for current physiological and neuroscientific theories. This also prepares the reader for the following section, which is likely to appear as a particularly outrageous impertinence to those conditioned by the academic *Zeitgeist*: cases of alleged direct influence on other organisms.

As an introduction to more drastic examples of remote mental influence, Emily Kelly reviews the phenomenon of "maternal impressions," where specific, mostly affective, images in the mind of a pregnant woman seem to correspond with anomalies in the organism of a fetus. Among modern physicians, maternal impressions are viewed as mere folklore or anachronisms, and Kelly cites several skeptical statements. However, alleged maternal impressions, just as most other phenomena reviewed in *Irreducible Mind*, are not only important for physiological theorizing, but also to historians and philosophers of science with an interest in the problem of the so-called theory-ladenness of science. For example, the author shows that cases of maternal impression were reported in the medical literature up to the late nineteenth century, when it was still believed that a fetus was connected to the organism of a pregnant woman completely through blood vessels and nerves. Hence, a fetus was regarded as a quasi-organ of the mother, which permitted an (admittedly generous) interpretation of maternal impressions as psychosomatic effects. Only when advances in physiology made it clear that the physiological connection between fetus and mother was insufficient to allow such an interpretation, cases ceased to be published — earlier, seemingly well-documented, reports notwithstanding.

Full-blown instances of alleged remote influence are presented in the following section. The author reviews examples from the early literature on hypnotism, where authors like Pierre Janet, Charles Richet, Edmund Gurney, and Frederic Myers him-

self reported cases of so-called mental suggestion (“telepathic” induction of hypnotic suggestions over a distance). Also, successful experiments within the modern DMILS paradigm of experimental parapsychology and clinical studies on the efficacy of “distant healing” are reviewed.¹ Finally, documented birthmarks and birth defects in children who claim to remember previous lives are discussed, which correspond with wounds involved in the death of allegedly remembered previous personalities. The author stresses that the presented phenomena are not merely isolated scientific curiosities, but display a marked conceptual continuity and kinship to one another, and the latter of which make no sense in light of mainstream physiological and neuroscientific theories but are highly compatible with Myers’s model which ascribes to the psyche the role of an organizing principle of the physical.

Chapter 4, “Memory,” by Alan Gauld, one of the most well-read and analytical authors dealing with alleged psychic phenomena, tackles some of the enormous hurdles that are raised by the every-day phenomenon of memory for modern neuroscience and cognitive science. With breath-taking empirical and conceptual thoroughness and analytical depth, Gauld shows, in a similar vein as philosophers John Heil (1978) and Stephen Braude (2006), that the conventional understanding of memory (excepting conditioned reflexes, avoidance behavior, or the like) as the result of activation of hypothetical “memory traces” or “engrams,” i.e., modifications in the brain generated by experience, is fraught with logical hurdles as it quickly leads into a regress *ad infinitum*, and that the problem of memory, the received wisdom of the neuroscientific community notwithstanding, is still one of the big unsolved riddles of science. Among these difficulties are, for example, that different forms of memory, e.g., episodic, semantic, or conceptual memory, seem to presuppose each other and cannot always be logically reduced to one another. Similarly, the mere recognition of a recollection, i.e., the insight of what discriminates a memory from other mental contents, seems to presuppose an inherently and primitively discriminative feature of consciousness (which is reminiscent of a similar problem in the philosophy of mind, namely that of intentionality, or the “aboutness” of mental contents).

As previously argued by Edward Kelly in Chapter 1, Gauld finds that cognitivist theories of mind, which developed within the theoretical framework of the artificial intelligence paradigm, also fail to overcome the hurdles in regard to memory found in reductionist neuroscience. While cognitivism rarely speaks of memory traces, the term “representation” is commonly used for very similar conceptual purposes to those of what Gauld calls “good old-fashioned memory traces.” But contrary to what engram models of memory or the cognitivist computer models imply, representation is not a thing that can be “stored,” and by definition is generated rather than intrinsically present in things or structures.

Next, Gauld goes in *medias res* with certain empirical findings and their interpretations within neuroscience, centering around the implications of neurological degeneration and lesion studies, which seem to suggest that memory somehow must be stored and located in the brain in the first place, and which assign the hippocampus and medial temporal lobe a crucial role as a physiological basis of long and short term memory. Gauld warns that it is at best premature to promulgate the image of higher mental functions as distinctly located in defined brain areas as findings in neuroscience increasingly suggest a high plasticity of neural correlations with mental

¹Direct Mental Interaction with Living Systems or Direct Mental Influence upon Living Systems.

processes. Similarly, methodological problems of brain imaging techniques such as fMRI or PET are analyzed, which, in Gauld's view, often lead to "breathtaking oversimplifications" (p. 267). He reviews a number of paradoxical and inconsistent insights from the neuroscientific literature suggesting that the precise role of the hippocampus, the medial temporal lobe and other brain areas for the genesis and activation of memory is still far from understood, which is particularly evident in cases where memory remains relatively or fully intact despite injuries of relevant areas.

But these neurological anomalies are not merely enumerated to demonstrate the fallibility of the "locality" paradigm, as Gauld always attempts to reconcile them with the best currently available neuroscientific theories, all of which, however, seem to fall short of making sense of them (including the celebrated model by Antonio and Hanna Damasio, which the author criticizes thoroughly). He also finds that the emerging description of the brain as a dynamic, holistic, and self-organizing system is unlikely to solve the problems related to the intentionality of memory, the role of synaptic modifications in the apparent formation of memory, and the plasticity of neural processes, but offers merely descriptive advantages. Gauld states that although the raised issues do not necessarily have to remain unsolved — but he confesses skepticism about the possibility of overcoming the purely logical and conceptual problems inherent in memory traces and related concepts — they should not be ignored by the neuroscientific community as has been the case to date.

It is obvious that a demonstration of the possibility of postmortem survival would falsify the hypothesis of the complete dependence of consciousness and memory upon a working brain. Hence, in the last section of his chapter Gauld summarizes (somewhat obscure, but methodologically remarkably sound) findings of empirical research into hypothetical survival and discusses the problem of survival with regard to memory, as well as the philosophical problem of personal identity. He introduces Myers's approach to the survival problem, which refrains from evaluating reported phenomena suggestive of survival as isolated data, but rather aims at assessing whether those phenomena are conceptually consistent and compatible with psychic and psychological characteristics of the living. In anticipation of a finding from the following chapter on automatism, Gauld shows how Myers's research into dissociation convinced Myers and other researchers that dissociative processes (or "secondary streams of consciousness") — which, on first glance, seem to challenge the traditional image of the psyche as a unity, and thus a basic precondition for its hypothetical capability of postmortem survival — are rooted and coordinated in a subliminal region of the self, thus suggesting a basic unity of the human psyche. Since, according to Myers, the subliminal self is characterized by features that are difficult to reduce to a purely biological or physiological reading and seem to be pre-adapted to a "disembodied" existence, he believed that it is identical with the surviving human psyche. Gauld recommends taking the data from survival research seriously, despite their being inconclusive, and suggests other factors that a comprehensive theory of memory needs to take into account.

In Chapter 5, "Automatisms and Secondary Centers of Consciousness," Adam Crabtree gives an excellent and detailed historical account of the works of Myers and colleagues (Pierre Janet, William James, Morton Prince, Thomas W. Mitchell, William McDougall, Sigmund Freud, Carl Gustav Jung) on sensory and motor automatism and dissociative phenomena, and compares them with modern theories (by Ernest Hilgard and Stephen Braude). Modern and historical approaches to the problem of the unconscious are thoroughly reviewed, and socio-cognitive theories of automatism are discussed and discarded since they are found to collapse before the

phenomenology of certain well-documented cases from the literature on hypnotism and dissociation, which can hardly be accounted for as instances of role-playing or results of social conformity.

In a discussion of modern neuroscientific findings that seem to rehabilitate the notion of a dynamic unconscious under the catchword of the "cognitive unconscious," Crabtree documents a well-nigh irrational dread among modern neuropsychologists to acknowledge the role of consciousness and volition for psychology in any form whatsoever. The same is true for the mere idea of autonomous dissociated streams of consciousness within the human psyche, apparently unambiguous data from neurobiological research on dissociative identity disorder and other areas notwithstanding. The author reviews the works of Myers and colleagues on the relationship between automatism and psi phenomena and the problem of creativity. Myers's psychological model is again found to be superior to modern theories in terms of explanatory power regarding unconscious and dissociative processes as well as sensory and motor automatism.

Chapter 6, "Unusual Experiences Near Death and Related Phenomena," jointly written by Emily Kelly, Bruce Greyson, and Edward Kelly, provides an overview of research on near-death experiences and a review of current theories of the near-death experience. The authors find that none of the classical elements of the near-death experience is exclusively linked to the latter, but also figure in other altered states of consciousness. Psychological explanations which are rebutted by the authors include expectancy effects, birth memories, depersonalization, and personality factors. Physiological theories that also fail to account for the complexity of the near-death experience suggest the involvement of blood gases or neurochemical and neuroanatomical processes. Transcendental aspects such as enhanced mental clarity during the near-death experiences and veridical perceptions during out-of-body experiences are discussed and found to pose the greatest challenge to biological-naturalistic approaches.

Out-of-body experiences are discussed from a more general perspective, and the authors scrutinize recent single-case studies from the mainstream literature that seem to suggest that out-of-body experiences can be understood and even induced in purely neurophysiological terms. The authors argue convincingly that each of those studies suffered from severe methodological flaws and phenomenological superficiality, and that their conclusions, widely promulgated in the press as the long-awaited scientific explanation and demystification of the out-of-body experience, are to be viewed with great caution. The significance of autoscopic experiences (where, unlike in out-of-body experiences, the focus of perception remains "in" the body, while an external double of oneself is hallucinated) and lucid dreams for the near-death experience are reviewed, and the phenomenology of apparitions of the dead and death-bed visions is discussed. Also, the considerable phenomenological overlap between certain types of near-death experiences and mystical or conversion experiences is detailed, with a special focus on the often dramatically transformative character of these experiences. Finally, the difficulty posed to biological-naturalistic models by near-death experiences during cardiac arrest and general anesthesia is emphasized, and the authors conclude that a truly scientific model of consciousness needs to account for all features of the near-death experience, which has a relatively high prevalence in the general population, as well as more mundane phenomena of mental life. Again, Myers's model is represented as not only being capable of accommodating the anomalies under review, but also as putting the latter into a conceptual perspective with less dramatic aspects and functions of the mind.

Chapter 7, "Genius," by Edward Kelly and Michael Grosso, illuminates another interesting phenomenon which Myers used as a cornerstone of his psychological model, and which also shows the shortcomings of modern neuropsychological theories: cases of exceptional creativity and talent, where astonishing cognitive (e.g., mathematical) or artistic feats are accomplished as automatisms, i.e., outside normal awareness, sometimes in intellectually severely impaired persons, and occasionally accompanied by visual and other impressions in a symbolic manner. The sheer complexity, speed and memory involved in these cases seem to suggest that creativity, in its exceptional and common forms alike, is a feature of the human mind that transcends conscious cognition and originates in a subliminal region of the psyche. Current theories of cognition and creativity are reviewed in detail and dismissed as insufficient for understanding or explaining the phenomenology of extreme creative achievements. The authors also discuss exceptional cognitive achievements in the mentally ill, which seem to support Myers's view according to which creativity and madness share a common precondition: an unusual permeability of the psychic "membrane," which in Myer's model determines the quality and scope of conscious perception as well as the emergence of inspiration, intuition, and creative impulses as "subliminal uprushes." In line with the theme of the next chapter, the authors conclude with a discussion of the phenomenological overlap between genius and mystical experience.

In Chapter 8, Edward Kelly and Michael Grosso discuss the implications of mystical experience for psychology and neuroscience, following an approach similar to that of Frederic Myers, William James, and the hitherto less known but fascinating work of Emil Mattiesen (1925), which transcends the approach of mainstream psychology of religion through empirical and conceptual expansion. A phenomenological overview of mystical experiences within eastern and western traditions is followed by considerations from personality psychology and a critique of "constructivist" approaches, which currently rank among the most popular approaches to the understanding of mystical experiences in the psychology of religion. The authors argue that a purely constructivist account falls short of making sense of certain types of mystical experiences that seem to outstrip cultural and personality factors and moreover have a typically transformative character, which is difficult to deduce from the alleged constructedness of the experiences in question.

Certain mystical experiences also involve elements of the phenomena reviewed in the preceding chapters, such as extreme psychophysiological effects (e.g., stigmata, insensitivity to pain, etc.), out-of-body experiences, and profound psychological or ethical transformation, exceptional cognitive feats, etc., which is why the authors consider mystical experiences as the *via regia* of consciousness research. Current neurobiological approaches assuming a relationship of mystical experiences with temporal lobe epilepsy, ergotropic/trophotropic balance, and the models of d'Aquili, and Newberg, and James Austin, are critically discussed and found to be insufficient to understand all facets of the phenomenon. A subsequent section deals with certain phenomenological similarities between mystical and psychedelic experiences, and the authors bemoan the enormous political hurdles that make a potentially promising study of controlled induced altered states of consciousness using, for instance, lysergic acid diethylamide (LSD) or psilocybin, difficult and in most countries impossible. Finally, psychodynamic approaches to mystical experiences (Freud, Jung, Myers, James) are considered and compared, and suggestions for future research are advanced.

In the ninth and final chapter, "Toward a Psychology for the 21st Century," Edward Kelly interweaves the themes of the book into a conceptual whole and

attempts an evaluation of Myers's ideas and their implications for a scientific psychology of the future. He opens the chapter by scrutinizing then contemporary reviews of Myers's *Human Personality* (a selection of which are contained in the enclosed compact disk) by G.F. Stout, William McDougall, William James, Ernest Jones and others, and corrects several obvious misunderstandings and misrepresentations, especially by Stout and Jones, of Myers's ideas.

Next, Edward Kelly attempts to reconcile the transmission or "filter" model favored by Myers, James, Bergson and others with the bulk of modern neuroscientific data, and he discusses (explicitly non-Cartesian) dualist interactionist as well as neutral-monist models as a contribution to a possible solution of the mind-body problem. In a concluding prospectus Kelly speaks for all authors of *Irreducible Mind* when he suggests that the psychological systems of Myers and William James, both of which exhibited enormous scientific courage and exemplary empirical thoroughness, are preferable to other, more accepted models: Unlike the latter, they account both for phenomena of every-day mental life and those which, despite being well-documented, are denied by the current materialistic paradigm. At the same time it is stressed that Myers's model of the mind should not be viewed as a complete and finished system, but rather, as recommended by Myers himself, a provisional map of consciousness and a guide to the further study of the human mind.

At first glance, some readers and novices to the study of the mostly exotic topics discussed in the book might presume that *Irreducible Mind* is just a bloated manifesto of the New Age movement. Such an impression, however, would be entirely erroneous. Each chapter and the book as a whole are characterized by a constructive critical and genuinely scientific tone and spirit, which not only scrutinizes certain dogmas within mainstream science, but also recommends distinctive and, at least in my view, realistic directions for future research. I know of no other similar work that employs the same degree of thoroughness, and displays such great scientific competence, as is characteristic of the present book. Moreover, the same critical attitude is applied to the model of Myers itself, which, despite gaps and weaknesses, has not only stood the test of time but also offers a genuine scientific alternative to mainstream neuroscientific theories.

While also drawing on materials from experimental parapsychology and transpersonal psychology, the authors find certain attitudes within both fields wanting. Regarding mystical experiences and their scientific value for transpersonal psychology, for example, they state: "Transpersonal psychology thus has a real subject matter. But to put the matter bluntly, it must put its scientific house in better order, and notwithstanding the unfortunate proclivity of some of its adherents toward inflammatory rhetoric about supposedly insurmountable 'clashes' or 'collisions' between the primordial tradition and mainstream science, we can discover no essential obstacle to doing so" (p. 574). The authors of *Irreducible Mind* are in a good position to utter such criticism, as they demonstrate a keen awareness throughout that unusual research topics necessitate high scientific thoroughness, and they show that this demand can be satisfied. Also, regarding those in experimental parapsychology who typically consider the study of the history of their own field a waste of time, Edward Kelly remarks: "Although this has begun to change in recent decades, parapsychology still falls far short of what the founders of psychical research envisioned, as reflected in particular by the tendency of many modern parapsychologists to treat psi phenomena as free-floating 'anomalies' rather than trying, like Myers, to incorporate them within a larger framework of interrelated psychological phenomena" (p. 584, fn).

That a systematic cultivation of historical awareness and conceptual thoroughness are indispensable for consciousness researchers within and outside the scientific mainstream is one of the crucial lessons of *Irreducible Mind*. In this regard, the curricula of nascent psychologists and neuroscientists, which rarely encourage students to critically question metaphysical presumptions underlying their methodological indoctrination, are certainly in need of extension. Thomas Kuhn's (1963/1970, p. 368) assessment according to which "even a cursory inspection of scientific pedagogy suggests that it is far more likely to induce professional rigidity than education in other fields [of academia], excepting, perhaps, systematic theology" is as topical today as it was when Kuhn first began to be heard. Speaking of the history and philosophy of science, it is perhaps regrettable that the authors of *Irreducible Mind* did not reference the works and arguments of other students of the scientific community such as Imre Lakatos (1976), Bruno Latour (1999), Harry Collins and Trevor Pinch (1982), and particularly Paul Feyerabend (1975/1986), which contain essential insights as to the problem of science as a social process and belief system. In turn, *Irreducible Mind* offers rich material for the history, philosophy, and sociology of science and the newly emerging field of science studies.

The arguments put forth by the authors, who are explicitly concerned with a necessary advancement of scientific psychology, are difficult to allocate to either mainstream science, parapsychology, or transpersonal psychology. The latter branches, to use the language of dynamic psychology, are streams that have been dissociated from the collective consciousness of academic psychology, and which await a reunification and reconciliation with their big sibling. Unless this is accomplished, members of the psychology and neuroscience mainstream will necessarily continue to view the efforts of parapsychologists and transpersonal psychologists as irritating and even pathological disturbances (Kohls and Sommer, 2006). In this reviewer's opinion, the present book has the potential to serve as an invaluable guide for psychologists and other scholars who are aware of the increasing crisis and lack of orientation within modern academic psychology.

One quite minor point of criticism regarding what I feel might be a pedagogic mistake is perhaps in place: in the Introduction (p. xxvi) a confession as to belief in the reality of psi phenomena is made, which might tempt more or less biased readers to quit reading instantly before hearing the actual arguments. As implied earlier, I believe that one of the undisputed achievements of the book is to sensitize readers to the theory-ladenness of scientific activities and, ideally, to our own possible cultural and theoretical conditionings and biases, which tend to make us pre-judge reported psychic phenomena as an intellectual taboo. On the background of other, less spectacular, phenomena discussed in *Irreducible Mind*, the alleged impossibility of psi phenomena is likely to appear less certain than perhaps previously believed, which in principle allows a less polarizing approach to psi and other phenomena that have typically been associated with superstition or dogmatic religion and thus categorically dismissed. Through the premature confession as to the existence of psi phenomena the misleading impression might arise that the present book is but another ideologically motivated diatribe attacking scientific materialism (the sacred cow of the scientific community). Hence, some readers that might have needed some priming and preparation for being confronted with the evidence for psychic functionings presented later in the book may thus be deprived of the opportunity to ponder the arguments of the whole work, to perhaps even advance them through criticism, or to broaden their own intellectual horizon.

Frederic Myers stated that the greatest success of his book would be its rapid supersession by a better (Myers, 1903, vol. 1, p. 9). *Irreducible Mind* convinces me that

after more than 100 years of scientific psychology his hope has not been fulfilled. The authors have not only plausibly argued that the empirical and conceptual horizon of science, particularly the science of the human mind, is both capable and in dire need of expansion, but — and I use this strong term deliberately — they have proven it.

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