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A Modular Model of Mind/Matter Manifestations (M^5)

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Abstract—While ongoing empirical research into anomalous mind/matter interactions continues to reaffirm the reality of such phenomena, it has heretofore failed to stimulate viable theoretical models, or even to suggest effective strategies for more productive experimentation. In contrast to prevalent presumption, re-examination of several large databases from this laboratory raises doubt that such effects are produced by direct attention of the conscious mind to the observable physical processes addressed. Rather, an alternative route is indicated wherein unconscious mind and intangible physical mechanisms are invoked to achieve anomalous acquisition of mental information about, or anomalous mental influence upon, otherwise inaccessible material processes. Implications for more effective experiments include subtler feedback schemes that facilitate submission of conscious intention to unconscious mental processing; physical target systems that provide a richness of intangible potentialities; operators who are amenable to such interactions; and an environmental ambience that supports the composite strategy. Theoretical requisites include better understanding of the information dialogue between conscious and unconscious aspects of mind; more pragmatic formulations of the relations between tangible and intangible physical processes; and most importantly, cogent representation of the merging of mental and material dimensions into indistinguishability at their deepest levels.

Keywords: consciousness-related anomalies — engineering anomalies — human/machine anomalies — mind/matter interactions — models of mind/matter interactions — remote perception

I. Background

Over the past century or more of systematic research into consciousness-related anomalous physical phenomena, itself laid upon many millennia of recorded anecdotal attention to such topics,[1] little credible progress has been made toward reliable definitions of situations, individuals, or strategies that regularly enhance the scale or reproducibility of these extraordinary events. Whereas any reasonable meta-analyses of the huge bodies of extant data clearly establish the reality of such effects and crudely circumscribe their size and gross mental and technical correlates,[2] little indication of routes to systematic improvement of yield or reliability appears therein. To the contrary, in many cases apparent hints of potentially productive strategies gleaned from one set of experiments, when implemented more directly in subsequent studies, have

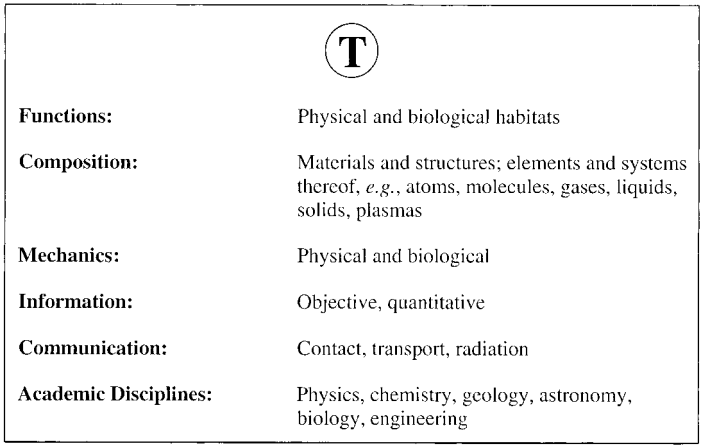

Fig. 1. Tangible Physical Module (T).

failed to improve the yield, or even to produce equivalent results. In other cases, experiments that logically have seemed less propitious, either in their attractiveness to the participants or in the difficulty of their tasks, have provided some of the largest effect sizes. And not infrequently, attempts at direct replication conducted under essentially identical conditions have shifted the anomalous behavior away from the primary indicators into various secondary structural aberrations.[3] At the end of the day, we are confronted with an archive of irregular, irrational, yet indismissable data that testifies, almost impishly, to our enduring lack of comprehension of the basic nature of these phenomena.

Most of this long chain of less than enlightening experiments have been designed and operated under the implicit, if not explicit, presumption that we are seeking other direct, albeit anomalous, routes of access of the conscious mind into the material world that can function in parallel with the known sensory channels. Hence, the experimental strategies have employed simple and attractive physical targets, feedback displays that are aesthetically engaging to the operator while providing immediate information on the achievement, and operator strategies involving direct attention to the tasks. The proposition advanced in this paper is that all of this actually may have been a misguided search for the key to these phenomena under a familiar intellectual lamp post, while the processes we seek to understand actually are functioning in more shadowy regions of the mental and physical worlds.

To develop this suspicion in a bit more detail and to begin construction of our alternative model, consider two conceptual modules labeled (T) and (C), denoting the tangible physical world and the conscious mind, respectively (Figures 1 & 2). The former comprises all of the known material substances

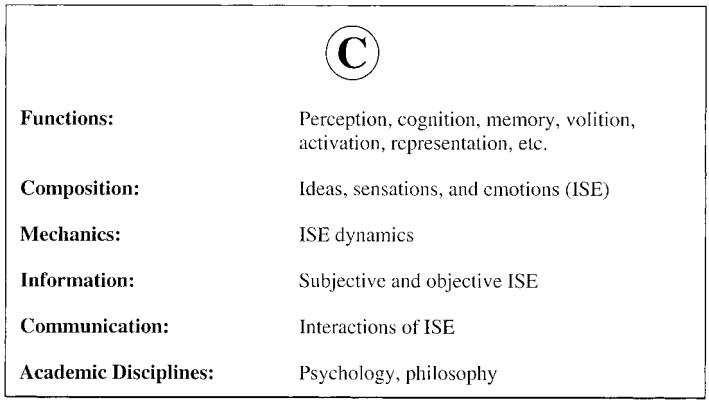

Fig. 2. Conscious Mind Module Ⓒ.

and structures, dynamic and energetic processes, and information transfer mechanisms commonly represented in the contemporary natural and biological sciences. The primary functions of this domain are to preserve and evolve itself, and to provide viable habitats for living creatures. The modes of internal communication are via contact interactions among its material units, bulk transport of substance or energy, and radiations of various kinds. Its most commonly employed observables are based on fundamental measures of position, time, mass, and electric charge. Searches for the ultimate constituents of this material domain have led historically to identification of a plethora of atomic, nuclear, sub-nuclear, and yet more esoteric "particles," all of which can display complementary wave-like characteristics. Conversely, all of its radiation processes have been found to display particulate characteristics under appropriate observational conditions. Despite this duality, almost all aspects of this venue appear to conform to a hierarchy of well-understood dynamical relations, conservation laws, and other physical principles that preside over their orderly deployment and representation.

The module Ⓒ, representing all the conscious aspects of the mind, subsumes the psychological capacities commonly termed perception (awareness), cognition (contemplation), representation (organization), memory (recollection), volition (intention), activation (behavior), *etc.* The primary processes executed in this domain are the establishment of subjective experiences derived from interactions with the physical world and with other consciousnesses, and the logical organization thereof via its own internal ruminations. Attempts to define the composition and dynamics of the mind traditionally have been pursued from two widely disparate presumptions regarding the relationship of mind to brain. From a currently popular materialistic perspective, all of the conscious functions and experiences of mind are established by the electrochemical states of the brain, themselves induced by sensory stimulations

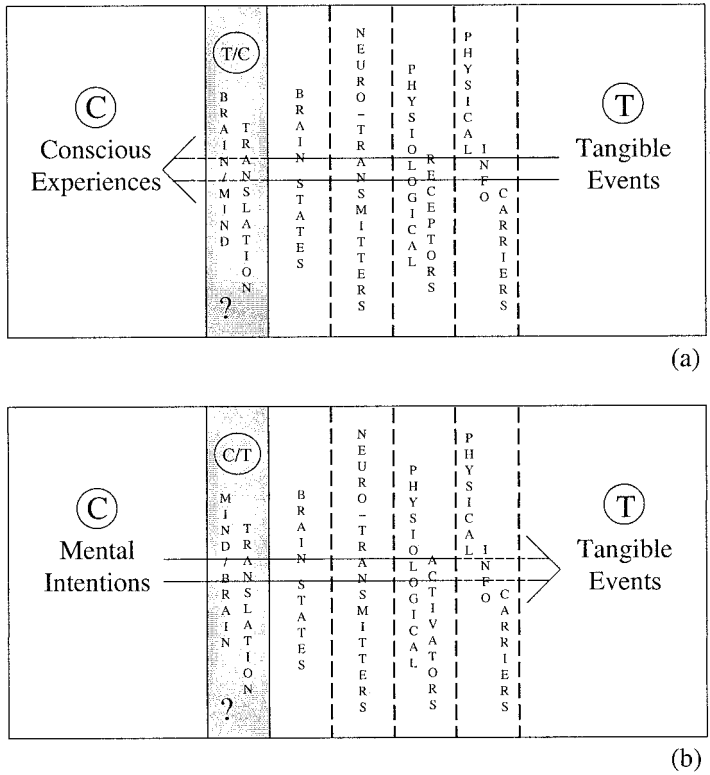

Fig. 3. Interactions of Conscious Mind with Tangible Matter (a) Acquisition of information from environment; (b) Insertion of information into environment.

from the entire physiology. As such, the conscious mind module would center on the brain and, in principle, could be represented adequately by the methods of objective science. But in a sharply alternative non-materialistic view, which we shall favor, conscious experience is regarded as a much more extensive, less explicitly definable, perhaps even conceptually ineffable purview, with the brain and its associated neurophysiological processes more properly included in the tangible physical module (T), where they serve as transducers between objective signals and subjective impressions. In taking this option, we cannot avoid invoking a host of less explicitly definable or measurable subjective dimensions for which a comprehensive quantitative science does not yet exist. In several other publications we have offered some speculations on possibilities for formulation of such a "science of the subjective,"[4] with particular attention to the metaphoric applications of quantum mechanics for such purposes.[1, 5] These formulations introduce a number of "soft" coordinates, along with expanded roles for uncertainty and probability, proactive teleology, and interdisciplinary metaphors, well beyond those usually allowed in materi-

alistic science, and, to some extent, we shall presume the validity of such extrapolations in the development of this model.

From this perspective, we can illustrate the inadequacy of the current mind/matter paradigm and begin assembly of our modular model by juxtaposing segments (C) and (T), as sketched in Figures 3a and b. The essential issue is how (C) acquires information about (T), and vice versa. In "normal" processes, we presume that information about physical states or events is first transmitted by contact, radiation, or some other transport process to the physiological corpus, where it is detected by some appropriate sensory transducer, whence it is converted to corresponding neurological signals that are transmitted to and organized by the brain, establishing therein an array of micro and macro, localized and distributed, states to which the conscious mind, either by experience or instinct, can respond. Inversely, a conscious intention to affect the physical environment follows a reverse route wherein the brain, somehow configured by that intention, transmits appropriate instructions to physiological transmitters and activators, such as the voice equipment, hands, or legs, to perform some physical functions that influence, *i.e.*, insert information into, the physical environment. Note that the brain/mind and mind/brain steps that terminate, or initiate, penetration of the (T)/(C) and (C)/(T) interfaces, respectively, remain obscure. Nonetheless, the details of the other physical and neurophysiological links in these chains are well enough established in the preponderance of common situations that a large body of "normal" behavior has been catalogued. Those rare cases of information where such linkages have not yet been identified are regarded as anomalous, and search for the requisite missing links has been pursued under the continuing presumption that it is this same interface that somehow is being penetrated. It is this presumption that our model proposes to challenge.

The stimulation for this challenge has been a re-contemplation of a broad range of experimental results obtained in the Princeton Engineering Anomalies Research (PEAR) program over the last two decades. While the bulk of these results have verified the reality, scale, and certain characteristics of the anomalous effects, a number of experiments specifically configured to enhance the operator interactions with the target devices or tasks have displayed disappointingly small, null, or even negative yields. In contrast, other designs in which the feedback was rudimentary or totally absent, or where the tasks seemed much more difficult or illogical for the operator to accomplish, have yielded surprisingly strong results. In still other cases, repetition of identical experimental designs has yielded anomalous results of varying character, or none at all.

Before attempting further specification of these correlations, we might remind the reader that the PEAR program has concentrated almost entirely on two classes of experiments: anomalous human/machine interactions, and remote perception, albeit with many variants of each. In the former category, untrained human operators attempt to influence the output of a variety of ran-

dom event generators (REGs), most of which are electronic in character, but some also of a mechanical, optical, acoustical, or fluid mechanical nature.[6] In the latter, similarly unexceptional human "percipients" attempt to acquire subjective or objective information about remote physical targets at which a human "agent" is stationed, with no known sensory communication channel available.[7] Given the large reservoir of prior publications detailing many versions of these experiments,[1, 8] and the desire to keep this article concise, we shall eschew any detailed review of this prior work, and simply note the particular evidence in each category that casts doubt on any direct Ⓒ/Ⓣ interface penetration model:

1. Ineffectiveness of Direct Feedback

The early "benchmark" REG experiments that established the reality, accessibility, scale, and primary correlates of our human/machine anomalies provided the operators with numerical LED displays of their ongoing and compounding achievements. In an attempt to engage the operators in more intimate bonds with the machines and their outputs, subsequent versions displayed colorful cumulative deviation graphs that developed in real time on screens of the data acquisition computers. For many years, these "digital" *vs.* "graphic" feedback options were left to operator preference, and while some individual operator idiosyncrasies were observed, no overall superiority of one or the other mode was established. Indeed, a smaller body of data taken with no feedback at all showed at least as large a composite effect size as that of either of the visual modes.[9]

This insensitivity to conscious feedback has been underscored by the results of a large body of "remote" REG experiments, wherein operators stationed up to global distances away from the laboratory attempt to influence the machine outputs at pre-arranged times of their operation in the laboratory. Although no form of concurrent feedback is available to these remote operators, the overall effect sizes have been at least as large as those obtained in the "local" experiments, even when the time of operator effort has been different from the time of machine operation.[10]

Notwithstanding these bemusing first indications of the insensitivity of the anomalous effects to feedback format, many other techniques to enhance effect sizes by more engaging visual stimulation have been attempted, with similar lack of success. For example, the first major departure from our use of microelectronic REGs as target systems utilized a large "Random Mechanical Cascade" (RMC) device, described in detail in other publications.[1, 11] In the laboratory-based version of the experiment, the operator is in intimate visual contact with a flux of many small balls through an array of scattering pegs into a line of collecting bins, and receives detailed feedback on the temporal development of the accumulating bin populations via LED displays. Despite these major differences in the physical character of the machine and the form of its feedback, the overall effect sizes, statistical merits, and many structural as-

pects of the anomalous output distributions have been found to be quite similar to, but no larger than, those achieved with the microelectronic devices. Remote experiments performed using this same device have yielded essentially similar results.

Several other types of human/machine interactions involving random physical sources and feedback modalities of electronic, optical, mechanical, acoustical, and fluid mechanical types also have been explored in a broadcast search for configurations that would intensify the operator/machine interactions and yield larger effect sizes. To date, no such configuration has been found. A large, colorfully illuminated crystal pendulum on which the operators attempt to alter damping rate or swing symmetry, although presenting some interesting internal structure in its database, has yielded no larger bottom-line results, but maintains significant remote effects.[12] An "ArtREG" experiment, wherein two attractive illustrations compete for dominance of a computer screen whose pixels are driven by an electronic REG, has shown weaker overall results than other REG experiments driven by the same sources but presenting less engaging feedbacks.[13] Various implementations of a beautifully illuminated fountain, wherein the random element is provided by the dynamical collapse of the upward jetting water column itself so far have failed to yield convincingly superior effect sizes. A Native American drum, whose random beats are driven by a standard REG has shown little evident organization of its acoustical output patterns. And a charming mechanical robot that is driven around a circular table by its own on-board REG has yielded little evidence of greater anomalous response to operator intention than have more rudimentary incorporations of the same noise source.

2. Indirect Feedback Experiments Yielding Larger Effect Sizes

In contrast to the array of unsuccessful attempts to enhance anomalous effect sizes via more engaging feedbacks, other experimental designs that intrinsically provide less explicit, less attractive, or less immediate feedback, or that would seem to present more difficult tasks for the human participants, often have yielded larger anomalous effect sizes. One example already has been mentioned, *i.e.*, the persistence, and in some cases amplification, of the anomalous effect sizes in the "remote" and "off-time" REG, RMC, and Pendulum experiments. A second example appears in the complex of remote perception experiments where in both "on-time" and "off-time" protocols no direct, contemporary feedback is available. Yet, the overall effect size, digitized via 30-element descriptor codes, exceeds that of the majority of REG laboratory experiments by two orders of magnitude.[14] But perhaps the most striking example of this high-yield category would be the spectrum of "FieldREG" experiments, wherein miniaturized electronic REGs are placed unobtrusively in a variety of group convocation venues such as religious services, sporting events, musical and theatre performances, business and professional meetings, clinical therapies, *etc.*,[15, 16] or are deployed to monitor consequential public

events on an international scale.[17, 18] Although in most applications the human participants are unaware of the presence of the device and have no basis for establishing a state of intention for its output, a strong and persistent correlation of the output with the quality of the particular prevailing group dynamic has been demonstrated. Specifically, those group scenarios that are characterized by a high degree of shared purpose and enthusiasm, creativity, spiritual ritual, or other forms of collective resonance, are signaled by anomalous excursions of the REG outputs that are several times larger than the typical results of our laboratory-based REG experiments. In contrast, group venues that are more pedestrian in character tend to be accompanied by REG traces that conform anomalously closely to the chance mean values.

3. Effects of Operator Strategy or Personality

Another component of our experience that testifies to the enigmatic nature of direct feedback influence on operator performance is a body of admittedly anecdotal evidence relating to the broad range of operator personalities and experimental styles. Some are outgoing, ebullient, and light-hearted; others shy, quiet, and serious; others dour, imposing, and blunt. Some concentrate intensely on the experimental task and the feedback; others are much more relaxed and detached. Some cajole the machine; others threaten it; others ignore it totally, listen to music, or read a book or magazine to achieve a degree of distraction from the task. While we have attempted no quantitative correlations of results with these strategic or personality parameters, it does seem clear that there is little positive correspondence of operator performance with the degree of conscious attention to the task. Indeed, some of the largest effects have been provided by the least attentive operators.

4. Objective versus *Subjective Parameters*

A more quantitative index bearing on our proposed model has been provided by numerous attempts to identify the most salient parameters and correlates of the human/machine anomalies by analysis of variance (ANOVA) techniques. These invariably have verified *ad hoc* empirical observations regarding the relative insensitivity of the anomalous phenomena to such technical or objective parameters as machine type, rate of data generation, size of data units, spatial or temporal separation of operator from machine, or feedback modalities. The parameters which do emerge from such analyses as consequential are much more subjective in character, most notably the operator intention, but also other features of an operator-specific nature, including gender,[19] persistence of effort (serial position),[20] and the effects of co-operator partners.[6, 21] A similar correlation of degree of success with degree of subjectivity is apparent in the pattern of remote perception results, where the more impressionistic and generic aspects of the target scenes tend to be more readily perceived than their objective or specific details, and percipient descriptions

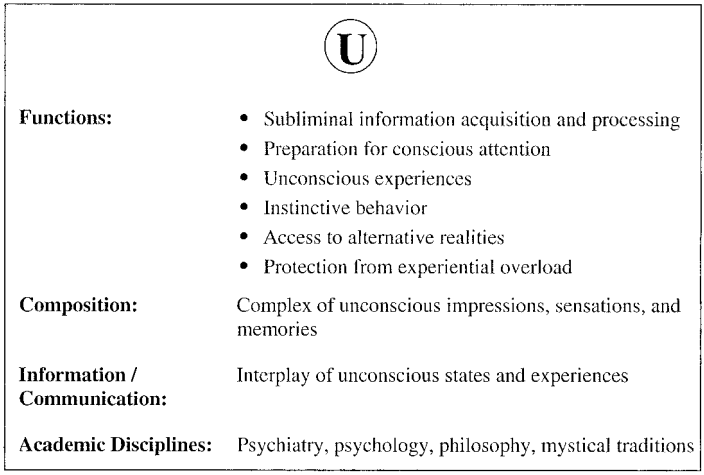

Fig. 4. Unconscious Mind Module (U).

often resort to symbolic terminology.[7, 14] While it is true that conscious mind processes both objective and subjective information, the tangible physical domain, by definition, does not trade in the latter currency. Hence, the suspicion arises that the anomalous information routes do not proceed directly from (C) to (T), or vice versa.

5. Appearance of Structural Anomalies Subordinate to Primary Intention

In a number of experiments, most notably a huge three-laboratory "PortREG" replication study conducted recently,[3] the anomalous results have shifted from direct correlation of the mean shifts with operator intentions, to an assortment of unsolicited structural aberrations in the database that collectively compound to a similar level of statistical departure from chance expectation. Since these aberrant sub-correlations were not consciously considered, let alone desired, by the participating operators or experimenters in any of these studies, it again would seem that other than conscious mental processes may be implicated.

II. The Unconscious and the Intangible

From this potpourri of enigmatic evidence, we distill our first radical proposition: the processes of anomalous information acquisition and physical influence that we seek to understand are not to be found primarily in the conscious mind and its interactions with the tangible world. Rather, we must move our search to the domains of the unconscious and the intangible. In other words, our model needs two other modules, which we shall label (U) and (I). With reference to Figure 4, we first circumscribe by (U) those aspects of the human

mind that have been labeled in various contexts and applications as "unconscious," "subconscious," "preconscious," "non-conscious," or "implicit," and to which have been attributed a polyglot variety of functions including efficient storage of information and past experience; autonomic control of physiological and cognitive processes; subliminal reactions to stimuli; preparation or confirmation of those experiences which register as conscious; instinctive behavior and insight; protection from trauma and other experiential overloads; altered states of consciousness; and various extraordinary abilities such as homing, trailing, or swarm behavior. An important distinction is made between "procedural" unconscious processes, which encompass a host of benign capacities for efficient performance of simple physiological and mental tasks outside of conscious awareness, and "dynamic" unconscious processes, which are maintained out of awareness for reasons of psychological conflict, ambivalence, or trauma. For our present purposes, however, we shall subsume all such capacities and regimes, along with others to be proposed in this model, under the generic rubric of an undifferentiated foundation for the conscious mind.

Again we must choose between a materialistic perspective that purports to base all unconscious processes on complex neurophysiological activity, and a more impressionistic conceptualization that is more elusive to define. In either perspective there is only incomplete intellectual architecture available at this time, despite the pioneering work of Janet, Freud, Jung, Adler, Ellenberger, and many others,[22] and the development and application thereof in contemporary psychoanalytic and psychotherapeutic theory and practice,[23,24] as well as in various forms of "mind-body medicine" and many aspects of cognitive science research. Far from achieving comprehensive understanding of unconscious mental functioning, efforts have been focused largely on locating empirical means of access to unconscious processes, and deriving practical implications of such access for clinical and therapeutic purposes.

Invocation of the unconscious module in and of itself would seem to benefit our model little, given a lack of empirical evidence or even plausible ideas of how this domain might share information directly with the tangible physical world any more effectively than the conscious mind. It is here that we take note of a common presumption of contemporary theoretical physics, namely, that there exists a domain of intangible physical processes that underlies the tangible world, much as the unconscious mind underlies the conscious. To this we add our own radical postulate that this regime enjoys a much more intimate dialogue with the unconscious than does the tangible with the conscious, and in this form we appropriate it as yet another module, (I), of our model (*cf.* Figure 5).

Such a conceptual domain has been postulated in abstract and mystical terms by natural philosophers over the full history of scientific rumination, but only recently it has attracted more orderly and analytical attention from a number of physicists. This attention has taken many parochial forms, each with its own peculiar nomenclature, metaphoric imagery, and mathematical tech-

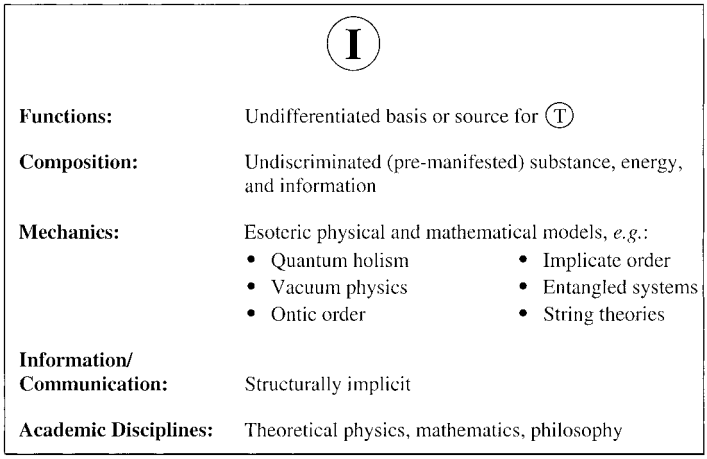

Fig. 5. Intangible Physical Module (I).

niques, but each grasping for some sub-tangible framework for representation of an ineffable physical reservoir upon which float the tangible phenomena of observable physical events, or from which they erupt under appropriate stimulation or conditioned observation. The catchy titles of these diverse efforts are splattered throughout contemporary journals of theoretical science: "implicate order;" "ontic description;" "string theories;" "vacuum physics;" "EPR-entanglement;" "quantum wholeness;" *etc.* All struggle to capture some essence of this strange undifferentiated world that William James propounded in even more florid philosophical terms as the "blooming buzzing confusion," or the "aboriginal sensible muchness," into which consciousness reaches to assemble its palpable personal experiences.[25]

Like its tangible counterpart, the composition of this shrouded, intangible domain comprises the seeds of substance, energy, and information, but now present in less distinguishable, more abstract forms that lend themselves to greater fungibility than their tangible counterparts. In some of the formalisms this loss of discrimination extends into the metric, as well, where time and space blur and lose their functional utility. And at the deepest levels of this zone, some authors contend, even the distinctions between mind and matter, between concept and percept, between model and data, dissolve into uncertainty.[26] It is at this level that our own model of mind/matter intersection has some hope of completing its circuit of logic, but not until we study its interfaces in more detail.

III. The Modular Structure and Its Interfaces

Utilizing the four conceptual modules defined above, we now propose to assemble them into an architecture of mind/matter interactions like that

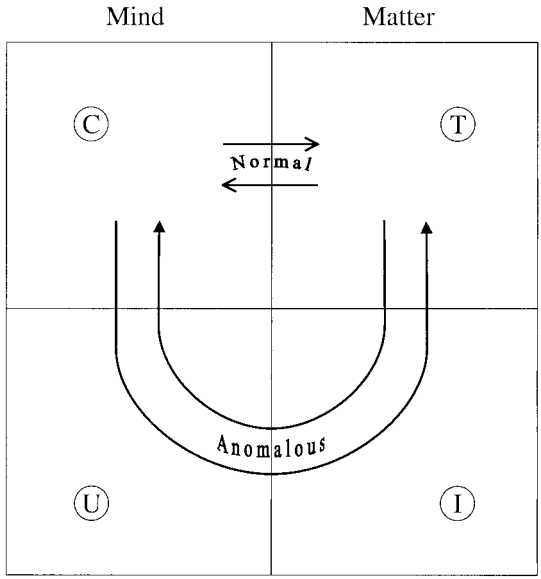

Fig. 6. Modular Model of Mind/Matter Manifestations.

sketched in Figure 6, which allows us to supplement direct modes of information exchange between the conscious mind and the tangible physical world by more circuitous, anomalous routes, which we postulate to proceed either from (T) to (I) to (U) to (C), or the reverse, covering anomalous information acquisition from the tangible world, or anomalous insertion of information into it (*i.e.*, anomalous influence upon it), respectively. For example, given an intention or desire to affect a physical process or event not normally accessible, it is proposed that the conscious mental processes surrender the task or goal to unconscious processing, which by some means is capable of imparting that intention to the sub-physical melange of undifferentiated matter/energy/information, which in turn can stimulate manifestation of the desired effect into the tangible regime. Conversely, if the task is to acquire information from the physical manifest, the tangible details must dissolve into the sub-tangible format, whence it is more recognizable by the unconscious mind, which in turn may percolate its impression upward into conscious realization.

For such a model to secure any theoretical credibility and to provide any empirically testable hypotheses, we must labor more diligently over its most salient aspects, namely the interfaces among the four modules. As a first step in this refinement, we should concede that none of these interfaces is conceptually sharp. Rather, each entails a vague and diffuse progression of properties and processes from those of one adjacent zone to those of the other. To illustrate this boundary softening, consider again the "normal" interface between zones (C) and (T). As described briefly in Section I and Figures 3a and 3b, in-

formation flowing from (T) to (C), or vice versa, does not abruptly exchange itself into local currency at one sharply defined border. Rather, a sequence of transformations is involved whereby, in the (T) → (C) case, information regarding substantive physical effects is first propagated within (T) by some transport process, arriving at some primary physiological sensors, which then stimulate local and distributed neurological responses, which in turn configure brain states, which then, in some poorly understood fashion, stimulate and correlate with subjective conscious experiences. An inverse scenario prevails for the reverse information route (C) → (T). In both cases, the mind/brain interface remains a "no-man's-land" of mental/material transition, with even subtler aspects implicit in the recognition that most of the participating physical, physiological, and mental processes, however objective or subjective they may be, have been conceptualized, named, defined, and analyzed by the conscious human mind.

Similar diffusions prevail within the other three interfaces. Between (C) and (U), for example, the mind progresses from fully conscious awareness to complete oblivion via various intermediate states of consciousness that have less structured or organized conceptual characteristics, *e.g.*, states of autonomic control, subliminal perception, reverie, fantasy, dreaming, repressed memory, trance, hypnosis, dementia, hallucination, anesthesia, coma, or near-death experience, most of which do not switch on or off abruptly, but blur into one another in chaotic, unpredictable, and sometimes phantasmagorical mixtures. Some of these states are readily accessible to conscious inspection and control, *e.g.*, breathing, heartbeat, and other forms of autonomic awareness. Other states can be broached by meditation, dream analysis, hypnosis, psychoanalysis, or other forms of therapy. But many states are more deeply buried, requiring psychoanalysis or hypnotic intervention to penetrate. And some, so far as we now know, are totally impregnable. The productive negotiation of the (C) / (U) "interface," therefore, is a complex and delicate task, especially if the purpose is to achieve some benign unconscious state that can establish viable communication with an amenable level of (I) in the adjacent sub-physical quadrant of the house.

The blurring of interface is equally evident on the material side of our modular structure, where the distinctions between tangible and intangible phenomena already are rather arbitrary, even in the classical physical and biological representations. While mechanical processes involving the substances, configurations, motions, and interactions of discrete objects may present the appearance of unambiguous tangibility to our perceptual and conceptual senses, once we attempt to represent heat transfer and other thermodynamic effects, or the phenomena of electricity and magnetism, we inevitably are drawn into progressively more intangible abstractions of fields and waves. For example, while the wave patterns on a violin string or on the surface of the ocean qualify as tangible in the usual sense, the propagation of sound and light waves involves intrinsically less tangible properties, and when we come to quantum

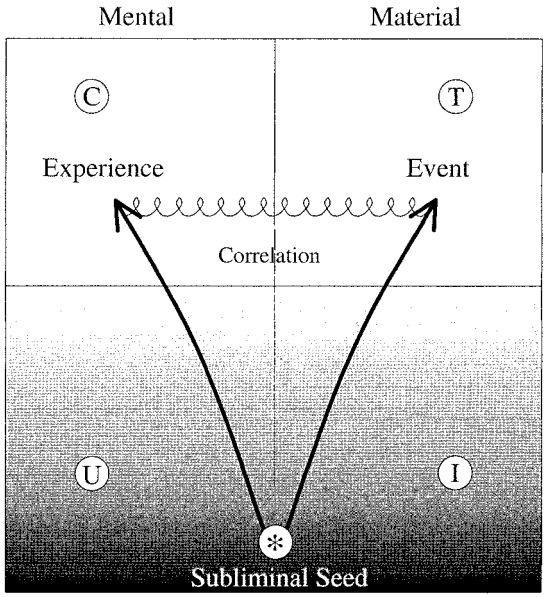

Fig. 7. Correlation of Tangible Events and Conscious Experiences via Subliminal Seeds.

mechanics we have lost almost all claim to tangibility, certainly at the level of the wave function, or state vector, itself, and we are dealing with some form of potential information to be manifested probabilistically in (T). From this quantum platform, deeper progress into the intrinsically intangible formulations comprising the module (I) sub-structure follow along increasingly abstruse paths whereon intangibility and uncertainty are not only tolerated but exploited, and all tangible and specific coordinates ultimately disappear. Again we might note that this transition also entails a growing transfer of attributed properties from common experiential features to abstract mathematical concepts and nomenclature imposed by the theorist in the construction of his particular model and its syntax, and in this sense mental aspects already have permeated this material domain.

The most crucial interface in our model, that between (U) and (I), is the least sharply defined. Indeed, if the contention of several authors regarding the indistinguishability of mental and physical phenomena at the deepest levels of these two domains is valid, there can remain no interface there at all, only a pre-distinction continuum bearing only vestigial characteristics of the Cartesian divide between (C) and (T). We are proposing that it is this homogeneous deepest layer of (U) and (I) that provides the tunnel for anomalous passage of information from the mental side to the material side or vice versa, or perhaps more aptly, that provides the gestation site for some embryonic "pre-information" commodity that connects both tangible events and conscious experiences. Given their common origin, these events and experiences in-

evitably will display intrinsic correlations, and it is these correlations which comprise the apparent mind/matter anomalies that bemuse our conscious minds (*cf.* Figure 7).

Acknowledgment of the intrinsically diffuse natures of the four interfaces somewhat compromises the discrete modular character of our basic model and complicates its topological representation, particularly at its central nexus (*cf.* Figure 8a). An alternative polar geometry could be posed which obviates this difficulty and offers additional metaphorical options (*cf.* Figure 8b). In this representation, information is conceived to flow through circular sectors, crossing the distributed interfaces as required for specific tasks. To further complicate the imagery, we should also anticipate that even these diffuse or evanescent interfaces may not be static, but rather dependent on the particulars of the participating individuals, processes, and environments. Like the ebb and flow of the interface of the sea on the shore, what is a conscious experience on one occasion may be handled subliminally on another; what is a hard physical event in one context may be less tangibly manifested in another; and, perhaps most importantly, the extent of mind/matter distinction or merger may be keenly participant and mood dependent. None of this blurring or sloshing of the interfaces, however, compromises their essential function: they represent the sites where, via each of their implicit dialogues, material, mental, and merged realities are established.

IV. The Source

One other fundamental question needs to be posed before our model can be completed. Namely, whether the conceptual modules, the interfaces between them, and the information flow routes and mechanics so far assembled are epistemologically and ontologically adequate in and of themselves to capture the essence of experiential reality, or whether they are enhanced and activated by some external agency that creates, energizes, informs, interrelates, and perhaps even subsumes all of those components. Clearly this takes us directly into the most subjective of all mental experience, that of personal spirituality, and we intend no advocacy here. Those readers who regard this dimension as inappropriate and are content with a secular framework may pass over this possibility and ponder the implications of the configuration so far assembled. For others, who acknowledge some transcendental dimension in human experience, we add a few remarks about the possible role of such a spiritual source module, and its implications for pragmatic science.

If we take our initial clues from the tenets of most established spiritual traditions, past and present, the overarching functions of this agency, however clothed, are nothing less than the creation and oversight of the material and spiritual universes which it provides for the utilization and celebration of all living creatures. One could argue that such a sublime source hardly lends itself to encapsulation in a conceptual module, but we shall retain this form of representation to complete the symbolic architecture of our M^5 model. With

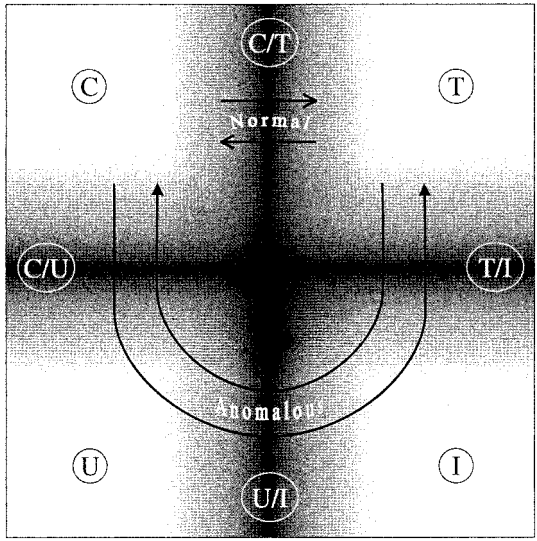

Fig. 8a. Modular Structure with Fuzzy Interfaces: Rectilinear Representation.

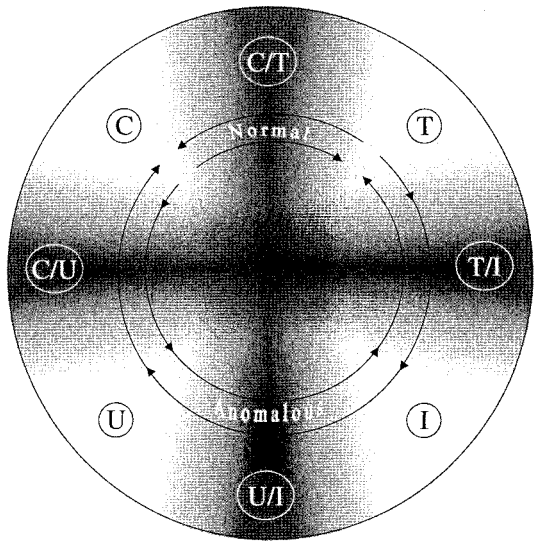

Fig. 8b. Modular Structure with Fuzzy Interfaces: Circular Representation.

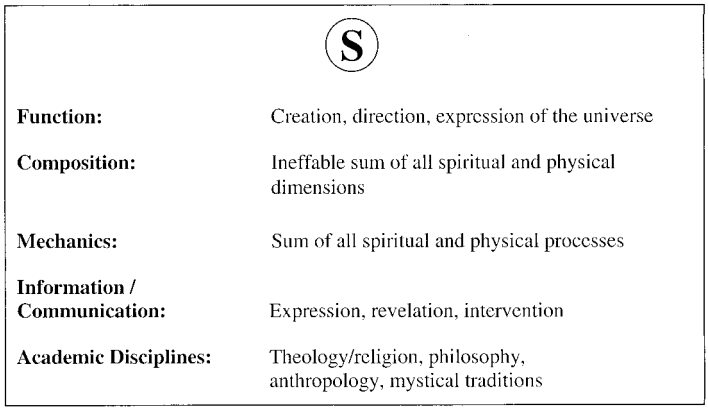

Fig. 9. The Source Module (S).

reference to Figure 9, while most of the other characteristics of this domain are largely ineffable, its modes of interaction with the other conceptual modules have some established precedents. Again drawing on the heritage of religious, spiritual, and mystical practices, these might be catalogued as prayer, meditation, inspiration, revelation, ecstatic union, or divine intervention. Also commonly attributed to this source are the pervasive powers of wisdom, morality, courage, and love, by which it implements a teleological purpose of spiritual evolution.

The positioning of this source module (S) in the architecture of the M^5 model is at least as arbitrary as specification of its attributes. One possibility is simply to surround the other four modules, in either their rectangular or circular representations as sketched in Figures 10a and 10b, to emphasize its overarching capacity and role. Alternatively, (S) could be placed below the (U) and (I) modules, whence it could directly stimulate and supply pre-information raw material to the deepest levels of these merging domains, somewhat like an alchemical stove for the vessels resting upon it (Figure 10c). In yet another conceptualization, it could reside at the center of the circular representation, serving as a Copernican sun for all of the surrounding sectors (Figure 10d).

Clearly our geometrical metaphors are becoming somewhat strained by this point, but the relevance of some role for such a source needs to be confronted and assessed in terms of individual intellectual and spiritual experience. The philosophical and scientific literatures are replete with such personal assessments, ranging from categorical rejections by many secularly disposed scholars, to soaring endorsements by others, few more eloquent than those of Albert Einstein:

The most beautiful and most profound emotion we can experience is the sensation of the mystical. It is the sower of all true science. He to whom this emotion is a stranger, who can no longer wonder and stand rapt in awe, is as good as dead. To know that what

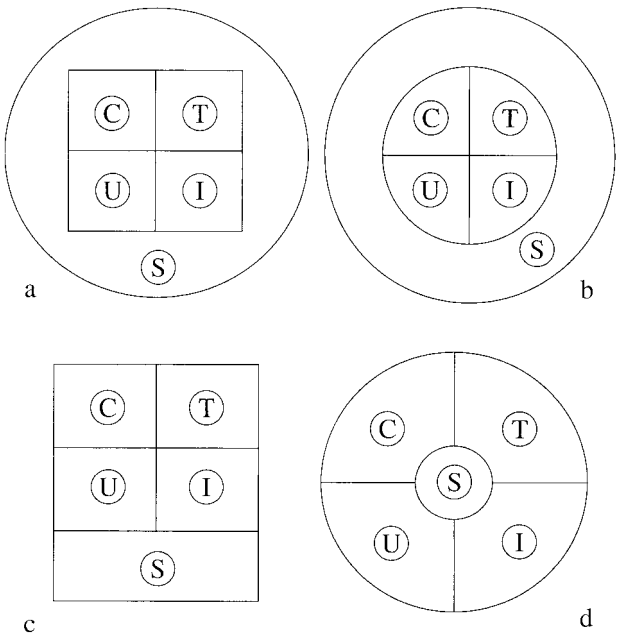

Fig. 10. Modular Structures with the Source.

is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their most primitive forms—this knowledge, this feeling is at the center of true religiousness.

The cosmic religious experience is the strongest and noblest mainspring of scientific research.[27]

Now, even though the realms of religion and science in themselves are clearly marked off from each other, nevertheless there exist between the two strong reciprocal relationships and dependencies. Though religion may be that which determines the goal, it has, nevertheless, learned from science, in the broadest sense, what means will contribute to the attainment of the goals it has set up. But science can only be created by those who are thoroughly imbued with the aspiration towards truth and understanding. This source of feeling, however, springs from the sphere of religion... The situation may be expressed by an image: Science without religion is lame, religion without science is blind.[28]

V. Experimental Implications

Although our modular model has been constructed to be consistent with the bemusing bodies of empirical data accumulated heretofore in our laboratory and elsewhere, it can aspire to scientific credibility only if its future applications lead to more replicable and significant experimental results. Unfortu-

nately, given the abstract nature of the components and configurations of the models, opportunities for such validation are quite limited and elusive to implement, but three categories of exploration suggest themselves. First, if we accept the hypothesis that direct and explicit feedback is not supportive of the requisite operator states for achievement of anomalous mind/matter interactions, and even may be counter-productive in that it locks the process into unproductive Ⓒ/Ⓣ modes, it follows that subtler forms of feedback that distract the conscious mind from the task and stimulate unconscious involvement could prove more efficacious. These might entail relaxing, numinous, or mildly hypnotic visual displays or auditory backgrounds that are not explicitly coupled to the outputs of the experiments, or a more complete absence of sensory stimulation as employed, for example, in conventional "ganzfeld" experiments.[29] Possibly most ideal would be some format that provides subliminal stimulation that is related to the operator's task or employs psychological "priming" techniques that are known to affect unconscious mental activity. Whatever the form of such environmental conditioning, the operator would need to achieve a delicate balance between maintaining some teleological sense of intention or desire for a particular experimental outcome, while still surrendering conscious control or responsibility for the achievement of that goal to the unconscious mind and its deeper resources. In so doing, the operator would give up any need for biofeedback-like "How am I doing?" reassurances usually provided in traditional human/machine experiments which, in this model, are hypothesized to obstruct access to the deeper unconscious, intangible levels of interaction. A number of new experiments to test this hypothesis currently are underway in our laboratory involving, for example, major modifications of our existing ArtREG, Fountain, and Drumbeat facilities. Given the large bodies of data that need to be accumulated before credible anomalous trends can be discerned above the background random noise, it is much too early to post even preliminary results, but as these become available, they will be reported.

Another potentially effective strategy that has been suggested by operator testimony, by some abstract theoretical issues and, quite frankly, by some bald intuition, is to establish a paradoxical environment which inhibits the operator from focusing on any particular reality. For example, enigmatic images, like those depicted in paradoxical art or utilized in psychological experiments in perception, could be presented to induce a bifurcated state of consciousness that we have in other contexts labeled the "space between the bits," or the "world between the worlds." From such an equivocal state, it is hypothesized that the unconscious mind may more readily surrender its usual conceptual reality, and merge its identity more intimately with that of the target device, in somewhat the same manner that aboriginal people merge their personalities with those of the animals and other features of their natural environments. From this state of "innocence" (*i.e.*, not tainted by any preconceptions, prejudices, or consensus realities), the mind and the machine could establish a new shared reality that would

manifest as anomalous in both sectors, by our usual criteria. As one contributor to this proposition put it, in this bonded state, the mind does not directly query or instruct its environment; it "dances" with it, each partner sensing and conforming to the other until a new reality resonance is found.

Beyond the provision of more subtle feedback environments and the encouragement of operator strategies and attitudes amenable to the circuitous routes of interaction proposed by the model, some judicious selection of the random physical source and its implementation within the experimental target devices also may enhance the desired process of anomalous information flow. Specifically, if the properties and functions of the (T) / (I) interface so far proposed and discussed further in the following sections are at all valid, it follows that physical target systems entailing complex or chaotic processes, strong non-linearities, quantum physical domains and entanglements, or any other processes embodying high degrees of dynamical uncertainty would offer the greatest possibilities for dialogue with the corresponding mental states. Historically, these were not the targets of choice in the earliest mind/matter experiments. Zener cards, dice, and other simple mechanical devices simply did not qualify by these criteria, and it was not until the advent of electronic or radioactive REGs a few decades ago that one could address systematically the experimental efforts to truly complex sources. Here, probably as much by blind luck as by cogent design, processes deeply rooted in quantum uncertainty underlay the tangible data streams, and more credible and replicable results could be produced. Whether the growing contemporary understanding and implementations of yet more complex and indeterminate physical systems, at both the microscopic and macroscopic levels, offer options for greater resonance with the even more complex and indeterminate human mind is yet to be established, but surely should be pursued.

VI. Theoretical Implications

Our current understanding and modes of representation of the regimes of experience represented in modules (C) and (T) and, to a lesser degree, by the upper portions of (U) and (I) and their communications with (C) and (T), while imperfect, probably are adequate to support this stage of our conceptual pursuit of the M^5 model. The more crucial regime for further theoretical development and refinement is that where the deepest-lying levels of the unconscious mental and intangible physical sectors merge into some autonomous, holistic amalgam where, in the words of Fred Hoyle, "mind and matter meld."[30] It is a misty world of innumerable abstract variables, where space and time have not yet been defined, let alone distinguished, where information waits to be born, and where all of our common material and mental metaphors fail. It is the "*unus mundus*" of Carl Jung, from which emerged his family of archetypes and their associated experiential synchronicities. It is the "ultimate reality" of Bernard d'Espagnat; the "*causa sui*" of Baruch Spinoza; the "pre-established harmony" of Gottfried Leibniz; the "unbroken symmetry" of Eu-

gene Wigner and his successors. Into this region plunge from one side the most phantasmagoric experiences of human consciousness, and from the other the most abstract mathematical formalisms constructed by human consciousness, both groping in the dark for some coherent validity, some mutually consistent reification of their disparate semantics.

It is not our purpose here to attempt any detailed review or critical assessment of either of these two mixing epistemological streams. What is more critically needed is some ontological grasp, however imperfect, of the properties of their merged state. In this regard, we have found most stimulating the work of Harald Atmanspacher and his colleagues which has endeavored to display the essential unity between the conceptual representations of depth psychology and those of quantum physics, in a somewhat similar tone to that first displayed by Jung and Pauli.[31] In his cogent and courageous article entitled "Mind and Matter as Asymptotically Disjoint, Inequivalent Representations with Broken Time-Reversal Symmetry,"[32] Atmanspacher provides a comprehensive review and reference list of pertinent philosophical, psychological, and physical attention to this topic, and introduces the provocative possibility that the emergence of separate regimes of mind and matter from their underlying automorphic domain might be associated with the breaking of the time-reversal symmetry that prevails in this distinction-free zone. Upon emergence into the more sharply defined epistemic sectors, the future-directed temporal dynamics would, as usual, represent the causal, deterministic evolution of material states from initial conditions. The mathematically equivalent backward-going representations, conventionally disregarded in natural science applications, then would be available for characterization of the evolution of mental states that are teleologically responsive to some "final causation." If such an interpretation is valid, it re-opens the door to a full complementarity of mind and matter in the establishment of reality, wherein expressed physical events self-consistently follow the local dynamical laws our conscious minds have devised for them, but some form of consciousness-based teleological influence, perhaps utilizing the intrinsic uncertainties inherent in those physical processes, may steer the grand pattern of such events toward purposeful goals.

The dichotomy of causality *vs.* free will has long been a major fiber in the fabrics of philosophy, religion, and science, and persists in its academic bemusement to this day. Among the patriarchs of quantum science, rumination on this puzzle was widespread, and so pertinent and stimulating to our task as to merit serious reconsideration in this context. The excerpts that follow are included not so much to provide authoritative support as to illustrate the particular foci of their authors' interests in this issue that are pertinent to our proposed applications of M^5 (our italics):

Planck:

How can the independence of *human volition* be harmonized with the fact that we are integral parts of a universe which is subject to the rigid order of nature's laws?…

At first sight these two aspects of human existence seem to be logically irreconcilable. On the one hand we have the fact that natural phenomena invariably occur according to the rigid sequence of cause and effect…. But, on the other hand, we have our most direct and intimate source of knowledge, which is the human consciousness, telling us that in the last resort our thought and volition are not subject to this causal order…. The principle of causation is either universally applicable or it is not. If not, where do we draw the line, and why should one part of creation be subject to a law that of its nature seems universal, and another part be exempted from that law?…

Once we have decided that the law of causality is by no means a necessary element in the process of human thought, we have made a mental clearance for the approach to the question of its validity in the world of reality.(33)

Bohr:

…the impossibility in introspection of sharply distinguishing between subject and object as is essential to the ideal of causality would seem to provide the natural play for the feeling of free will.(34)

With regard to this, however, it must not be forgotten that, in associating the psychical and physical aspects of existence, we are concerned with a special relationship of complementarity which it is not possible thoroughly to understand by one-sided application either of physical or of psychological laws. In consideration of the general lessons we have learned from the atomic theory, it would also seem likely that only a renunciation in this respect will enable us to comprehend…*that harmony which is experienced as free will and analyzed in terms of causality.*(35)

Heisenberg:

We could ask whether *the aim to be reached, the possibility to be realized, may not influence the course of events.* If we do that, we are almost back with quantum theory. For the wave function represents a possibility and not an actual event. In other words, the kind of accident which plays so important a role in Darwinian theory may be something very much subtler than we think, and this precisely because it agrees with the laws of quantum mechanics.(36)

Pauli:

The "unconscious" itself has a certain analogy with the "field" in physics, and both are brought into the realm of the irrepresentable (Unanschauliche) and paradoxical through a problem of observation. In physics however we do not speak of self-reproducing "archetypes," but of "statistical laws of nature involving primary probabilities;" but both formulations meet in their tendency *to extend the old narrower idea of "causality (determinism)" to a more general form of "connections" in nature, a conclusion to which the psycho-physical problem also points.* This way of looking at things leads me to expect that the further development of the ideas of the unconscious will not take place within the narrow framework of their therapeutic applications, but will be determined by their assimilation to the main stream of natural science as applied to vital phenomena.(37)

Schrödinger:

To my view the "statistical theory of time" has an even stronger bearing on the philosophy of time than the theory of relativity. *The latter, however revolutionary, leaves untouched the unidirectional flow to time*, which it presupposes, while the statistical theory constructs it from the order of the events. This means a liberation from the tyranny of old Chronos. What we in our minds construct ourselves cannot, so I feel, have dictatorial power over our mind, neither the power of bringing it to the fore nor the power of annihilating it. But some of you, I am sure, will call this mysticism. So with all due acknowledgement to the fact that physical theory is at all times relative, in that it depends on certain basic assumptions, we may, or so I believe, assert that *physical theory in its present state strongly suggests the indestructibility of Mind by Time*.(38)

The only possible inference from these two facts is, I think, that I—I in the widest meaning of the word, that is to say, every conscious mind that has ever said or felt "I"—am the person, if any, *who controls the "motion of the atoms" according to the Laws of Nature*.(39)

Jeans:

…the indeterminacy does not reside in objective nature, but only in our subjective interpretation of nature….

Essentially the same solution was propounded by Clerk Maxwell. The course of a railway train is uniquely prescribed for it at most points of its journey by the rails on which it runs. Here and there, however, it comes to a junction at which alternative courses are open to it, and it may be turned on to one or the other by the quite negligible expenditure of energy involved in moving the points. Maxwell thought that the human body might come to similar junctions, at which it could be turned into one course or another by the action of the mind, without any expenditure of mechanical energy—the body is the train, the mind is the points-man. The indeterminacy of atomic motions has seemed to many to provide just the kind of junction, and possibly also of points, that Maxwell needed.

This may suggest a possible way in which mind can act on matter, but it leaves the deeper problem of freedom of choice untouched. …

Again we can hardly say that the new physics justifies any new conclusions on determinism, causality or free-will, but we can say that *the argument for determinism is in some respects less compelling than it seemed to be fifty years ago. There appears to be a case for reopening the whole question as soon as anyone can discover how to do so*.(40)

In Atmanspacher's approach we now glimpse a possible basis for analytical pursuit of these heretofore intuitive convictions. The task ahead is to develop this into testable predictions, and to devise rigorous experiments to validate or falsify them.

VII. Model Summary and Applications

Our purpose has been to suggest a fresh conceptual model of the relation between the human mind and its material environment that can comfortably accommodate those empirically established forms of information exchange that

appear anomalous within the prevailing theoretical paradigms. From this proposed perspective, insights are sought that may enable more effective and instructive experimental designs, and eventually some pragmatic applications of these inherently elusive, but potentially powerful phenomena. The first premise of this model has been that further attempts at direct penetration of the Cartesian interface between the universe of tangible physical events and the realm of conscious mental experience will not be productive, and possibly even may be counter-productive, for this purpose. Rather, mind and matter each must first dissemble into their less explicit and focused forms, *i.e.*, the unconscious and the intangible, to degrees where the traditional coordinates of conscious experience and tangible events lose their utility, and a holistic merger of their purviews obtains. This ultimate, autonomous reality then serves as a common subliminal origin or seed from which can emerge coupled physical events and conscious experiences whose correlations exceed prevailing epistemological expectations (*cf.* Figure 7).

An attractive possibility for the theoretical representation of this correlated emergence process is the invocation of the traditionally rejected negative time branches of the dynamical physical relations for application to the mental modules, in parallel to the usual positive time versions for the material formulations. In other words, whereas the fully expressed physical branches would continue to conform to a future-directed evolution from prescribed initial states (within the established limits of their microscopic and macroscopic uncertainties), the mental branch would be imbued with the capacity for some teleological response to a final goal, *e.g.*, to a desire or need or intention (within the functional limits of uncertainty available to it). To activate this capacity, it presumably would be necessary to bias those intrinsic uncertainties of the composite mind/matter systems so that their conscious, tangible crystallizations embodied, however slightly, these teleological influences. This biasing of elemental probabilities actually has some empirical support deriving from analyses of the count distributions that comprise the outputs of several of our earlier mind/matter experiments.[41]

To illustrate the proposition in our most familiar context, the interaction of a human operator with an electronic REG, let us suggest the following scenario: The machine is designed and calibrated to produce, in the absence of operator involvement, a randomly alternating sequence of binary digits that compound into combinatorial distributions having a well-established mean, but a broad variance expressive of the intrinsic uncertainty in the outcome of any given bit sample. In unattended operation (*e.g.*, calibration), the elemental binary probability of bit outcome, as determined by the quantum physics of the noise source and its subsequent electronic processing, remains at its 50/50 design ratio, and the accumulating distribution mean hovers close to N/2, where N is the total number of samples, with a distribution variance of N/4. When the operator first engages the machine by expressing an intention or desire for its subsequent performance, *e.g.*, "high," "low," or "baseline," this is

recorded in the data manager as an *objective* experimental parameter, but it also stands henceforth as the *subjective* teleological driver of the mental side of the emergent mind/matter bifurcation. For this reverse causality to contribute to the evolution of the bonded system, however, certain attitudinal caveats appear to be relevant. Specifically, several of our most prolific and effective operators testify to the efficacy of surrendering conscious control of, or investment in, the target process, and submitting rather to a state of detached indifference or ambivalence to its outcome, perhaps similar to that prevailing objectively in the physics of the machine. In this regard, we might note that since the very concepts of "uncertainty" and "probability," including their objective observation, inescapably entail subjective features, it may be that only within such a bonded state of uncertainty can the elemental binary probabilities be biased, and thereby the subjective goals become objectively manifested. In short, the mind of the operator needs to enter a "fuzzy" state—call it meditation, dream, trance, altered, unconscious—where conceptual boundaries blur, categories fail, space and time evaporate, and uncertainty prevails. The experimental ambience therefore should be conducive to such surrender of precise focus, and the operator's personality should be amenable to it. Note that in this merged dynamic, the initial conditions prevailing for the emergent material branch of the bonded system and the teleological conditions prevailing for the mental branch are playing fully complementary roles of equivalent importance: the former, as it were, pushing the system onward from the past, the latter drawing it forward into the future, so that its course acknowledges both its heritage and its destiny.

Applications of M^5 to other forms of consciousness-related anomalies follow similar conceptual logic, with appropriate acknowledgment of the direction and scale of the information fluxes. With respect to the remote perception effects mentioned earlier, for example, we are dealing with an *acquisition* of information about module (T) by module (C), rather than an *insertion* of information into (T) by (C). Thus, we now must think in terms of the physical information about the target scene being diffused into its underlying intangible composition, whence it may interact with, and exert some formative influence upon, the intermingling elements of the unconscious mind of the percipient, who then constructs therefrom a conscious impression and subsequent description of the scene. Considering the critical role of uncertainty in this transmutation of information, we would expect that those features of the scene that intrinsically entail the least precision of specification, *i.e.*, the most generalized and impressionistic aspects, should survive this gauntlet better than features that require sharper definition. As already mentioned, our experience with various analytical scoring techniques based on alphabets of target descriptors is generally consistent with this expectation.[14]

So far as techniques and ambience to enhance such a process are concerned, we again are led to favor strategies that disengage the conscious mind, yet stimulate unconscious connection with the task. In this regard, the role of the

human agent who is stationed at the target site, and presumably immersed in that experience, is probably relevant in some way to the percipient's unconscious information search. Whether this is primarily a telepathic process, *per se*, or whether the agent is serving as a beacon or focus for the percipient's clairvoyance has not been definitively resolved by the experiments, although limited success with protocols wherein the human agent is replaced by map coordinates, functional designations, or other directives that guide the focus of the percipient to the target, would seem to favor the latter. In any case, the model proposes that some merging or blurring of the identities of these three components—target, agent/locator, and percipient—is requisite to the effect.

Speaking of telepathy and clairvoyance, the extensions of the model to these generic categories of anomalous phenomena also seem reasonably evident. For the former, we simply posit two adjacent mental structures, each with its own conscious and unconscious stratifications leading downward to a common reservoir, reminiscent of Jung's "collective unconscious," through which fuzzy information may flow in either direction. Representation of direct clairvoyance would be similar to that of remote perception, with the notable exception that many anecdotal examples of this phenomena appear to be spontaneous, *i.e.*, not elicited by conscious intention, but frequently are stimulated by severe emotional factors, thereby extending identification of a teleological driver beyond conscious, into unconscious, intentionality. We shall address this point in the context of the FieldREG application that follows.

The model also lends itself to representation of various alternative healing modalities such as therapeutic touch, remote diagnosis and healing, and prayer therapy, where in each case some emotional engagement with the patient is deployed to stimulate beneficial cellular or systemic physiological responses, or even to acupuncture and homeopathy, where stimulation of rather abstract, essentially intangible physiological information paths or processes appears to yield a variety of demonstrable clinical benefits. Again, the premise would be that these tangible changes arise as material consequences of more subtle rearrangements in the relevant intangible substructures, themselves responsive to the unconscious imposition of the desires of the healers and the patients, via the intrinsic uncertainties prevailing in both sectors.

Application of M^5 to our FieldREG experiments, which were part of its original motivation, presents both a confirmation and a complication. On the one hand, these results provide strong evidence for anomalous REG output in the absence of any direct feedback. Indeed, in most situations the participants are unaware of the presence of the device. On the other hand, we now have lost the primary correlate of all of the other human/machine experiments, namely the pre-stated intentions of the operators. So while it is clear that the box is responding to some mental property of the group, it is less clear what collective property that may be. More specifically, it again is not obvious what here is the teleological driver. As mentioned in Section I, our FieldREG database divides sharply between those venues we (pre-) characterize as "resonant" or

"creative," where the composite *chi*-squared deviations of the data significantly exceed chance expectation, and those of the more pedestrian remainder, where the *chi*-squared results deviate significantly *less* than would be expected by chance. But these group characteristics bear no evident relevance to the functioning of the REG electronics; the participants are not attempting, consciously or unconsciously, to produce higher or lower bit counts. Whatever the intentions or desires may be, they are (a) unrelated to the electrodynamics of the circuit, and (b) largely unconscious.

The concept of unconscious or "non-conscious" intentionality has some sound empirical support from contemporary psychological research,[24,42,43,44] and it may be that such an influence also is functioning here. Over the multivaried FieldREG applications there would seem to be only one such unconscious common denominator: a propensity to organize, cohere, create, or resonate emotionally as a group (or a lack thereof). And remarkable as it may appear, it may be this mental property that impresses itself, at some deep physical level, on the technical performance of the noise and sampling circuit, yielding correspondingly higher, or lower, bit scores in its output. (In this regard, it is useful to recall that the only technical distinction between pure chance REG outputs and anomalous outputs is a slight ordering or imbalancing of the bit stream, which again would be consistent with a slight alteration of the elemental binary probabilities of the bits themselves.) Thus, it appears that the same unconscious drive toward organization that pervades the human assembly here may be manifesting also in the physical electronics, this homogeneity again utilizing the intrinsic uncertainties available in each of those otherwise disparate venues. Hence, the REG appears to be functioning as a sensor of the degree of coherence or resonance in the group environment or, if you prefer, as a detector of a "probability-distortion field."

In this FieldREG context particularly, but in the other experimental applications as well, it is not unfair to question what role the experimenter, *i.e.*, the person tending the device or analyzing the data it yields, may play in conditioning its observed responses. As mentioned earlier, our model, although advocating a dominant role for the unconscious mind, by no means excludes conscious mental processing from the party. Rather, that sector clearly must retain the function of localizing the teleological goal to a specific venue, situation, or purpose, at various levels. For example, in the standard REG experiments the operator consciously commits to attempting to influence a particular electronic device to deviate from chance behavior in the form of particular correlations between the output bit distributions and the pre-stated high, low, or baseline goals. But overlaid on this is the somewhat more implicit intention of the experimenter to establish equipment, protocol, and analyses that demonstrate these anomalous correlations. Both of these levels of intention or desire must somehow focus the emergence of the event/experience couple from the otherwise undifferentiated reservoir of subliminal seeds, to the particular mind/matter manifestations addressed.

In the remote perception experiments, such conscious teleological localization is imposed not only by the percipient, who desires to describe a particular target defined by the presence of the agent or by some other criterion, but also by the agent, who has direct conscious access to the target and who also is mindful of the percipient's effort. And again, the experimenter who designs and oversees the protocol and the data processing may add to the teleological specification. In the FieldREG experiments, as just noted, the intentions of the group participants are much more subtle and indirect, but the role of the experimenter, if anything, is more central. It is he who selects the particular group venue, deploys the REG therein, and analyzes the data, again with the hope of acquiring anomalous results. In the other applications mentioned, this localization or specification can be achieved in other ways, of course, such as by the intrusion of a particular environmental or emotional situation, but however established, the prevailing ambience of desire it engenders may be an important component of the teleological driver of the eventual experimental effects.

Returning to the other possible applications of the model, it is tempting to extend these beyond laboratory-based evidence into such intractable and awesome major anomalies as poltergeist phenomena, efficacious prayer, miracles, and even survival of bodily death, but in these areas we must proceed very cautiously, for many technical and professional reasons. In passing, we simply might note that one of the few well-established features of poltergeist appearances is the central presence of a severely repressed individual, usually a young person forced by social circumstance, personality, or illness into recurring states of intense emotional stress that, in this model, might engender exceptionally vigorous dialogue with, and distortion of, the adjacent physical substrate, which then transmits the burden of expression of this mental torment into the tangible material domain.[45]

The ubiquitous religious practices of intercessory prayer also lend themselves to similar applications of the model. Whether directed toward improvement of the physical, emotional, spiritual, or circumstantial welfare of oneself or of others, such pertinent ingredients as strong desire, abdication thereof to unconscious processing, denial of personal benefit, resonant emotional bonding, and uncertainties in both the mental and material sides of the interactions frequently are in place. Indeed, the common liturgical invocations of "faith," "hope," "love," and the establishment of mystical contexts for worship all have their metaphorical secular counterparts in the model. Similarly, the putative miracles of many religious traditions and cultural legends could be represented as substantial reconfigurations of physical reality that erupted from the depths of the intangible, when triggered by some intense human need or social crisis.

The ultimate application of such a conceptual model, of course, would be to the most pervasive of human concerns, the survival of bodily death, which we broach here with only the highest reverence and deepest trepidation, and only

for those who can concede a scholarly interest in the topic. We know that as the physical corpus approaches its demise, it passes, either gradually or abruptly, through progressively deeper stages of unconsciousness into some realm from which little tangible evidence emerges. With the possible exceptions of neurophysiological recordings of comatose patients or the testimonies of near-death experiencers, we hold precious little evidence to define such a state, but it is not inconsistent with our model to suggest that this may be the most propitious mental regime of all from which to instigate major reconfigurations of physical, and in this case biological, reality by the means we have suggested. In the rare cases of apparent reincarnation, for example, we may be observing an incomplete metamorphosis of the unconscious mind of a dying individual into a new mortal configuration.[46] In the more common preponderance of deaths, however, the process could be hypothesized to terminate in a totally different embodiment that is essentially inaccessible to mortal observation, but nonetheless retains some aspects of its identity in its radically new environment. The properties and parameters of this new environment are, by definition, beyond our conscious comprehension, but it seems unlikely that our human constructs of space and time, and the distinction between mind and matter, will remain salient.

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We also must emphasize that the empirical basis for this work has been provided by a large pool of volunteer operators who over two decades have contributed diligently to our large body of individual and collective mind/matter databases, and whose insights and experiences have stimulated and enhanced many of the ideas presented in this paper.

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