

ESSAY

Change the Rules!

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Abstract—Although consciousness-correlated physical phenomena are widely and credibly documented, their appearance and behavior display substantial departures from conventional scientific criteria. Under even the most rigorous protocols, they are only irregularly replicable, and they appear to be insensitive to most basic physical coordinates, including distance and time. Rather, their strongest correlations are with various subjective parameters, such as intention, emotional resonance, uncertainty, attitude, and meaning, and information processing at an unconscious level appears to be involved. If science, by its most basic definition, is to pursue understanding and utilization of these extraordinary processes, it will need to expand its current paradigm to acknowledge and codify a proactive role for the mind in the establishment of physical events, and to accommodate the spectrum of empirically indicated subjective correlates. The challenges of quantitative measurement and theoretical conceptualization within such a “Science of the Subjective” are formidable, but its potential intellectual and cultural benefits could be immense, not least of all in improving the reach, the utility, the attitude, and the image of science itself.

Keywords: consciousness-correlated physical phenomena (CCPP)—science of the subjective (SOS)—scientific criteria—scientific models

I. Background

In a prior article⁽¹⁾ we reviewed in some detail the multidimensional history and accomplishments of the Princeton Engineering Anomalies Research (PEAR) program over the past quarter century, as it endeavored to assess and comprehend a variety of consciousness-correlated physical phenomena (henceforth CCPP) evidenced in the course of that research. As specified at the close of that essay, these experimental and theoretical studies, complemented by many other scholarly investigations conducted elsewhere, and by a broad range of less formally reported public and personal experiences, have led us to a hierarchy of

convictions about the fundamental nature of these extraordinary phenomena that may serve as an epistemological platform for their further comprehension and possible beneficial applications. Reprising that list [*cf.* pp. 238–239 of reference (Ref.) 1] in more succinct terms:

- 1) The anomalous effects, although small and irregular, are demonstrable under rigorously controlled, albeit conducive, laboratory conditions.
- 2) Their replicability, even under the most propitious experimental protocols, is broadly statistical at best, entailing unpredictable short- and long-term variations in their effect sizes and qualitative character.
- 3) To the extent that they can be statistically established, the effects seem to be largely independent of such objectively specifiable physical parameters as distance, time, or the nature of the devices or processes addressed.
- 4) Rather, their primary correlates appear to be subjective in character, including such nebulous factors as teleological intention (need, desire); emotional resonance (bonding, meaning, personal importance); attitude (confidence, playfulness, low ego involvement); masculine/feminine distinctions (both psychological and biological); and perceived uncertainty or complexity (both conceptual and technical), all of which may function at the unconscious as well as the conscious level.

In short, the manifestation of these anomalous physical effects does not conform well to prevailing scientific criteria. Specifically, they appear to challenge such honored requisites as causal determinism, falsifiability, reductionism, objectivity, and quantifiability of the salient correlates. In some respects, they more closely resemble the category of human experience that Carl Jung labeled “acausal,”⁽²⁾ leaving us, like him, with a major problem of how to approach their study and comprehension in a scholarly fashion.

Five categories of response might be considered, and indeed have been propounded in assorted contexts by various commentators:

- 1) Reject the entire body of empirical evidence as illusory.
- 2) Concede the anomalous effects, but dismiss their intellectual or pragmatic importance because of their small scale and elusive character.
- 3) Admit their existence and potential relevance, but concede the impotence of scientific methodology to deal incisively with them.
- 4) Attribute their irregularity and incomprehensibility to inadequate identification of additional physical factors which, once specified and controlled, would bring the phenomena into the fold of deterministic scientific processes.
- 5) Relax and/or expand certain elements of scientific doctrine to encompass such phenomena in a broader scholarly paradigm.

Option #1 seems the least intellectually responsible, given the quality and quantity of the extant empirical evidence. Scraping aside the inevitable over-

burden of naïve, incompetent, or fraudulent representations that continue to confound the topic, the residue of solid experimental data is in fact far more extensive and incontrovertible than that undergirding many of the more esoteric concepts of contemporary physics and biology.

Option #2 seems dangerously short-sighted in light of the numerous examples over the history of science where initially microscopic effects, once comprehended in fundamental terms, have vaulted into monumental intellectual and pragmatic importance.

Option #3 needs to be considered more seriously, for it draws a line in the sand in front of contemporary science that could limit its future growth in intellectual and public authority. In essence, it would restrict the professional purview of future science to those phenomena that submit to its increasingly rigid, mechanistic rule system, leaving assessment and understanding of all other forms of human experience to alternative modes of establishment, inspection, and representation.

Option #4 is reminiscent of the attitude of Albert Einstein in deferring acceptance of the probabilistic interpretations of quantum science pending a thorough search for “hidden variables” that could return the mechanics to causal terms. Unfortunately, his celebrated “God does not play dice” injunction has yet to be empirically validated for most quantum-scale physical events and seems not to apply to the broader range of human experience. Yet more to the point, our established empirical data strongly indicate that at least some of such neglected correlates must be intrinsically subjective in character, for which conventional science has little capacity for specification, quantification, and mathematical manipulation. Thus the distinction between this approach and the following option #5 essentially devolves into an attack on the subjectivity issue, *per se*, or to a reformulation of the scientific paradigm on more comprehensive grounds.

Option #5 is clearly the most challenging, and admittedly entails two elements of substantial risk. First, there is the danger that the proposed major rule changes could be invoked illegitimately to rationalize flawed empirical data, analytical procedures, or theoretical logic, which if remedied directly would obviate the need for the more fundamental revisions. Clearly, such milder alternatives must be fully exhausted in every case before resorting to more radical resolutions. Second, if such rule changes are indeed to be installed, care must be taken not to compromise those aspects of the scientific methodology that remain valid and will continue to be essential going forward. In particular, the unavoidable loss of precision in incorporating subjective dimensions cannot be allowed to dilute the validity of the observations and models.

All of this said, it is our considered position that such fundamental broadening of its strategic approach is ultimately inescapable if science is to continue to maintain its premier position in the arsenal of cultural logic and utility. If these phenomena indeed exist and can significantly impact human experience and behavior, society has a right to demand their ongoing scientific assessment and

comprehension. Beyond this, the proposed extension of the range of science would substantially alleviate several of the ideological dichotomies which its more rigid definition has fostered, *e.g.*, science *vs.* religion, logic *vs.* intuition, material *vs.* mental, functional *vs.* aesthetic, *etc.*, *etc.* However, two formidable obstacles will obstruct this ambitious tactical path: a) the obdurate recalcitrance of the established scientific community toward consideration of the requisite revisions; and b) the difficulty in formulating and implementing those revised rules.

The first obstacle can be countered by noting the proliferate sequence of substantial rule changes that already have marked the course of scientific endeavor throughout its long cultural history. As Thomas Kuhn has documented, the recurrent pattern is for science to proceed along a relatively flat conceptual path until some imposing body of anomalous empirical evidence forces it to revise its rule system and thereby to jump rather abruptly to a new plateau of presumption, which then serves as the conceptual and strategic level for another extended era of activity until the next “paradigm shift” is forced to occur.⁽³⁾ The familiar examples comprise the well-known rungs in the historical ladder of Western science, usually labeled by their primary proponents, *e.g.*, Ptolemy to Aristotle to Galileo to Newton to Einstein to Bohr to Schrödinger, *etc.* From such a retrospective, we clearly have the precedents for a new rule-change process to be considered, and need only to argue whether the extant anomalous evidence is now sufficient to cause yet another shift in scientific attitude, and how this may best be achieved.

But beyond the historical argument, it should be obvious to any astute practitioner or informed observer of contemporary science that this scholarly trade is already far from a purely objective business. In choosing a topic, designing experiments, collecting and analyzing data, conceiving and formalizing models, and interpreting the ensuing dialogue between predictions and results, there is inescapable intrusion of subjective investments in the tasks at hand, acceptance of the intrinsic uncertainties lurking therein, and utilization of many forms of unconscious processing, including intuition, instinct, and creative inspiration. While many scientists will concede, however grudgingly, the parallel presence of these factors in their daily scholarly activities, most will stoically resist attributing to them any tangible correlations with the emergent physical effects. But this attitude, in the absence of any objective study of the possibilities of subjective/objective cross-talk, is itself an egregious violation of scientific objectivity. Categorical, *a priori* rejection of subjective influences in the face of the extant technical data and ubiquitous common experience constitutes a damning indictment of the entrenched scientific establishment and its pontifical methodology.

II. Other Precedents

The dereliction of objectivity about subjectivity in science cuts far wider than any particular research agenda addressed. Indeed, any scholarly discipline, in

the pursuit of its own information processing and analyses, needs to confront the possibility that the tangible experiences of its domain may be subjectively conditioned to some degree. For this reason, we need not limit our search for precedents to the scientific milieu, but we may also examine the subjectively inspired rule changes that have characterized many pragmatic and humanistic fields of endeavor, as well. In point of fact, most of the concepts of the “exact” sciences have been metaphorically appropriated from more mundane common experience; hence their ongoing metamorphosis will tend to reflect the broader evolution of human thought and inspiration. Thus, if we are searching for rule changes that can productively accommodate the subjective aspects of science, we may benefit from reflection on such influences in other realms of human affairs.

In the most common of public activities—government and law enforcement; industry and business; education at all levels; medical practice and health care; and many other sectors—we have repeatedly instilled alterations in the prevailing regulations that have reflected evolutions of public and private needs, desires, knowledge, and aspirations. In virtually every case, the issue has not so much been whether to change, but what to change, *i.e.*, what portion of the prevailing architecture of rules should remain fundamental and indispensable, and what could be beneficially modified. Current examples would include the “green revolution,” the ramparts erected to restrain terrorist incursions, and of course the panoply of “equal opportunity” retrofits to societal mores. In the Appendix we discuss particular cultural and formalistic rule changes that have characterized several fields of scholarly and pragmatic endeavor.

The take-away distillation from such multidisciplinary retrospection is that quantized changes in perspective are common, and for the most part necessary, in virtually all categories of human activity, and that scientific research in particular cannot be held immune from occasional overhaul when empirical evidence or philosophical maturation so predicates. The essential tasks are to justify, program, and install such changes in constructive and expeditious fashions that minimize wastage of the prior formats, defuse resistance from the recalcitrant oppositions, and engender productive utilizations by the avant-garde generations of new scholars.

III. Conceptual Bases

Before attempting to specify the particular scientific rule changes we envisage, it may also be useful to review the evolution of our own prior attempts to model consciousness-correlated physical phenomena, *per se*. In the cited previous publication,⁽¹⁾ we outlined several efforts to formulate conceptual representations of possible CCPP mechanisms, as stimulated by various batches of experimental results obtained over the course of the PEAR program. Early on, we were impressed by certain phenomenological and epistemological similarities of the empirical experiences with those of elementary quantum

science, and we proposed a metaphorical extension of the Copenhagen “physics of observation” approach to a more general “physics of experience” attitude we called the “Quantum Mechanics of Consciousness” (QMC) that could embrace a number of specifiable subjective parameters.⁽⁴⁾ From the recognition that physics describes “reality as exposed to our method of questioning,”⁽⁵⁾ emerged such conceptual aids as consciousness “atoms,” “molecules,” “resonant bonds,” and “coherent ensembles,” along with behavioral interpretations of the quantum principles of uncertainty, complementarity, exclusion, superposition, correspondence, and entanglement, that helped to conceptualize the anomalous results.

Somewhat later, we introduced a “Modular Model of Mind/Matter Manifestations (M^5),” which explicitly acknowledged the role of the unconscious mind in the anomalous events, especially its capacity to dialogue effectively with the sub-physical or intangible processes that underlie abstract theoretical physics.⁽⁶⁾ This was supplemented by a proposed mathematical formalism entitled “M*: A Vector Representation of the Subliminal Seed Region of M^5 .”⁽⁷⁾

Yet more recently, we mused about “Sensors, Filters, and the Source of Reality” (SFS) in a framework that generalized all forms of experience in terms of an interpenetration of two primary entities: an organizing Consciousness, whether individual or collective, localized or extensive, objective or subjective, conscious or unconscious, sensory or subtle, and an undifferentiated Source, an ineffable, unbounded, inexhaustible reservoir of potential experience and information that could be tapped by suitable interpenetration with the relevant Consciousness within a given context of meaning.⁽⁸⁾ An important by-product of this representation was the recognition of a multitude of “Filters” imposed on the interpenetration channels by physiological, psychological, and cultural factors that could obstruct, restrict, or distort the raw information flow between the Consciousness and the Source in either direction, but which also could be opened or tuned to particular purposes to deepen the interpenetration and release more profound experiences.

Overarching these explicit models was a more generic proposition defining their common purpose, entitled “Science of the Subjective,” (SOS) which remains our charter statement of the composite experimental and theoretical attack on this topic.⁽⁹⁾ Although the concepts and mechanics presented in this array of models may seem somewhat disparate, their larger value going forward may lie in the identification of certain common-denominator issues that arise in one form or another in all of them, and thus comprise a skeletal structure of the encompassing SOS, and may eventually enable a yet-more-fundamental representation of the entire CCPP domain of experience. The list of such common theoretical ingredients is appropriately similar to that inferred from our experimental studies, namely:

1) Uncertainty

The critical importance of some form of intrinsic indeterminacy or randomness in the physical process, device, or event involved has been thoroughly de-

monstrated in the experimental program. In the quantum model, the uncertainty resides in the probabilistic character of the mechanics itself. In M^5 , it is inherent in the unconscious mental processing, and in the sub-physical representations. In the SFS approach, it resides in the infinite potentiality of the Source, and in the multitude of possible Consciousness representations thereof. Whatever the origin of this uncertainty, it appears to be the requisite raw material out of which the anomalous CCPP are constructed, and without this ingredient, no such effects will arise.

2) *Intention*

Meaningful human intention, desire, purpose, or need explicitly correlates with all of the laboratory-based human/machine results, and implicitly drives the FieldREG effects.^(10,11) It also seems to be a major factor underlying most common CCPP experiences reported anecdotally. This property has its theoretical counterparts in the observational acts of the quantum model, in the stimulation of unconscious processing in M^5 , and in the filter adjustments of SFS.

3) *Resonance*

The sense of resonance or coherence is a similarly ubiquitous attendant to CCPP effects in the laboratory experiments, most particularly in the FieldREG applications where it is clearly the primary subjective correlate. It also is evident in many common anomalous experiences, and has important counterparts in each of the proposed models. In the quantum metaphor, it manifests in the bonding of “consciousness molecules” and as “consciousness collective effects.” In M^5 it is essential to the dialogue between the unconscious mind and the sub-physical mechanics. For SFS it is the most powerful filter-tuning mechanism.

4) *Attitude*

In our earlier list of empirical correlates we also mentioned attitude or style, which essentially reflects the degree of openness and positiveness the human participant brings to the interaction, the acceptance of the possibilities of CCPP and of alternative interpretations and representations of the experiences of the interaction, and the willingness and capacity to set aside rigid expectations, fears of implications, and ego-investments in the outcome. In short, it denotes the degree of receptivity to the possibility of the phenomena, as opposed to a personal investment against them that freezes the requisite subtle capacities for their experience. In a number of contexts we have addressed the evident masculine/feminine gender distinction in such attitudinal aspects, and the corresponding disparities in the empirical results.⁽¹²⁾ Such attitudinal properties also prevail in all three conceptual models. In QMC they appear explicitly as “consciousness coordinates” and implicitly in the basic premise that the origin

of physical quantum effects resides as much in the human mental processing as in the material world, *per se*. The masculine/feminine dichotomy in particular is acknowledged *via* the quantum spin coordinate, which underlies the exclusion principle in consciousness space. In M^5 , they are coupled to the willingness and facility with which the desired outcome is entrusted to the unconscious mind. In SFS, again, resonant tuning of the filters between the Consciousness and the Source is largely a matter of the attitude that is brought to the task.

IV. The New Rules

If the expansion of scientific methodology we are proposing is to continue to fulfill the most fundamental criteria of the discipline, it must embrace the same sequence of essential procedures that has characterized productive scientific endeavor over many preceding eras, namely: postulation of a hypothesis; conception, design, and implementation of incisive experiments; acquisition of incontrovertible empirical data; thorough, cogent analyses and interpretation of the empirical results; and conception and formulation of pertinent theoretical models to dialogue with the experimental programs. While the rule changes we require cannot be allowed to compromise the intellectual integrity of any of these basic steps, they do have major implications for the execution thereof. For example, if subjective properties are to play a complementary, in some cases dominant, role to the objective aspects in the establishment of the phenomenological effects, they must be afforded comparable respect in the design and implementation of the experiments, *e.g.*, the desirable laboratory ambience, the treatment of the operators, their attitudes and styles of operation, the deportment of the experimenters and the expectations, desires, and other personal investments they bring to the task, the selection of feedback modalities, and, perhaps most difficult of all, the identification and cataloguing of these various subjective parameters throughout the course of the experiments.

The prior paper⁽¹⁾ reported in some detail on the treatment of these environmental and attitudinal issues as they empirically and intuitively evolved over the course of the PEAR program. Here we would extend this to a plea for more extensive, tolerant, and astute dialogues with both the academic and pragmatic sectors of the scientific community regarding the specification, assessment, and, where possible, quantification of such properties for correlations with the empirical physical results. In searching for these empirical correlations, however, the acquisition of viable experimental data faces an important tactical trade-off, namely how to retain adequate technical rigor without sterilizing the processes and protocols to the point of suffocation of the subjectively driven anomalous effects. Alternatively put, experiments may be disqualified either because excessive subjective license renders their results vulnerable to artifact or illegitimate interpretation, or because excessive demands for technical rigor suppress the spontaneous CCPP effects. This inescapable trade-off was also discussed in

more detail in several earlier compositions^(1,4,8,13,15) in terms of a “consciousness uncertainty principle,” the recognition of which seems essential if this new scientific format is to advance.

Faced with the characteristic statistical irregularities in the CCPP results already mentioned, the tasks of data analysis and interpretation also demand correspondingly higher levels of sophistication than are commonly required for more conventional scientific investigations. For example, as noted in Refs. 1 and 17, application of parametric statistics needs to be tempered by the empirical evidence that these effects can undergo substantial long-term regime changes in their elemental binary probabilities and hence in their effect sizes, for reasons beyond our current understanding or perhaps even as another of their bizarre intrinsic characteristics.

A second challenging tendency is for the anomalous behavior to transform its appearance from the output variable specified in the experimental design to some other mode of expression in the data profiles. Coping with such “anomalies within the anomalies” *via* legitimate statistical arguments is no minor task. In our work, we have found certain forms of Monte Carlo simulation useful in their capacity to assess the appearance of structural aberrations in large bodies of programmed chance effects, in a fashion that precludes multiple-testing artifacts being awarded anomalous validity in actual experimental data.⁽¹⁴⁾ A second potentially valuable weapon may be offered by Bayesian methods which in their assignment of “prior” probabilities entail an implicit element of subjectivity that may be linked to the experimental factors.

The difficulties of posing theoretical models capable of explicating and predicting physical phenomena that are correlated with subjective properties are largely self-evident, given the inherent vagueness of specification and quandaries of quantification of such correlates. Possible avenues of approach to relieve such impasses have been proposed in various other publications, most notably in Section IV, Chapter 5 of our book, “Margins of Reality,”⁽¹⁵⁾ where some metaphorical multidisciplinary and the linguistic indicators that can be derived therefrom were suggested as entrees to specifications of the “consciousness coordinates.” But there is a larger, even more challenging issue that must be raised in this context, as well. Namely, what is the role of consciousness in the very conception and formulation of models and theories of any genre, most especially of this one? If we are prepared to concede that consciousness can play proactive roles in the establishment of tangible, *i.e.*, empirical, reality, are we not obliged, for philosophical consistency and symmetry if nothing else, to include and cogently represent a comparable capacity of consciousness in the theorizing process, as well? In other words, are we not now necessarily committed to reflexive theories, wherein the creation of the model entails the same sort of dynamical intercourse of Consciousness with its Source that we employ to produce the tangible physical experiences? Bluntly put, have we not now moved from the creation of models of reality, to the creation of models of consciousness creating reality, to the creation of models of consciousness

creating models of consciousness creating reality? Bemusing as it may seem, the inevitable consequence and high benefit of this entanglement of perspective would be to bring both our experience of reality, and our conceptual representations thereof, into synergistic indistinguishability, and thereby to avail of the most powerful technique for conditioning that reality. As Einstein succinctly put it in only a slightly different context nearly a century ago: “It is the theory that determines what we can observe.”⁽¹⁶⁾ In our present context we would rephrase this to: “Change the rules; change the reality.”

Clearly, in the acceptance of each of these categories of rule changes, the expanded science would be surrendering some portion of its precious principles of rigid replicability, objectification, and causal determinism, to be replaced by subtler statistical criteria, consistency of correlations, metaphorical coherences, and trade-offs of precision with the requisite uncertainty and randomness. Which is to say that successful experiments and models would strive to establish correlations of the effects with both subjective and objective aspects of the protocols, not so much to trace a causal chain, but to identify fellow-travellers to the primary phenomena that characterize propitious procedures and environments for their spontaneous appearance. The astute experimenter thus would endeavor to configure his laboratory and its strategies to be *conducive* to emergence of CCPP effects, rather than to guarantee them, and the astute theorist would cast his models in terms of *enhancement* of the spontaneous probabilities *via* the ensemble of such demonstrated correlates. The possibility that such a correlational approach might ultimately lead to a more elaborate and esoteric causal model of the Consciousness/Source dialogue is intriguing, but at this point in our understanding, is beyond our grasp. Other than a few relatively primitive discussions of so-called “second-order” or “higher-level” models, construction of fully reflexive, adequately sophisticated formalisms seems to lie well ahead.^(17,18)

V. Beneficial Consequences and Applications

If the proposed Science of the Subjective actually could be implemented and widely deployed, a host of beneficial consequences and applications spring to mind. Here we offer only a superficial sampler:

1) *Dialogue with the Skeptical Community*

The long and tedious controversy between CCPP proponents and the various components of the skeptical and critical communities, including the scientific, religious, and naïve public sectors, has largely been sustained by the presumption, on both sides, that the phenomena should adhere to the conventional scientific rules if they are to be regarded as real. If this requirement were to be relaxed, it would be possible for the debate to proceed on a much more constructive scholarly basis, wherein the advocates would concede at the outset the

irregularity of the events, and the opposition would focus on the quality of the research, the validity of the empirical demonstrations and their correlations, and the credibility of the higher-level reflexive models posed for their interpretation. With the prevailing corrosive confrontations thus replaced by more enlightened and refined scholarly discussion, both sides could contribute to the advancement of understanding of CCPP, and to their eventual pragmatic utilization. As has always been true in scientific scholarship and deployment, informed, astute, and constructive critics are essential elements in the qualification and refinement of new ideas, and should be welcomed, indeed solicited, for this valuable service. But in this particular case, the exchange cannot be bound by last century's scientific rules; it can be engaged only on grounds that fit the phenomena (*cf.* Appendix, Section *ii*).

2) Health Care Benefits

Perhaps the most evident and accessible arena for beneficial application of the proposed expansion of the scientific paradigm is that of public and personal health care and well-being. Here, all of the empirically established correlates are clearly in place: desire or purpose on the part of the patient and healer; intimate resonance between them and with the physiological and psychological elements, systems, and processes addressed; proliferate sources of uncertainty and complexity in their normal functions and pathologies; and a variety of attitudinal, stylistic, and environmental options. If such correlates have been shown to be conducive to the appearance of anomalous effects in experiments on laboratory benches with simple physical devices, it is not unreasonable to expect the more complex and more sensitive physiological effects to be responsive to the intimate and personalized efforts of a healing agent, whether that be a professional practitioner, a concerned individual or group, or the patient himself. The efficacy of such alternative healing strategies already has been documented in many venues,^(19,20) and it has been addressed in basic terms in a few of our earlier articles, and in a 150-page anthology devoted to this particular application.^(21,22,23) Especially clamoring for comprehension are an ensemble of macroscopic medical anomalies including, but not limited to, placebo and nocebo effects, hypnotic healing, psycho-neuro immunization, and multiple personality syndromes, wherein the participation of subjective factors in the establishment of specific physiological states seems inescapable.

3) Creativity and Inspiration

The ephemeral processes of human creativity seem similarly to be favored by the CCPP correlates of purposeful need or desire, and resonance with the topic at hand or with some source of inspiration or intuition, and they display similar sensitivities to the prevailing environments and attitudes. And once again the new ideas seem to emerge from a background *mélange* of potential but unspecified information, or to comprise a rearrangement of existing information in an

alternative context. As discussed in more detail in Ref. 24, although creativity is usually manifested in the currency of information, this is in fact fungible with the more tangible material and energetic evidences that appear in other CCPP applications. In any case, the issue remains whether the proposed expansion of scientific methodology could lead to enhanced understanding and more effective invocation of such creative stimulation.

4) *Science vs. Religion*

One of the most tantalizing prospects is that the proposed broadening of scientific perspective would finally enable some rationalization of the age-old confrontation between science and religion. This weary dichotomy has generated more literary poundage, uninformed and tautological debate, and irrational behavior on both sides than virtually any other philosophical issue in this or any previous era of human culture, all of it predicated on categorical “either-or” presumptions. If subjective issues were to be legitimized within scientific methodology, the mutual respect that could be engendered could recast this combination of orthogonal perspectives into a constructive complementarity that would vastly benefit both, and greatly enrich the inherently composite experiences and their understanding. As Ouspensky put it:

A religion contradicting science and a science contradicting religion are equally false.⁽²⁵⁾

It is our suggestion that the catalyst that would enable such amalgamation would be the addition of such revered religious properties as faith (attitude), hope (desire), and love (resonance) into the functional vocabulary of science.

5) *Evolution*

One particularly pertinent candidate for resolution of needless and destructive dispute between scientific and religious perspectives presents in the currently raging arguments over origin of species that are being ventilated by the neo-Darwinist “random selection” factions on the one side and the creationists or “intelligent design” advocates on the other. Curiously, neither side seems to include in their models the possibility that the desires and environmental resonances of the species themselves might be factors in conditioning their evolutionary paths, either by directly biasing the biological processes involved, or by enhancing access to their information reservoir, however that may be defined for those species and purposes. For example, if the teleological influence, or “reverse causation,” that has been demonstrated in various CCPP contexts^(6,26) is allowed to enter the evolutionary process, either consciously or unconsciously, as a probability modifier that reaches backward from desired future states, then, over a large population and many generations, a somewhat subtler form of intelligent design may function that actually utilizes much of the random selection mechanics. Thus, as we advocated in a paper entitled “Consciousness, Information, and Living Systems,”⁽²⁷⁾ a science that carried such

possibilities in its biological arsenal could help to clarify the complementarity of these superficially disparate perspectives, to the deeper satisfaction of both.

VI. The Down Side

If the empirical evidence and theoretical reasoning presented in the prior article,⁽¹⁾ and the arguments so far advanced in this essay have been at all persuasive, it is not unreasonable to raise a complicating aspect of the matter. Namely, are all appearances of CCPP necessarily positive in character, *i.e.*, do they invariably enhance information, reduce entropy, and fulfill legitimate needs and noble desires, and are they otherwise beneficial in their applications? While we have much less experimental evidence on which to base a response, it nevertheless seems clear that such categorical assurance cannot responsibly be made. For example, our PEAR operator pool contains a small fraction of participants, both female and male, who, for whatever reason, tend to produce results opposite to their pre-stated intentions, to a statistically impressive degree.⁽²⁸⁾ This propensity to “psi-missing” is also well known and widely reported in more conventional parapsychological research.⁽²⁹⁾ While it is tempting to assign such performance to an inept style of interaction, an unconscious perversity of effort, or a more deliberate attempt to confound the data, it is our suspicion that this tendency may also derive from the inclination of some operators to invest more of themselves in the resonance of the interaction than in fulfilling a particular intention, with the result that for them a deviation from chance in either direction of achievement constitutes a “successful” result.

On a broader cultural level, persistent negative correlations bring to mind personalities like Christopher Robin’s “Eeyore”⁽³⁰⁾ or Li’l Abner’s “Joe Btfsplk,”⁽³¹⁾ for whom life is an endless stream of aggravations and failures to cope, and who are doomed to wander about unhappily and ineffectually with makeshift tails pinned to their posteriors, or with rain clouds drizzling onto their heads. If we stay trapped within our present causal logic, we are forced to engage the dilemma of whether it is their negative personalities that cause, or at least attract, the depressing events, or whether it is the incessant stream of those events that deforms their personalities. But in the correlational approach, we need simply acknowledge the consistency and synchronicity of the negative mental and physical expressions.

Nor does this attraction of negative effects focus only on such sad individuals *per se*. Certain consciousness experimenters and laboratories have actually acquired reputations for producing null or contrary effects to exceptional degrees, and similar disruptive influences have been observed in other fields of study. The famous theoretical physicist Wolfgang Pauli was more than once accused of disabling equipment simply by being in its vicinity. On one occasion, a particularly catastrophic experimental collapse was attributed to his having been waiting in a nearby train station at precisely the fatal moment!⁽³²⁾ To these anecdotes one can of course add the storied “gremlin” effects of the Second

World War; our personal “Murphy’s Law” experiences of automobiles, household appliances, and computers failing at the most inconvenient moments; the capacity of certain people to repeatedly disable their own watches, clocks, and other programmed utilities; and the legion of “SLIders” for whom lighting fixtures seem to be the preferred targets for their negatively proactive unconscious psyches.⁽³³⁾ And of course the bizarre assortment of reported poltergeist phenomena that appear to correlate with repressed emotional stress in certain adolescent agents may be the strongest indicators of the negative capacities of the unconscious mind.⁽³⁴⁾

To pursue these inverted manifestations of CAPP, one should probably distinguish among those effects that appear spontaneously, possibly correlated with some form of psychopathology; those that arise from inadvertent or naïve misapplications of the psychical strategies (*cf.* for example Larry Dossey’s treatise “Be Careful What You Pray For”⁽³⁵⁾); and those that are deliberately malicious invocations of esoteric techniques. We have neither the experience nor the understanding to attempt to clarify this issue further here, other than to note that the same array of subjective correlates found in the positive events appears to be involved at all negative levels, as well, *i.e.*, intentionality, whether conscious or unconscious; prevailing uncertainty, complexity, or disorder; characteristic attitudes; and generous involvement of the unconscious mind in the interactions. It would be comforting to contend that the remaining major correlate, *i.e.*, resonance or coherence, would by its nature exercise a beneficial constraint on the process, but unfortunately we are all too familiar with organizations and individuals whose religious or political zeal engenders intense sacrificial commitment and unity of purpose to their malevolent agendas.

Over the long tortuous history of scientific endeavor, rarely has there been a major breakthrough in basic understanding that has not brought with it serious concerns for destructive or careless misapplications of the new knowledge and the technology that could be derived from it, and in the majority of cases such chimeras have indeed manifested in some form, *e.g.*, as weaponry of many ages, environmental contaminants, de-humanizing agents, pharmacological and nutritional mistakes and abuses, and many other prompters of cultural and global catastrophes. On most occasions the scientific community has declined culpability for such egregious misdirections of their products, arguing that the search for new fundamental knowledge cannot be held hostage by the potential abuses thereof. Science, they would claim, is by its nature an abstract, dispassionate business that deals only in objective facts; the public utilization of those facts is the scholarly concern of the psychologists, sociologists, theologians, and humanists, and the pragmatic concern of politicians, legislators, law enforcement agencies, and, in severe cases, the military. Yet this same scientific establishment also has allowed its authoritative weight to be placed behind products and enterprises of questionable social and personal value; to bias our educational system toward dispassionate objective logic at the expense of aesthetic humanistic sensitivities; to engender and undergird international political postures

based mainly on technological power and needs; or to emphasize monetary advantage over ethical consideration; thereby propelling itself and the culture it serves to an excessively secular, at times arrogant, attitude that desperately needs renovation. In the particular revision we are proposing here, however, such an insensitive stance would be less defensible, for the proposed Science of the Subjective by its nature must explicitly acknowledge the functional roles of human values, needs, purposes, and resonances in the fundamental essence and dynamics of an interdependent world, and therefore careful cultivation of these requisites would be inescapable in its pursuit and successful applications. The responsibility for constraining those deployments to those that are beneficial, and for precluding those that are destructive or evil, thus could not be handed on to some other authority. Rather, SOS would be designed and developed to be self-regulating from the bottom up, with potentially detrimental aspects precluded or controlled by failsafes at the structural level.

VII. Apotheosis

Over the course of the PEAR odyssey, we have encountered our share of misguided scholarly, economic, political, and cultural vicissitudes that had to be struggled through. At such times, we would often make recourse to a powerful poem by James Russell Lowell entitled “The Present Crisis.”⁽³⁶⁾ Although motivated by a different issue, in a different era (the emancipation movement of the mid-19th century), this inspiring work is replete with ringing one-liners and memorable heroic verses that gush from the writer’s personal penetration into his own Source of truth, with a profound pertinence that extends far beyond the specific topic he addresses. The final stanza sounds precisely the generic rule-change challenge that must be met by pioneers in any venue:

New occasions teach new duties; Time makes ancient good uncouth;
They must upward still, and onward, who would keep abreast of truth.
Lo before us gleam her campfires! We ourselves must Pilgrims be,
Launch our Mayflower, and steer boldly through the desperate winter sea,
Nor attempt the Future’s portal with the Past’s blood-rusted key.

If science is to continue to fulfill its proper role in human society, it cannot hold itself aloof from such revitalization of its own rule system. To those of the scientific Old Guard who will object that the final line’s allegorical allusion constitutes an unjustified exaggeration of the public abuses of science past and present, we would only suggest some reflection on how many of those evil consequences could have been avoided, had the softer, subjective capacities of the human mind been carried along in constructive complement to its much more intensely cultivated objective rigor. And, for replacement of those demeaning cultural failures, we would offer a dream of the magnificent new world such a refitted scientific Mayflower could open for our exploration and enjoyment.

APPENDIX

Precedents for Cultural Rule Changes in Various Sectors of Human Enterprise

As broached briefly in the body of the text, the history of science has inevitably reflected the evolution of human skills, attitudes, and priorities in many other areas of endeavor. Hence, scholarly examination of rule-change scenarios in those sectors could help to establish a generic envelope to guide reformulation of the scientific paradigm. The following musings are far from complete or rigorously astute, but they may serve to stimulate more thorough reflection on such correlations.

i) Sporting Competitions

To begin with a somewhat trivial but illustrative example, the genre of common team sports offers particularly familiar cases of expeditious rule changes. For example, the evolution of modern American football from its international soccer and rugby ancestors was primarily enabled by the acceptance of the previously prohibited forward pass. The subsequent introductions of the two-platoon system, the two-point conversion, and the tie-breaker formats have further altered the experience and mystique of the game for both players and spectators. Likewise, modern baseball emerged from its original awkward form *via* the basic change from put-outs by striking runners with thrown balls to tags and forces at bases. The more recent additions of designated hitters and dedicated relief pitchers have substantially streamlined baseball's contemporary dynamics. In basketball, the introduction of the three-point shot constituted a major change in game strategy, player skills, and the consequent impressionistic impact, and so on. One may legitimately argue whether all sporting rule changes have indeed improved the aesthetic appeal, fairness, and excitement of their respective games, but they seem clearly to have been motivated by a well-intentioned set of common principles, *e.g.*, participant satisfaction and safety; evolution of player skills; spectator enjoyment and resonance; and the associated financial and legal issues. For these reasons, we should anticipate continuing sequences of changes into the future courses of the various sporting venues.

ii) Creative Arts

The histories of all creative artistic sectors are replete with sequences of technical and aesthetic rule changes and their associated effects. Certainly the formats, techniques, and impact of the modern visual media would have been totally foreign to their predecessors of the Classical and Romantic eras, who themselves had developed techniques of color, perspective, and dimensionality that would have been anathema to their medieval and primitive forebears. A

similar evolution characterizes the development of literary technique from its primitive forms to its contemporary prolific complexity.

In music, likewise, in the evolution from tribal rhythms to religious chants to Bach to Beethoven to Brahms to Berlioz to Bartok to Bernstein, we see inexorable expansion and sophistication of the repertoire of tonalities and structures, where the formats of one era become either passé or archival, to be superseded by others that earlier would have been rejected as cacophony, or as violating the established technical rules. An equally vigorous, perhaps even more frenetic pattern of change has driven in parallel through the evolution of popular and folk music throughout the ages, also leaving in its wake corresponding cadres of conservative complainers who resent the evaporation of their beloved older formats and decry the insensitivities and vulgarities of the new.

No better illustration of the confrontations between pioneers of new forms of musical expression and status quo critical communities could be cited than that stimulated by the towering German composer Richard Wagner, whose introduction of the “Singspiel” format, the “Leitmotif” technique, and the utilization of the voice as one instrument of the orchestral representation revolutionized the operatic stage, thereby drawing unrelenting fire from a battery of critics mired in the rigid dogma of 19th-century musical theatre. As an exquisite and devastating rebuttal to their carping, Wagner constructed an entire opera, “Die Meistersinger von Nürnberg,” which comprises a hilarious satire on the foibles of this hide-bound bunch of complainers. At one point, the visionary hero of the story, the cobbler Hans Sachs, sings an injunction to his master-singer colleagues that could well serve as the theme of the present-day quarrel of CCPP advocates with their own skeptical detractors:

Would you measure by your rules something that is not governed by them?
Forget your own guidelines; seek first the appropriate rules.

(*cf.* Section V, *I*). On a somewhat lighter note, Gilbert and Sullivan fans will recall that the convoluted plots of virtually all of their operettas are in the end resolved by someone of authority simply proposing a change in the pertinent rules.

iii) Spirituality

Moving to the spiritual terrains of religion, theology, faith, and morality, the overarching observation would be that the historical advent of most new religious forms, while usually entailing significant rule changes relative to their predecessors or to contemporary competitive versions, nonetheless has retained and built upon many of the basic features of the older forms. One can argue whether these changes were driven by prevailing social pressures, political expediency, maturation of human consciousness and conscience, or divine inspiration, or whether they were evolutionary or revolutionary in character, but their specification and modes of implementation, usually cast with some

reference to their prior or alternative versions, comprise the essential trademarks of those faiths. Obvious examples from the Judeo-Christian tradition can be cited by comparison of the Pentateuch of the Old Testament with the profound modifications thereof in the sermons, parables, and Letters of the New Testament, *e.g.*:

The Sabbath was made for man, and not man for the Sabbath.⁽³⁷⁾

He that is without sin among you, let him first cast a stone at her.⁽³⁸⁾

Ye have heard that it hath been said, An eye for an eye, and a tooth for a tooth; But I say unto you that ye resist not evil, but whosoever shall smite thee on thy right cheek, turn to him the other also.⁽³⁹⁾

A new commandment I give unto you, that ye love one another; as I have loved you, that ye also love one another.⁽⁴⁰⁾

and perhaps most pertinent to our thesis here:

And no man putteth new wine into old wineskins; else the new wine will burst the wineskins, and be spilled, and the wineskins shall perish. But new wine must be put into new wineskins; and both are preserved.⁽⁴¹⁾

Note, however, how these changes were couched in enduring respect for the prior or competitive systems, *e.g.*:

For verily I say unto you, 'Til heaven and earth pass, one jot or one tittle shall in no wise pass from the law, 'til all be fulfilled.⁽⁴²⁾

or:

Render, therefore, unto Caesar the things which are Caesar's; and unto God, the things that are God's.⁽⁴³⁾

In other words, the changes were posed more as amendments, generalizations, clarifications, or expansions of the prevailing systems, rather than as a revolutionary overthrow of them, a feature worth retaining in our scientific context.

iv) Psychology

Closer to our technical territory lies the turbulent terrain of human psychology. Although much younger in its formalization, its history of rule changes has been particularly severe and consequential. In clinical psychology, the early insights, theories, and models of Wundt and Witmer were drastically transformed by later theorists, such as Rogers, Frankl, Perls, or Maslow, into so-called humanistic, existential, Gestalt, or transpersonal schools of thought, to name just a few. Similarly, Freud's original psychoanalytic concepts underwent substantial modifications by his various followers, such as Adler, Reich, Jung, and others. And the evolution of contemporary cognitive psychology can be traced from Broadbent's information processing model in the 1950s through the later schools of social, personality, or developmental psychology, to those

currently preoccupied with cognitive neuroscience, mechanistic brain function, and microbiology. While some of these alterations have opened doors to better comprehension of cognitive and emotional experience and behavior, others have engendered pedantic periods of follow-the-leader stagnation that have insisted on searching for the key under the lamp-post. In the former category reside such monumental break-outs as the identification and pursuit of the role of the unconscious mind; the tracking and treatment of traumatic repression; the postulation of the archetypal presence, synchronicity, and the collective unconscious; and the acknowledgment of “acausal” phenomena (many of which have now been discounted, if not derided, by the contemporary psychological establishment). In the latter category we would lump much of the current neuroscientific aspiration to complete the understanding of human behavior *via* DNA analyses or diagnostic probing of the electrochemical processes of the brain, which, while potentially clarifying some of the information processing circuitry, are not likely to illuminate the character of Consciousness itself, or its sublime dialogue with the ultimate Source of the information.

v) *Philosophy*

In this most abstract of academic regimes, one could reasonably contend that the entire history of philosophy has constituted a tightly woven fabric of rules of thought and their transitions, refinements, and alterations. Indeed, philosophy could be regarded as an endeavor to establish the rules of epistemology and the alteration of such rules, *i.e.*, metarules. Whether we dwell on the classical foundations of Heraclitus, Socrates, Plato, Aristotle, and their many toga-clad colleagues; the refreshing views of Swedenborg, Kant, Hegel, or Schopenhauer that impacted the scientific revolution; the controversial views of later philosophers, such as Nietzsche, Peirce, James, Bergson, Husserl, or Whitehead; or the musings of contemporary philosophers of science, one profound presumption permeates all: the rules not only frame the reality, they condition its experience. This too is an insight worth retaining in our pursuit of scientific alterations.

vi) *Medical Practice*

No sector of professional activity has been more tightly constrained over history by its internally and externally imposed rules and regulations than that of medical practice and generalized health care. Throughout its subdivisions of clinical diagnosis, hospitalization, counseling, pharmacology, social work, insurance, and public health, evolution of standard practice has been paced as much by the inertia of the prevailing controls as by the accumulation of new empirical experience and the development of superior technologies and facilities. The conservatism of this march forward is understandable, perhaps even commendable, given the intolerable personal, collective, and professional risks attending any false steps in modification of treatment protocols, substances, or

equipment, predicating that the medical regulation business is a very major component of the entire health care panorama.

But major changes drive forward nonetheless. Especially relevant here is the contemporary explosion of individual and public interest in and demand for the so-called alternative, complementary, naturopathic, and integrative healing and preventive techniques, which are forcing the deeply vested allopathic component into phenomenological terrains in which it has much less training and experience. The rule changes that must inevitably emerge from this cultural pressure have been, and will continue to be vigorously argued and, to a considerable degree, will parallel those challenging the basic sciences, as well.⁽²³⁾

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