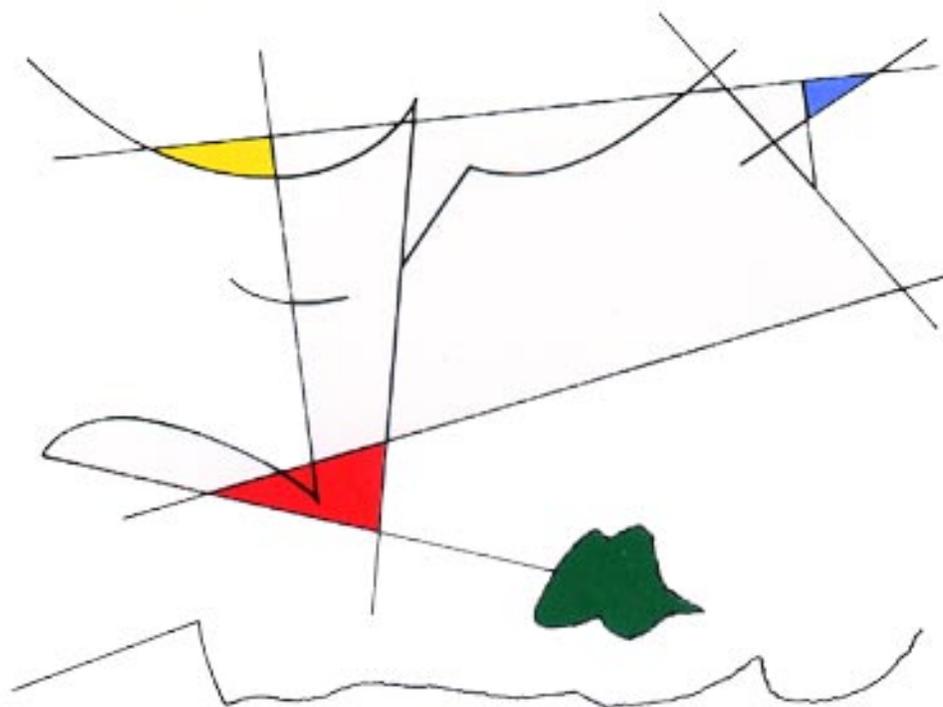


# MARGINS OF REALITY

*The Role of Consciousness  
in the Physical World*



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# PREAMBLE

Consciousness contemplates no more profound or perplexing question than this: what is its role in the establishment of reality? In one extreme view, endorsed by much of traditional Western science and philosophy and exemplified by modern pragmatic materialism, the mind of man is relegated to a passive processor of experience imposed by a totally deterministic external world—a mere visitor meandering through the grand museum of life. In the opposite extreme, espoused by numerous and enduring mystical traditions of many cultures and eras, all experience is presumed to be created by consciousness, so that any tangible reality ultimately traces to illusion. Between these divergent perspectives there is room for a full variety of hybrid personal positions, to be formed by some constellation of cultural and religious heritage, empirical experience, logical reasoning, intuition, and inspiration, wherein consciousness is allowed some mixture of these passive and active roles—wherein, as Niels Bohr concluded from the enigmas of modern physics, “we are both onlookers and actors in the great drama of existence.”<sup>1</sup>

Until quite recently, scholarly search for the most satisfying and pragmatic balance of these perspectives has necessarily proceeded largely on hypothetical and qualitative grounds, for directly illuminating experimental evidence has been very difficult to obtain. Although alchemists of every age have expended immense efforts in attempting to break this cosmic riddle, their results have only compounded the question. While the modern disciplines of academic and clinical psychology have collected many empirical correlations and proposed numerous heuristic models of the interactions of human consciousness with the environment, the underlying mechanisms of the dialogue between mind and matter remain far from comprehended. On the physical side as well., few directly pertinent experimental data exist, although an assortment of anomalous effects such as the measurability paradoxes of atomic and nuclear physics, the enigmas of neuroscience and medical practice, and the body of controversial evidence on so-called psychic phenomena suggest that there may be serious shortfalls in the established paradigms.

Given the immense pragmatic and philosophical ramifications of the topic, this dearth of definitive experimental evidence might seem curious, but formidable obstacles oppose such investigations. The physical and psychological relationships between consciousness and its physical world entail subtle effects and processes that in some case appear to violate the most fundamental scientific premises of space, time, and causality. The parameters bearing on such interactions are numerous and widely interdisciplinary, and various subjective and aesthetic factors not normally accommodated by traditional scientific methodology seem crucially relevant. Even in the most incisive and carefully controlled studies, systematically

replicable effects appear only as marginal deviations from the normal statistical behavior of probabilistic systems, predicating extreme sensitivity and stability of detection equipment and acquisition of huge data bases if valid indications are to be unequivocally discriminated from the intrinsic noise of random processes.

With full acknowledgment of these difficulties, the purpose of this book is to reexamine the role of consciousness in the establishment of physical reality in the light of an extensive new body of experimental data recently acquired using equipment, protocols, data-processing and interpretation techniques that mitigate the obstacles to the extent that statistically replicable, quantitative results can be obtained. Some of these experiments study the interaction of human operators with various technical devices and systems. Others concern the acquisition of information about remote geographical targets inaccessible by known sensory channels. From these studies emerge a family of manifestly anomalous effects, clearly at variance with established physical and psychological models, and clearly indicative of some influence of human consciousness on the tangible statistical characteristics of the information involved. Based on the observed salient features of these anomalies, their scale and primary parameters, a conceptual model of such interactions can be proposed to aid in correlation of results, design of more incisive experiments, prediction of other effects, and explication of the phenomena on fundamental grounds. While the random processes embodied in these experiments and presumed in this model are specifically selected and adapted for rigorous and quantitative research, they share many basic characteristics with numerous other probabilistic systems in the natural world, in psychological and sociological situations, and in engineering practice. Hence, various broader implications of the observed and postulated effects can be reasonably considered.

The thesis is posed in five segments. In Section I are assembled a group of epistemological vectors, drawn from various traditional areas of human thought and experience, that converge on the motivation, definition, and circumscription of this particular research program. Section II presents a concise review of the design, operation, and results of an ensemble of experiments directly addressing the interaction of human consciousness with physical devices and systems embodying various types of random processes. Section III describes a complementary program of experiments on the acquisition and interpretation of information about unknown physical targets remote in space and time. In Section IV, these demonstrated anomalous capabilities of human consciousness are addressed via a comprehensive theoretical model based on the same wave mechanical metaphor that proved useful in resolving many of the anomalies of modern physics. Section V then reexamines the original set of topical vectors in the light of these experimental results and theoretical predictions and attempts to converge on some generic response to the original question of the role of consciousness in the establishment of reality.

Many technical and philosophical fibers are required to weave these arguments, some quite rudimentary and intuitive, others more sophisticated and hierarchical, and their interactions are equally as important as their individual courses. But once this conceptual array is in place and the empirical evidence is sifted through it, the role of consciousness in the physical world indeed emerges endowed with an active component. By virtue of the fundamental processes by which it exchanges information with its environment, orders that information, and interprets it, consciousness has the ability to bias probabilistic systems, and thereby to avail itself of certain margins of reality.

<sup>1</sup> Niels Bohr, *Atomic Theory and the Description of Nature* (Cambridge: The University Press, 1961), p. 119.