Article

Human Consciousness as Epiphenomenon of Primordial Consciousness (Part I)

Alex Vary*

Abstract

We explore the premise that the human mind and consciousness emerge as an epiphenomenon of a primordial consciousness. We posit a transcendent primordial consciousness which preexists its human vessel and which produces and evolves that vessel. Although human consciousness may emerge neurologically, a mechanism underlying its transcendent nature is suggested; that is, a primordial consciousness engenders cyclic processes that generate, shape, and evolve the neurological vessel. We suggest that cyclic processes which produce and implement informational fields and signals are inherent to the mesostratum which is a signal storage and transmission modality. Accordingly, we argue that a primordial consciousness generates the life cycles and the neural networks from which human consciousness emerges. The best instrument for exploring mesostratum informational fields and signal contents is the human brain/mind, specifically, exceptional individuals possessing unique abilities to access and employ mesostratum consciousness signals. Examples of such individuals are cited. The examples illustrate that human consciousness can access, retrieve, analyze and employ the content of the informational field, the akashic field, residing in the mesostratum.

Part I of this two-part article includes: Introduction; 1. Fundamental Considerations; 2. Mesostratum and Mind Loop; and 3. Stochastic & Epigenetic Emergence of Life.

Keywords: Primordial consciousness, emergent consciousness, transcendent consciousness, Yoga, Akashic field, thought signals, physiostratum, mesostratum, superstratum, prodigoius savants.

Introduction

We adopt the premise that humans can access a ubiquitous consciousness which is global, transcendent - extending beyond the neural boundaries of the brain, beyond self-awareness, beyond sentience. To propose and argue this transcendent nature of consciousness, one must boldly assume that it *transcends everything material* - that there is a primordial shared aspect of consciousness which is external to the individual human vessel: the brain/body and its neural network.

A conceptual framework is proposed to help explain the transcendent nature of consciousness and its relation to the physical-bio-material entity which possesses and experiences consciousness. The foundation of the framework is the mesostratum - an energetic signal storage and transmission medium. The mesostratum machinery imagined and described here offers a

* Correspondence: Alex Vary, PhD, Retired NASA Scientist & Independent Researcher. Email: axelvary@wowway.com

conceptual linkage from a purely transcendent continuum to the physiostratum material discontinuum, in which we reside. This paper illustrates ways we abstractly access and explore the mesostratum and how the mesostratum and emergent human consciousness interact.
Daniel Dennett [1] wrote, "Human consciousness is just about the last surviving mystery. . . Consciousness stands alone today as a topic that often leaves even the most sophisticated thinkers tongue-tied and confused. . . . With consciousness . . . we are still in a terrible muddle. . . [perhaps] there will never be a demystification of consciousness." David Chalmers [2] observes that "Consciousness poses the most baffling problems in the science of the mind. . . . There is nothing that we know more intimately than conscious experience, but there is nothing that is harder to explain." Dennett is a proponent of reductionism - that consciousness emerges from the bio-physical entity - while Chalmers argues that consciousness transcends that entity.

These opposing views lead to *either/or* propositions which partition and shroud the issue in mystery. This partitioning should be avoided by recognizing that consciousness needs bio-physical neural network to be manifest and that the bio-physical neural network is governed by a higher consciousness - making choices and exercising initiative, sagacity, imagination, creativity, intuition - which transcends neural networks.

1. Fundamental Considerations

Metaphysics of Consciousness

The mystery of consciousness revolves around the question: How can beings made of the raw - initially inanimate - matter of the physical world acquire such phenomena? Neither the reductionist approach nor the non-reductionist approach has thus far resolved the question. This paper suggests the mesostratum as a link between non-reductionist's transcendent consciousness and the reductionist's empirical world.

The phenomena of consciousness are related to physical neurological brain-states, but are not identical to brain states - they are experienced but are empirically unmeasurable, unquantifiable. The esoteric aspects of consciousness assign objective reality, meaning, value, quality to what is being sensed, neurally-processed, experienced. A higher consciousness is experienced uniquely, indirectly and when experienced it is not always obvious to the unprepared or unattuned mind. It commands the body and evaluates its experiences. It is a *motivator* and *observer* - an *occupant* the body - it is that which is usually called the subconscious. It communicates - or we communicate with it - subconsciously in subtle ways - if not by direct imagery or verbal exchanges, then through ideation, insight, inspiration, introspection, meditation. Lucid dreaming, near death experiences, out-of-body experiences, and certain types of hallucinations are extreme examples.

Any dissertation on the nature of consciousness should also explain metaphysical phenomena such as telepathy, psychic communication, out-of-body and near-death experiences, vivid hallucinations, and lucid dreams. It should also explain creativity, inspiration, intuition in literature, visual art, music, architecture, and engineering. It should explain the works of

Shakespeare, Goethe, Mozart, Beethoven, da Vinci. It should explain prophets, seers, their works, scriptures, the Bible, Koran, Vedanta, Upanishad. It should explain the mathematical insights and intellectual constructs of Gauss, Euler, Einstein, von Neumanm, Ramanujan.
Roger Penrose [3] proposes that distinct aspects of quantum phenomena are essential for consciousness and these occur in neural networks, specifically in cytoskeletal nanotubules which are quantum-activated structures within each of the brain's neurons. Penrose advises that we should bear in mind the *global* nature of consciousness. It is irrational to assume that any particular cytoskeleton nanotubule or combination thereof produces, retains, or understands an argument by Socrates or Kant. Penrose points out ". . . understanding is something that operates at a much more global scale; and if cytoskeletons are involved, then it must be some collective phenomenon which concerns very large numbers of cytoskeletons all at once." We will argue that global communication involving cytoskeletal nanotubles involves transcendent mesostratum energy and signals and will give illustrative examples.

Consciousness - Time - Entropy

There are various aspects of consciousness generally necessary for an entity to be deemed conscious - these include awareness, memory, learning, anticipation, and subjective experience. Awareness is one required aspect, despite many problems with the exact definition of awareness, specifically self-awareness. Conscious interaction with memory systems, along with learning, is needed to appreciate and adapt to novel and significant events. Anticipation includes prediction of consequences of proposed actions and prediction of consequences of probable actions by other entities. Subjective experiences or qualia are widely considered to be the hard problem of consciousness, indeed posing a challenge to the ontological thesis that everything is physical and that there is nothing that transcends physical objectivity.

Probably, a paramount function of consciousness is that aspect of it which gives meaning to the perceived flow of time. Roger Penrose [4] remarks that, "One of the most striking and immediate features of conscious perception is the passage of time. It is something so familiar to us that it comes as a shock to learn that our wonderfully precise theories of the behavior of the physical world have had, up to this point, virtually nothing to say about it . . ." or why time needs to *flow* at all. The brain/body consists of a collection of ticking bio-clocks but, like the cuckoo clock on my wall, know not what time it is. The configuration of the cuckoo clock hands at any instant depend on my setting of the pendulum bob. Like the cuckoo clock, the brain perseveres, provisionally in an eternal *now*, devoid of *knowing* the flow of time.

Human consciousness assigns meaning to duration and distance, while ostensibly *outside* the domain of time and space. Paradoxically consciousness putatively resides in a realm that transcends the material domain of time-consuming and space-spanning phenomena. Consciousness is distinct from the mathematics and measurement of spatiotemporal coordinates so descriptive of our embodiment and laboratory experiments. Consciousness is above the fray always endeavoring to put things in order by insisting: 'this must have happened before that happened' - 'this belongs here, that belongs there' - 'this thing persists even when it is not observed'. It is my consciousness that puts these words in the order you see; my consciousness writes equations that describe physical phenomena; my consciousness arranges lines, lyrics,

symbols, icons and figures I draw or compose; my consciousness assigns context and nuance to my prose and poetry.

Penrose [5] points out that ". . . our experience of the passage of time is dependent upon an increasing entropy as part of what constitutes our conscious feeling of the passage of time; so whatever time direction we believe to be the 'future' must be that in which entropy increases." Penrose argues, "our psychological experiences of the passage of time would always be such that the Second Law of Thermodynamics holds true, irrespective of the physical direction of the progression of entropy." Our conscious experiences of time is such that the Second Law always holds true and thus establishes the relation between time and entropy.

Penrose admits that although, "According to the Second Law, things are getting progressively more and more random with time . . . this represents merely an overwhelming probability, not quite an absolute." Despite the impermanence, destruction or decay of pockets of living thinking matter, there is the hint of something remarkable: these are instances of increasing order that continually emerge from the chaos of the overwhelming global entropy. The increasing order is apprehended by observation and contemplation.

Let an egg drop from a table and crash asunder on the floor. We do not expect the egg to self-assemble because that is inconsistent with the Second Law and would be such an enormously improbable sequence of events that we can simply reject it as a realistic possibility. This contrived incident (egg crashing asunder) is simply the interruption of a non-random process destined to produced an increasingly organized living entity that, given the right circumstances, could become the founder of a dynasty of purposeful, self-aware, replicating living things. What is exemplified in this case is a pocket of negentropy in the midst of increasing entropy discovered and informed by an entelechial primordial consciousness perhaps by an *emergent* spontaneous consciousness which evolves stochastically to deal with existential needs.

Primordial Consciousness

James Jeans exclaimed [6], ". . . the universe begins to look more and more like a great thought than like a great machine." Perhaps a primordial consciousness assembles such a great machine - the chaotic milieu of the cosmos - and then endeavors to put things into spatiotemporal order at least locally, perhaps provisionally - improvising, modifying, evolving, bringing order out of chaos as contemplated by Ilya Prigogine and Isabelle Stengers [7]. A virtually unchallengeable observation is that it requires an immense dynamic cosmos and a tremendous amount of time to produce minuscule pockets of intelligent consciousness on congenial life-friendly globular habitats. According to Stephen Hawking it also requires a grand design. Stephen Hawking [8] explains how ". . . understanding of the laws governing us and our universe [may] lead to a unique theory that predicts and describes a vast universe full of the amazing variety that we see." Hawking's *laws of the universe* are so exquisitely formulated that they somehow govern the assembly of the cosmos down to the minutest details of forces, fields, and quantum particles.

From this viewpoint, consciousness is more than an epiphenomenon accompanying the nascency of the cosmos, but is instrumental in the origination and evolution of the cosmos - which is

dependent upon a preexisting transcendent consciousness as contemplated by Penrose, Hameroff, Stapp, and Chopra [9]. The opposing reductionist viewpoint is that consciousness is merely an epiphenomenon which emerged from the raw materials of the cosmos. This leads to the paradox of how a seemingly chaotic cosmos can produce isolated pockets of order and organization - localized reversals of entropy. These organized entities are spawned as pockets of order out of chaos - for example, the human neural system. Is the emergence of the thoughtful transcendent brain perhaps potentiated by parameters inherent to the chaotic milieu? In either case, this implies the emergence of coherent global signals not requiring a physical neural network. It is proposed that the mesostratum demonstrably records, archives, and transmits primordial transcendent signals, waveforms, and informational fields independently of the physiostratum, as described next.

2. Mesostratum and Mind Loop

Soul ~ Spirit ~ Body Triad

It is clear that any discussion of consciousness involves the mind, which in turn requires its own definition as a transcendent entity. We propose that the *mind* spans three strata: (1) the *superstratum* (the transcendent domain of pure thought), (2) the *mesostratum* (the mediating domain of information, signals, energetic fields, and (3) the *physiostratum* (the domain of spacetime and temporal-objective material reality) [10]. In this context, the mind reaches from the superstratum continuum to the physiostratum discontinuum via signals through the mesostratum interface, as illustrated in Figure 1.

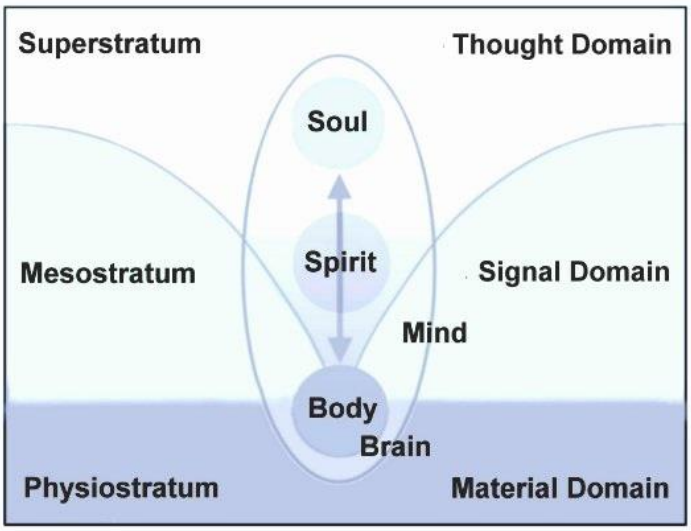

Figure 1 - Soul-spirit-body triad of mind.

The physiostratum discontinuum is conceptually a subset of the superstratum continuum [11]. Elements of the superstratum and physiostratum commingle in the mesostratum interface. We are aware of the transcendent superstratum and mesostratum indirectly by their ubiquitous

influence on the physiostratum primarily at the quantum level and by their influence on our consciousness and our experience of tangible objective realities.

The words soul and spirit are burdened with theological and ancient scriptural connotations. We adopt the notion that each individual soul is the superstratum focus of a conscious entity while the spirit is a mesostratum signal transmission modality which informs the material conscious entity. The body/brain is the physiostratum focus of a transcendent consciousness. The mind is defined in Figure 1 essentially as a loop that unites the brain and soul foci via a mesostratum download/upload signal cycle.

The mind loop is essential to integrate the wholeness of one's being, but is evasive when the body is awash in worldly tides, distractions, and self-indulgence. This separation may be overcome by quiet meditation which engages the mind loop, recombines the body and soul, and helps realize the full potential of one's being through enlightenment and inspiration that is manifested in accessing and exploring the mesostratum.

Mesostratum Reality

A simple experiment reveals the reality of the mesostratum. Magnetic fields are continuumthings, virtual mathematical objects, that exist only in the mesostratum. Their presence and influence is clearly demonstrated by the alignment of iron filings originally randomly scattered on a cardboard sheet just before being placed over a magnet. The tiny particles of iron line up along so-called *lines of force*, in the mesostratum hyperspace continuum, between the magnet's poles.

It can also be demonstrated that light waves, electromagnetic waves and fields, transpirate within the mesostratum. This has been made apparent since Thomas Young's double slit experiment and the Michelson–Morley interferometer experiment. Both revealed that light waves, electromagnetic waves, transpirate outside the physiostratum, in transcendent mesostratum. For example, within the mesostratum continuum, photons traverse decoupled from the physiostratum, while *in transit* from a source to a detector. The decoupling is evident in the *constant velocity of light* which is *independent* of the velocity of the photon's physiostratum source/emitter - a material body, an agglomeration of quantumthings [11].

Recognizing the reality of the mesostratum, at least provisionally, can help explain how a transcendent consciousness spawns, enables, and evolves human consciousness. A leap of faith is not needed for accepting the idea of the transcendent aspect of a human mind nor the existence of a transcendent mesostratum that mediates between the physiostratum and superstratum. We simply accept as axiomatic that mesostratum informational consciousness signals - transpirate *outside* and *independently* of the particulate physiostratum and its discontinuous granular spacetime objects such as neurons and neural networks.

Since mesostratum consciousness waveform origination, transit, and evolution scenario is not observed, it may be declared to be a non-reality, according to the notion that the only reality is one that is *observed and measured*. One might muse that neither the mesostratum nor

consciousness wavefunctions are objectively real and are therefore sufficiently transcendent to be dismissed by reductionists, empiricists, naturalists. More difficult is the acceptance of radical concepts such as the superstratum ~ mesostratum ~ physiostratum triad. This model and its auxiliary paradigms are nevertheless useful because they may help explain an even more esoteric phenomenon: the transcendent nature of human consciousness and its role in the orchestration of quantum and other informational signals and fields.

Provisionally recognizing the reality of the mesostratum, exploration of the mesostratum should reveal unexpected features, properties, and resources, particularly regarding modes of information storage and transfer. Because it transcends the material world, the mesostratum necessarily has 'Wi-Fi' or *wireless* signal origination, exchange, and transmission capabilities. Mesostratum signals and dynamic fields which transmit information and energy are not necessarily restricted to electromagnetic waves and fields. It is inadvisable to exclude the possibility of other kinds of signals; signals far stranger than the familiar electromagnetic waves that figure so pervasively in terrestrial technologies.

Consciousness and Thought Signals

We hold as axiomatic that mesostratum continuumthings like signals and mathematical objects transpirate *outside* and *independently* the particulate physiostratum and its discontinuous granular spacetime. We explain how mesostratum continuumthings underlie the world and physiostratum quantumthing agglomerations [11]. We argue that Plato's world, as described next, is conceptually identical to what we term the mesostratum.

A parallel between information conveyed by a stream of quantum signals and other kinds of signals which carry conscious thought and ideas may exist, but this is not easily illustrated. As a start, we contemplate Roger Penrose's accounts of drawing mathematical ideas from Plato's *world of perfect forms*. Penrose [12] argues that we discover the laws of nature in Plato's world, which by our definition is integral to and part of the mesostratum. He elaborates on his own experience with Plato's world and diagrams its relation to the physical and the mental world. Penrose affirms: "This was an extraordinary idea for its time, and . . . is indeed an immensely valuable one. It tells us to be careful to distinguish the precise mathematical entities from the approximations that we see around us in the world of physical things." Penrose asks, "Does this not point to something outside ourselves?" Penrose's advocacy of Plato's concept figures prominently as a predecessor to the concept of the mesostratum - as an aspect of consciousness *outside ourselves*.

Penrose concludes that the Platonic world of perfect forms exists and that physiostratum and the mind draw from and depend upon its inexhaustible reservoir of ideal entities. Although perfect forms are not found in the physiostratum, there is ample evidence that nature utilizes the mathematical objects and formulae of Plato's world. Certainly, mathematicians and physics theorists draw upon these resources [13].

Penrose asserts a remarkable interplay and communication among the triad he designates as the *Platonic*, *Mental*, and *Physical* worlds. The interplay is manifested by the manner in which mathematical discoveries, experimental results, and human consciousness are intertwined. As a

physics theoretician, Penrose prefers to limit his interest to Plato's world of mathematical concepts. Penrose writes, "I imagine that whenever the mind perceives a mathematical idea it makes contact with Plato's world of mathematical concepts. . . . When one 'sees' a mathematical truth, one's consciousness breaks through into this world of ideas, and makes direct contact with it. . . . When mathematicians communicate, this is made possible by each one having a *direct route to truth*, the consciousness of each being in a position to perceive mathematical truths directly, through this process of 'seeing.'. . . The mental images that each one has, when making this Platonic contact, might be rather different in each case, but communication is possible because each is directly in contact with the *same* eternally existing Platonic world!" Penrose is here implying communication of mathematical thought and particularly of thought signals in the rigorous symbolic language that is apprehended and understood by trained mathematicians. Indeed, Penrose points out that in his own experience communication with Plato's world is uniquely non-verbal and mathematically iconic [3].

Einstein, Pauli, Schrödinger, Heisenberg, Eddington, Jeans, espoused a form meditation that connotes communication with their transcendent consciousness. Einstein spoke of a cosmic feeling that inspired his reflections on the harmony of nature. Apparently mystical insights achieved by quiet meditative practices can be a useful guide in formulation of foundational scientific theories. Kurt Gödel spoke of the "other relation to reality" by which he could directly perceive mathematical objects, such as infinity. Gödel was able to achieve this by adopting meditative practices. Heinrich Hertz said, "One cannot escape the feeling that these mathematical formulas have an independent existence of their own, and they are wiser than even their discoverers, that we get more out of them than was originally put into them."

We shall recount more anecdotal citations because each reveals a rather obvious truth: what one draws upon from the mesostratum, from one's transcendent consciousness, may be discordant, chaotic - and invariably needs to be unraveled, organized. Some individuals have an extraordinary faculty to bring order out of the chaos and to formulate and forge a finished product - as did Mozart, Da Vinci, John von Neuman, others.

3. Stochastic & Epigenetic Emergence of Life

Stochastic Generation of Life and Consciousness

In explaining the spontaneous emergence of the cosmos we provisionally accept the notion that the cosmos, and its subsequent biological living content, suddenly emerged, expanded, and evolved from nothingness. We then acknowledge the notion that sentient life and human consciousness are simply the result of stochastic processes - an improbable interweaving of chance and choice. When we tie together the ideas of negentropy, the mesostratum, wavefunctions, signals, and entangled attributes of consciousness, we presumably approach discovery of the nature of and the resulting emergence of human consciousness. What we lack, principally, is knowledge about the stochastic processes that combined these factors. This knowledge is unavailable because of the randomness of the stochastic process. The non-deterministic stochastic process is a collection of variables, representing the evolution of random values over time.

Unlike a deterministic stochastic process which can evolve only one way, in a random stochastic process there is indeterminacy even if the initial conditions are known. There are usually infinitely many directions in which the process may evolve. We may know basic material building blocks, but are stymied about how they assemble; producing seemingly improbable outcomes in unpredictable successions of random stages.

Improbability, Coincidence, Choice

The improbability of abiogenesis and evolution of higher life forms has been compared to the improbability of a tornado sweeping through a junkyard and assembling an airplane. From the modern evolutionary standpoint, while the sudden appearance of cellular and higher life forms are improbable, evolution obviously proceeds nevertheless, randomly, slowly, stepwise, stochastically. Viewing the human body as a communal super-colony consisting of trillions of differentiated cells moves our attention to an exploration of symbiosis - as exemplified by the mutually-beneficial living-together, by choice, of unlike organisms - of interdependent cell populations and organs of the human body.

Some symbiotic relationships are obligate in that both symbionts entirely depend on each other for survival. Others are facultative, meaning that they can but do not have to live with the other organism. Symbiotic relationships include those associations in which one organism lives on another, or where one partner lives inside the other (such as lactobacilli bacteria in humans). Strange symbiosis loops prevail wherever life appears, down to the level of individual cells which cannot exist viably without the presence of symbiosis among enzymes, amino acids, cell membranes, and nuclei.

The raw materials, minerals, molecules of life and sustenance may come together by chance, but the living entity consists of much more than a fortuitous assemblage of those things. The assembly needs to be just right. It must follow a strict pattern, a template which assures that the entity is fully equipped to function and make choices. The improbability principle enunciated by David J. Hand [14] attempts to explain how all these factors combine coincidentally, spontaneously. Hand explains that virtually all seemingly random coincidences associated with chance events and conscious choice may be explained. He asserts that extremely improbable events are commonplace; a consequence of a collection of more fundamental laws which all tie together to lead inevitably and inexorably to the occurrence of extraordinarily unlikely events. According to these laws, and the improbability principle, “the universe is in fact constructed so that these coincidences are unavoidable: the extraordinarily unlikely must happen; events of vanishingly small probability will occur.” Hand attempts to resolve the contradiction between the sheer unlikeliness of such events and the fact that they nevertheless keep on happening.

Hand notes that the improbability principle is not a single equation, such as Einstein's famous equation, but a collection of strands which intertwine, braiding together and amplifying each other, to form a rope connecting events, incidents, and outcomes. The main strands are the law of inevitability, the law of truly large numbers, the law of selection, the law of the probability lever, and the law of near enough. Putatively, anyone of these strands is sufficient, by itself, to produce

something apparently highly improbable, but it is when they combine and work together that their real power takes hold. Hand insists that when these laws - the intertwining strands - are put together, virtually every unbelievable coincidence may be explained.

But, there is an adjunct to the improbability principle and laws that transcends the coincidental intertwining of chance events: It is choice (inspired, informed, uninformed, or random) by a self-aware consciousness. Does the improbability principle explain how the first free-living cell, that may have alighted on a grain of sand, successfully sought, found, and chose, nourishment and perhaps a cooperative genetically compatible or symbiotic partner? Indeed, if it needed no mate to commune with, to replicate, it still needed a genetic code of instructions to survive - and a habitat, environment rich in nutrients and helpful resources.

The evolutionary push for ever more complex communities of cells reflects the biological imperative to survive by self-enhancement and control of or better use of the environment. Complexity leads to more awareness, that is, to a greater capability to react and adjust to the environment and thence to improve the probability of survival. When cells choose to band together there will be an exponential increase in the organism's global self-awareness and ability to adjust to environment and change.

Bruce Lipton [15] writes, ". . . to survive at high communal densities, the cells created structured environments . . . sophisticated communities subdivided the workload with . . . precision and effectiveness . . . It proved more efficient for the community to have individual cells assigned to specialized tasks. In the development of animals and plants, cells begin to acquire these specialized functions in the embryo. A process of cytological specialization enables the cells to form the specific tissues and organs of the body. Over time, this pattern of *differentiation,* i.e., the distribution of the workload among the members of the community, became embedded in the genes of every cell in the community, significantly increasing the organism's efficiency and its ability to survive."

Epigenesis and Thought Signals

Lipton comments on new discoveries regarding interactions between mind and body and the processes by which cells receive and react to information. These discoveries seem to affirm the notion that genes and DNA do not control our biology; that instead DNA is controlled by signals from outside the cell, including the energetic messages of our thoughts, our environment. Lipton explains how the developing science of epigenetics is revolutionizing understanding of the link between mind and matter and profound effects it has on our personal lives and the collective life of our species. Epigenetics is the science of how environmental signals select, modify, and regulate gene activity. Lipton recalls: "I was seven years old when I stepped up onto a small box in Mrs. Novak's second grade classroom, high enough to plop my eye right onto the lens and eyepiece of a microscope. . . . A paramecium swam into the field. I was mesmerized. . . . My whole being was transfixed by the alien world of this cell that, for me, was more exciting than today's computer-animated special-effects movies . . . In the innocence of my child mind, I saw this organism not as a cell but as a microscopic person, a thinking, sentient being. Rather than aimlessly moving around, this microscopic, single-celled organism appeared to me to be on a

mission . . . I quietly watched over the paramecium's 'shoulder' as it busily comported itself [purposefully] in and around the algal mat."

Later, as a cell biologist, Lipton writes, "I realized that a cell's life is controlled by the physical and energetic environment and not by its genes. . . . The environment serves as a 'contractor' who reads and engages those genetic blueprints and is ultimately responsible for the character of a cell's life. It is a single cell's 'awareness' of the environment, not its genes, that sets into motion the mechanisms of life. . . In larger organisms . . . only a small percentage of cells are concerned with reading and responding to environmental stimuli. That is the role of groups of specialized cells that form the tissues and organs of the nervous system. The function of the nervous system is to perceive the environment and coordinate the behavior of all the other cells in the vast cellular community. . . Division of labor among the cells in the community offered an additional survival advantage. The efficiency it offered enabled more cells to live on less."

According to Lipton, epigenetics ". . . reveals that our genes are constantly being remodeled in response to life experiences. Which again emphasizes that our perceptions of life shape our biology. . ." He concludes that the cell membrane which interacts with environment and hence controls response is comparable to a computer processor chip, it is in a sense the cell's 'brain'. The cell membrane, similarly to a computer chip, is programmable and the virtual programmer resides *outside* the cell. Lipton argues that the cell 'membrain' biological behavior and epigenetic activity are dynamically linked to the available resources and information derived from the environment.

(*Continued on Part II*)