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Dissolving the Mind/Body Problems:
Goodbye to "Sense Data," "Raw Feels," or "Qualia," and
Hello to Evolutionary Interiority

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Critique and commentary are invited.

Length of this revised paper made a Table of Contents with page numbers advisable.

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Introduction: Overview of an Overdue Project in the Philosophy of Mind

Critical examination of prevailing philosophical views about human nature may expose persistent mistakes that deflect attention away from paths more likely to lead to the truth. Such critique is the aim of this paper. In effect, the paper aims to advocate and provide an overview of a revised and larger project ahead in the Philosophy of Mind, regarding our evolutionary origins.

But that task first requires us to see the so-called "mind-body problem" haunting modern Philosophy of Mind as a pseudo-problem, not a genuine problem requiring some high-powered theoretical solution. A strategy for doing so is outlined in Part One of this paper. It holds that the supposed "explanatory gap" between one's own sensory experience and what science tells us about inferred brain processes is rooted in a confusing tangle of mistaken assumptions in regard at least to: what we fundamentally are; what precisely is going on when neurobiologists study perception and memory; and how the semantics of ordinary language that describe our perceptual consciousness actually work in daily life.

Semantic analysis based upon everyday linguistic usage makes clear that *the term "mind," or "the mind," is in the first instance merely a collective term for the various observable types of sociocultural or natural interactions most typical of humankind. To engage in those typically human environmental interactions is "what it is like" to be a human being or person.* Moreover, our "mental" terms have publicly observable behavioral and situational "criteria" of correct ascription to people: "conscious" implies normal response to persons or situations; "awakens" implies bodily stirrings or opening the eyes after sleep; and so on. Most words for human "perception" implicitly refer to visible bodily sense organs: "sees" may imply open eyes and appropriately focused gaze; "smells" may imply a nose sniffing or at least inhaling in the right direction; "hears" may refer to head turning with uncovered ears, and similarly for the other senses. More general "mental" ache or pain terms like "hurts" imply reference to bodily "local signs," such as rubbing the forehead, or "favoring" an injured arm or painfully limping leg, perhaps with situationally appropriate vocalizations such as "ouch!" while flinching.

Is it thus a philosophical mistake to think that because "mind" is a noun it must *name*, or somehow "correspond to," some kind of invisible or metaphysically "private" *thing* or entity with "properties," causal or otherwise. Talk of "mental causes" inappropriately extends usage of the investigative term "cause" in scientific inquiry or legal analysis to a bogus philosophical psychology of the human being. Nor is there a special class of "mental events" typical of people, although particular times or durations may be assigned properly to specific occasions in which activities of perception, speech, thought, recollection, action, or other typical human "mental" behaviors occur.

It is not even clear any more that “mind” is a term that applies to our species alone. Comparative studies of animal cognition offer increasing evidence that activities of “mind,” traditionally thought unique to human beings, also apply accurately to intelligent behavior by various other hominids, sea creatures, and birds. For example, chimpanzees, dolphins and ravens can learn from others of their kind patterns of episodic memory, foresight, planning, and even deception, both in animal lab studies and within the ecological niches natural to groups of their species. These individual and social activities find ready affirmation in our own anecdotes about the surprisingly human responses of dogs, cats, horses, parrots, and other animal companions or service animals in daily life or in the wild.

In Part Two, we shall find that removal of mind/body confusions demands recognition that the human being is not primarily a *material body*, but a unitary *history of experience* whose *continuing interactions* with the world are best described as an ongoing *embodiment* of natural biological activities of survival and reproduction, rooted in the long evolutionary history of humanity on planet Earth. Each human life is best likened to a single unfolding day, punctuated by thousands of naps, the restorative gaps in obvious bodily activity that we call sleep. *In our lives we are each four-dimensional beings, a cohering and growing history of ongoing perceptual and other unmediated biological interactions with those aspects of an environing and itself evolving world upon which our species survival and evolution has depended.* Acceptance of this *radically revised viewpoint about what we are* will make most sense when we understand ourselves as products of an evolution not merely biological, but also simultaneously cultural.

Our biological “nature” is given form by socialization and shaped by culture. From infancy through adolescence and into old age, as socially defined “selves” *we learn to inhabit our bodies*, discovering their potentialities and limitations in each new phase of life. *So we must acknowledge more fully the fundamental role of human temporality in perceptual experience and recollection.* We then find that as a unitary history of growing experience, one is still firmly anchored in past personal interactions with the world. There are neither elementary “neutral phenomena” nor some two-sided material stuff of which conscious experience is made, with dual mental and physical aspects. Rather, there are only the many “stuffs” encountered and variously described both in the ongoing problem-solving interactions of everyday arts or crafts, and within traditions of scientific inquiry. Nor are we host to any non-bodily and qualitatively evanescent “perceptions,” that seemingly vanish while apparently crossing metaphysical gaps into brain “storage” and awaiting later equally mysterious “retrieval” from brain circuitry into qualitative sensory resuscitation, as snapshot-like “memory images.”

Strictly speaking, the brain does not “store” little entities called “sensory experiences” or “cognitions” or their recollection in “memories.” Brain cells are not well described as *containers* in which discrete memories are *contained*, like folders full of snapshots. *Brain circuitry is better viewed a switching mechanism that reconnects one with past worldly interactions that always remain part of what one has become,*

while one has moved along a three dimensional path or “course” of life experience over time. Accepting this reinterpretation will obviate any supposed necessity of worry about finding a place in scientific narratives for any supposed “leftovers” or inexplicable “danglers” of consciousness, variously termed “sense data,” or “raw feels,” or “qualia.” *Though we assign redness to the surface of thing called “red,” that redness is precisely an ongoing interaction between thing and eye—put your hand up between object and eye and see redness vanish! So goodbye to fictive red “sensations” popping up in the brain!* On to the real work ahead in Philosophy of Mind, a project needing close cooperation with the human sciences grounded in an evolutionary perspective. We can already see the outlines of the needed reconstruction in both The Philosophy of Mind and Evolutionary Theory itself.

Understanding more accurately the relationship between group mind (“culture”), individual minds (social “selves,” with “consciousness”), and the bodies of individuals will require a carefully reformulated *theory of evolution*. That revised theory must be situated firmly within an *instrumentalist reinterpretation of modern scientific research* that does not read back into prior existence the always tentative results of present inquiry, as though they were ready-made ultimate realities. The “brain processes” or “central states” of current theory are merely our momentary pictures of a deeper experiential reality. These “inferred entities” are completely contingent upon both the present state of theory and the limitations of current instrumentation in medical research, aimed ultimately at remediation or cure for accident, illness, disease, or infirmity, along with improving the quality of life.

From an evolutionary perspective, scientific “research” is always part of a cultural project of inquiry to find the means to predict, handle, and thus control aspects of life found important for ensuring the survival, amelioration of ills, and flourishing of our species. Scientific inquiry is the first step in solving life’s recurrent survival problems. But taking its results as the ultimate truth about human reality is a widespread mistake. *What is ultimately real is what we live, not the currently inferred and pictured bodily “processes” of scientific story that medical science and its technological applications use to find better ways of keeping us alive, well, and happy in practice.*

There is growing need to revisit and reformulate the notion that our problem-solving “mentality” results from a long, slow, sporadic *emergence* from earlier species ancestry, without lapsing into a simplistic panpsychism that grants consciousness even to stones, molecules, atoms, and quarks, “all the way down.” Nor can the notion of “emergence” be separated from that of “*life*” itself, and also “*deaths*,” viewed as *integral with the earthly biosystems that sustain the evolving uniqueness of genera, the durations of species, and the lifespans of individuals*. For those terrestrial biosystems are themselves a product of a more vast cosmic process of evolution, that produces within stellar systems both the energetic “elements” and the “organic molecules” essential to “biochemical function” in planetary systems.

Importantly included in the philosophic task ahead is the growing body of work on comparative animal cognition mentioned earlier. Those findings require that our revised evolutionary theory must acknowledge *some degree of intelligent "interiority" in various other species*. As parts of an evolving universe, *we humans are indeed unique in enabling the universe to begin to know itself and even discover its own cosmological history*. We do that by means of the sensory and cognitive "world" of developing cultural experiences particular to our species. To varying degrees, however, our varied species predecessors and present animal companions in that evolutionary ascent appear to share their own forms of that emergent "interiority." But we find them doing so within the perspectives of overlapping species "worlds," or "umwelts," particular to their own evolving ways of life. Ethical and other cultural implications of this discovery obviously await further development, as understanding of our own "interiority" and theirs grows.

Part One: Dissolving the Bogey of Mind-Body Dualism

A. Strategies to Dismantle Arguments Alleging a Threat of Mind/Body Dualism

1. Linguistic Considerations: The Semantic Mind/Body Problem

a. Ordinary Mind/Body Language in Everyday Usage

The philosophical mind/body problem is, in one crucial respect, about *how to use words correctly*. Before engaging in accurate phenomenology of *mind and body as partial aspects of something more primary*, we need to get clear on the correct usage of words such as "mind" and "body" in both everyday speech and in more specialized activities such as scientific work. Otherwise, linguistic errors can distort our interpretation of human experience in problematic ways. We may then devote too much time to avoiding what we think is a bogus threat of Cartesian dualism, arising from generally accepted but faulty approaches to discussing the relationship of "conscious mind" and "brain states." That threat is a "pseudo-problem" arising from a tangle of mistakes both phenomenological and semantic. Semantic mistakes arise from *incorrect assumptions about the way in which we actually give words such as "consciousness," "mind," and "body" meaning in the ordinary language of everyday speech*.

In particular, it is important to avoid the assumption that *nouns* always *name* distinctly separate "things" with "properties" or supposedly independent "substances" with "attributes." Otherwise we might mistakenly assume that the ordinary word "consciousness" *names* a special kind of *thing* that has different varieties, or includes different kinds of *entities, named by words such as "sensations" or "perceptions" or "memories."* In short, as 20th century linguistic philosophers pointed out, we need to consider carefully how words get their *meanings* in *everyday use*, before using them in more specialized contexts such as scientific inquiry and philosophical analysis. We can do that by looking at exactly what kinds

of learned activity give all these “mental” words their meanings in the first place, when acquired in infancy, childhood “upbringing,” or later schooling.

We have two main languages about mind and body. Our “ordinary language” is unsystematic, arising historically to meet widely varying needs of everyday life, arts, and crafts. But our “native tongue” has acquired what some call an implicit “folk psychology,” about persons’ minds and bodies. In part, that folk view gets expressed in how we talk of obvious or hidden reasons or motives for action. People often speak of these as somehow dwelling within the person’s “mind,” as when they ask “Whatever could you have had in mind?” in making a serious moral mistake or committing a crime. But other times those same people might just as well ask “what on earth got into your head when you did that?” Implicit here is some vague idea that mind’s location is in the head, without any need to ask explicitly how mind and head might have to be connected in order to do so. The equally common sayings “you must have lost your mind” or “been out of your mind” express this conceptual vagueness quite well, for it seems to imply a loss of the mind’s rational control over “passions,” without any further need to assign the passions or emotions unequivocally to mind or body.

It may well be that these everyday “folkways” of speaking derive from disputes about moral or legal responsibility, expressing need for moral criticism or legal prosecution. However, theologians, religious educators, scientists, or philosophers might for their own reasons think that these everyday expressions require clarification of the relation of mind and body. They might then assign their own interpretations to these everyday words, without adequate consideration of the “folk assumptions” already implicit in their use. So asking how accurately ordinary language deploys notions of mind and body is every bit as important as examining the way theologians, moral educators and philosophers of mind have tried historically to give these imprecise notions more exact meanings to clarify, but often confuse, their relationship.

Persons are said to have minds and bodies. Trying to bring these two imprecise everyday notions into more exact theological or philosophic relationship may well arise from implicit assumptions that lead to mistakes unhelpful about the finding the truth about what we really are. For this reason *it is important to view “mind” and “body” not as naming fundamental or mutually exclusive realities, but as moderately useful categories derivative from a wider “experience.” Experience is constituted by social and environmental interactions, that are also capable of description from innumerable other perspectives of inquiry (ecological, interspecies, spiritual, creative, aesthetic, or historical significance, or personal associations, etc.).*

b. Adaptation of Ordinary Mind/Body Language for Technical Usage

Astronomical and medical discoveries were part of a “scientific revolution” (roughly 1500-1800 AD) that challenged both traditional theological and folk notions about human nature. There was need of a more specialized terminology with more exact

meanings, to describe with greater precision how to measure what happens in nature. That led to adoption of more exact terms to measure and communicate precisely the observational results obtained from new optical devices such as telescopes and microscopes. Procedures using and improving these instruments were designed to penetrate further into natural phenomena both far and near.

Search for “mechanisms” to explain results of inquiry led to additional terminology, to connect results of successive observations systematically together in ways that might suggest further questions and new procedures to answer them. Corresponding about research going on in many places, scientific thinkers became aware of need to connect mathematically expressed results of diverse but converging inquiries in logically consistent ways, suggestive of more refined observations requiring improved instrumentation. Hovering always in the background was the new notion of “a clockwork universe,” operating by means of contiguous “causes,” analogous to successive collisions of balls on a billiard table: “matter in motion” became the new model of scientific explanation.

And so the need to connect measured results with some unifying scientific “theory” became apparent. Everyday phenomena as diverse as *particles* of sand and *waves* at beaches, using *force* to push or pull wagons holding *masses* of material into *motion*, and *vibrations* of musical strings, all provided useful metaphors for new scientific terms. Scientists began to speak of particles and waves, force and mass, velocity and acceleration of “bodies in motion,” frequencies of vibration, matter and energy, and so on. Eventually the solar system itself found use as a metaphoric model of the atom, with electrons “orbiting” a nucleus in the Bohr version of the atom..

Scientists began to devise mathematical formulas to express newly discovered “laws” said to “rule” the predictable paths of celestial “bodies” in motion. They also found laws “governing” changes in the changes in the simple “elements” and forms of “energy” composing “matter.” The challenge then and now was to see how long and how far these explanatory metaphors could be pushed, before beginning to break down (e.g., when 20th century experiments showed that light sometimes behaved like waves and sometimes more like a stream of particles). This natural tendency to explain everything from astronomical to submicroscopic phenomena in metaphoric terms, borrowed from everyday experience, reminds us that modern science is not based upon inevitable and immutable categories. *Science is a cultural project to reduce puzzling phenomena to terms familiar from everyday experience, that literally enable us to “see” what happens and “grasp” the ways to “handle” it.*

“Instrumentalism” is our term for the view that the findings of science at any given time are not eternal truths about things ultimately “real,” or exact “mirrors of nature,” but are always provisional findings existing only within the the current level of theory, technology, and scientific instrumentation. As we shall see later, in Part Two, *instrumentalism is the interpretation of scientific language that most accurately expresses the primary function of both everyday tool use and its extension*

to scientific research devices, when viewed from the more vast standpoint of natural hominid evolutionary strivings and practical survival strategies.

c. How Mistaken Talk of a Threatening Mind/Body Dualism Arose

Early modern attempts by philosophers to clarify the relationship of the terms “mind” and “body” in a way consistent with newly invented scientific procedures foundered upon the dogmatic assumption that mind, as the rational part of an eternal soul separable from the body at death, was not material thing locatable and of measurable extent in space. Subsequent attempts to treat the mind itself as a mechanism led to “laws of association” based upon “intuition” of qualities and meanings, rather than visible connections that could be measured quantitatively.

Injudiciously extending the notion “cause” in physics or law to analysis of “the mind” led to quandaries about how “mental causes” such as “passions” or “desires” or “wants” could possibly “interact” with bodily physiology to produce ordinary behavior, such as lifting a cup of liquid to satisfy felt “thirst.” As verbs following singular and personal pronoun subjects of sentences, terms expressive of need, such as “want” or “desire” or “thirst,” got assigned to “mind,” rather than body. The result was a puzzling duality of behavioral “causes.” How could “wants” activate nerves or move muscles? Once again “mind” and “body” seemed totally incompatible terms, a troubling “dualism” of spirit and mechanism at odds with our common experience of “inner” mind and “outer” body working as a unity in everyday activities.

At first, the problem seemed to be simply one of relating ordinary language more clearly to the specialized terminology of scientific theory. The task was to explain how “physical” terms could explain the “mental” phenomena to which ordinary language names purportedly “refer.” Perplexed philosophers viewed the threat of mind/body dualism as a problem that required some high-powered new theory to deal with the logical difficulties of a seemingly incompatible dualism of terms. “Idealism” was a strategy to reinterpret the physical in terms of the mental. “Bodies” and other objects or events got reduced to collections of the mental “perceptions” or “sense data” defining them. “Causation” got reduced to habitual “associations” of similar “perceptions” in the mind: sights of flames followed by smells and sights of smoke generated the “idea” of fire “causing” smoke. Essential scientific categories such as “space” and “time” later got explained as “forms” of perception native to “the mind,” organizing mental “perceptions” from objects otherwise unknowable as “things in themselves.”

But left out of these various doctrines of Idealism was the wealth of new knowledge arising from scientific study of the human brain and nervous system, in anatomy, physiology, physics and chemistry. A doctrine of constructing the perceived world out of discrete sense data could not easily deal with introspective accounts of a “stream” of perceptual consciousness, that arose in seeing, discussing, and handling objects with other people. Nor was it clear why the changing perspectival “appearances” of some thing moving or being walked around would have any

reason to appear together and cohere as one “thing” with a unity in one’s mind, if there were no corresponding material body as their common source. So “idealisms” eventually gave way to “materialisms” in search of causal “mechanisms.”

Modern discovery that different colors of light act as waves of specific frequencies and that optic nerves were electrochemical conductors, capable of activating particular areas of the human brain, led to hope that “correlations” of “conscious experience” with particular areas of brain function might at last explain the unity of conscious mind and material body. But attempts to work out the details of their “interaction” again quickly led to problems of incompatible dualistic terminology. There arose endless learned disputes about how merely quantitative material “brain processes” could possibly produce “the mind’s” qualitative perception of various particular colors. Descriptions of those qualitative sensory experiences seemed to be “nomological danglers,” out of place and left hanging in accounts of material sequences responsible for perception. How could colors shapes, smells and other “sense data” be riding along with the quantitatively described transmission of light waves through retinal nerves to areas of brain found necessary for vision, there to blossom forth qualitatively in a sudden perceptual glow of consciousness?

To this day Philosophers of Mind speak of “the conscious mind,” as though that *noun* expression must *name* something. The term “conscious mind” is all too easily taken uncritically as referring to an “entity” of some metaphysically “private” kind, uniquely owned by each “subject” or “self” who experiences “objects” or “bodies” in a “space” that we share in common. In this way our perceptual interactions with things around us again become unnecessarily doubled. The perennial result is philosophical talk of inner “representations,” literally “re-presentations”--or “sense data” or “qualia”--of the unknowable “things-in-themselves” around us. But perhaps the very subject/object form of our language “bewitches” us here. For something to be seen, English requires that there be a “subject” that sees it. But is plugging “conscious mind” and “body” into that subject/object form of speech really the best way to describe human perception and behavior?

To date, no linguistic reinterpretation of the supposed mind/body duality has been shown free of serious objections. *The root of the problem is that human “mental” concepts implicitly refer to complex sociocultural patterns of behavior in identifiable situational circumstances, with various durations found typical over time.* Temporally perceived patterns are real, but they are not the same kind of reality as everyday “things” or “material objects” or animate “bodies,” that are visible and quickly identifiable “all at once” by their typical shapes, colors, sounds, smells, tastes, or feels. *That is to say, the reality of human mentality is fundamentally temporal in nature. And that is why human reality is most clearly expressed and disclosed in stories, drama, dance, and music—the evanescent arts of time. Essential to these arts is the natural capacity for recollection of the past, by the most fundamental art of all, memory.* As human, we all have the natural ability to recall the past, but different cultures develop that ability in different ways and to different degrees

c. Why Mistaken Talk of a Threatening Mind/Body Dualism Keeps Arising

There are two main reasons why solving all these variations of a purported mind/body problem has proved so difficult. One is about using a fundamentally flawed theory about the way terms about “mental phenomena,” such as color perception and thought, actually get their meanings. This is the basic *semantic problem* we have been discussing. The second reason is a faulty analysis of the difference between individual and cooperative group perspectives, in describing what supposedly “mental terms” like “perception” and “thought” and “remembering” refer to, as descriptions of or “conscious experience.” This is a *phenomenological problem*.

Taken together, these mistaken interpretations of human perceptual and memory experience lead to *mind/body pseudo-problems*. These philosophical quandaries are incapable of “solution” because of the fundamental confusions arising *in using two different sets of terms for describing what should be described as basically a single experience: our immediately ongoing interactions with present and past environments.* Taken together, the terms “mental” and “physical” being used as blanket groupings for what are supposed, erroneously, to be “distinctly different phenomena,” are not even capable of fully describing all the phenomena of human “experience” exhaustively. “Mind” and “body” constitute just one pair of terminological “contraries” useful in daily life and speech. They refer only to *some of the many derivative “aspects” of lived human life “experience,”* taken as an ongoing and growing whole. In saying this we must not assume that “aspects” is a *generic term* that merely includes *different species* of the same kind of “thing.” Doing that would just lead to another mind/body problem, about “aspects” within our life experience and particular experiences.

Dealing effectively with mind/body “pseudo-problems” is best described as “dissolving” them, not “solving” them. Once the mind/body pseudo-problem is dissolved, it should be abandoned. *Attention in the Philosophy of Mind should be redirected toward questions about “emergence” of hominid and other animal “embodiment” of intelligence, perception, episodic memory, and a human “selfhood” both bodily and culturally shaped.* That work can be most usefully done only *within a Theory of Evolution radically reformulated to take account of species’ “interiority.”* Development of that fundamentally revised theory is outlined, and in small part begun, in Part Two of this paper. But our present task is to completely dissolve the “semantic problem” identified above. Then we can move on more confidently to consider also the “phenomenological problem” of “embodiment” just identified.

Part of the concerns about seeming incompatibility of ordinary and scientific terms arises from *mistakenly assuming that “mentalist” nouns of ordinary language “refer directly” to “inner sensations”* that are part of “what it is like” to experience a world full of sights, sounds, smells, tastes, touches, and various *inner feelings* about bodily stance or movement of arms, legs, eyes, mouth, and so on. *The “Correspondence Theory of Truth” at work here assumes that in discourse or thought nouns “refer” by “flying like a semantic arrow” directly toward the things that they name.* Left out of

this account is any acknowledgement that visual perception occurs in and through our projects of handling things in the world around us, that we undertake to meet our needs, fulfill our purposes, or satisfy curiosity provoked by our surroundings.

Under the spell of this "Spectator Theory of Perception," we may incautiously assume that *nouns* such as "mind" or "consciousness" or "redness" must *name* or somehow *point directly at* particular discrete *things* that in some way are "*existent.*" Or from long familiarity with color-naming situations in which as children we have already been taught to distinguish one color from another correctly, by picking out toys or other things adults call "red, we may assume that color terms *name* or somehow directly point to mental *things* that we can discriminate within our present "consciousness" of what we see. We may then be persuaded to speak of red "sensations" or "qualia," located somehow and somewhere "in our heads."

One first step in avoiding the mind/body dualism to which such notions tempt us is to examine more carefully how such supposedly *mental terms* could actually get learned and then used successfully in communication with others. For sound work in twentieth century Philosophy of Mind has shown convincingly that *such words identify observable behavioral "dispositions" to behave in typical patterns in certain recognizable circumstances or social contexts.* There is no way that we could learn correct use of these words by seeing somebody else's "seeing of red"-- that person's "sensation of red," as a philosophical adult might term it. *Only if we learned by patient example from parents or others to distinguish colors from shapes were we then able to learn by trial and corrected error to pick up "the red ball, not the green one."*

Moreover, because we cannot see directly into the conscious minds of other people, early in our language acquisition *there must be "paradigm cases"* in which we pick up by observation and guidance how *situational or behavioral cues make it appropriate and "correct" to use these words as we speak to others.* *It is by "episodic memory" of how we made those earlier discriminations "correctly"—i.e., to the approval of our watchful language teachers--that we become accustomed to pick out immediately the color rather than shape of a thing, then discriminate that color from others we've learned to identify in similar learning situations with adult guidance and correction.*

We do learn on rare occasions later on that some percipients are "color-blind," by noting their persistent inability to use color words in the same "correct" way most of us habitually do. Such occasions underlie the *important notion of "a normal percipient."* That "normality" is *based upon a fundamental fact about our common "human nature."* During the course of human evolution, human beings have *acquired the natural ability to learn to discriminate and respond as humans others do, to the sight of different colors.* A long and growing tradition in optics, physical science, neurophysiology, and biochemistry provide persuasive *explanations of how that is so.*

That account *begins with discovery of specific electromagnetic wavelengths for reflected light of each of the various colors visible in rainbows, or in the light spectra*

seen with aid of a translucent glass prism. Discovery of color-sensitive retinal cells and associated neural transmission and brain activity helps to fill out, but not complete, the explanatory picture of human color perception. As we shall see in Part Two of this paper, completing the explanation requires consideration of how and why human distance receptors called "eyes" evolved in the first place, as a means of survival. Ultimately, there will be need to consider why there is matter made visible by light, in a cosmos now understood to include both a matrix of "dark matter," with "dark energy" as well--a task far beyond our current scientific capabilities.

Relating our current scientific account of color perception properly to our ordinary language descriptions of "seeing the color red" and having sensations of red" is crucial to avoiding mistaken analyses of perception. *The big mistake is to think that individual discrimination of colors such as red must be located in an individual's private "consciousness of redness," with transient "sensations" of redness that somehow wink out of existence after some unfathomable transformation into the electrochemistry of brain cell areas found necessary for "storage" and later "retrieval" in memory and learning.* Finding the right way to make this correlation requires that we distinguish more carefully between some perspectival features of human perceptual experience. The current discipline that deals with such matters is called "*phenomenology*," since it is concerned with accurate description of visual and other sensory or cognitive phenomena appearing in human experiences, such as perception.

2. Phenomenological Considerations: Experiential Mind/Body Problems

Some philosophers inclined toward "Idealism" have seemed to regard everything one sees in one's perspectival "field of vision" as a mere "representation" (literally, a "re-presentation") of those "outer" things, an "image" lodged in some immaterial "inner" "consciousness." Their description of the one's "visual field" then seems to raise questions about how this inner "perceptual screen," upon which outer things are somehow projected, could possibly relate to the presumably material "things-in-themselves" that we can not more directly experience. To refute this mistaken view that the noun "perception" must name some mysterious "thing," *let us examine how the everyday vague notion of a "field of vision," or "visual field," actually gets a more precise definition in everyday optical practice.*

For purposes of optical remediation of visual defects known as "cataracts" that "cloud" vision, eye doctors called "ophthalmologists" may use instrumentation capable of exactly measuring a patient's "field of vision." The purpose of that measurement arises from the physician's need later to remove a faulty "clouded" lens from the patient's eye and later replace it with an artificial lens designed with curvature sufficient to remediate that patient's presently obscured vision. *That "visual field" is not some private perceptual screen located mysteriously within a supposed inner "something" (literally, "some thing") of the patient's inner "consciousness." It is precisely a measurable three-dimensional region, within which the percipient can distinguish and respond verbally about seemingly moving blue*

lights, illuminated successively by the physician for “mapping” around the edges of the expected “range” of the patient’s visual responses (as in “I saw the light out of the corner of my left eye”). From this brief description we begin to glean an important truth.

Vision, including the perception of space, is best described as an ongoing interaction, between the individual percipient and that person’s surroundings--in this case the circling display of successive lights moved by the physician until they just edge out of view, establishing the limits of what the patient can see from that viewpoint. Understood as an ongoing an interaction capable of refinement, perceptual experience has two poles, subject and object. Experience of the human subject in this case is implicitly localized in space, both by the perspective of a particular viewpoint centered upon eyes visible to the physician and by the possibility of one’s own ability to cover one’s eyes with a hand or close one’s eyes, thereby ending the sight of the successively “encircling” blue lights controlled by the ophthalmologist.

Dimensions of the individual’s visual field at some particular distance from the eyes is determined by how far to the left and right one can still see the lights as they are moved left and right, up and down. One might measure the width and height of this field at various distances from the eyes, to determine how much the “field of vision” has expanded at each location successively farther away from the eyes. Because we have two eyes that normally coordinate in “binocular vision” when looking at surroundings from a particular fixed position of the head (achieved in the examination room by resting one’s head against adjustable chin and forehead restraints), a 3-D representation of a person’s visual field thereby mapped might roughly appear as the intersection of two closely overlapping cones widening as they extend farther outward, each cone centered upon the retina of each eye.

Verification of this double centering of one’s vision can be accomplished by holding up a finger in the middle of one’s field and bringing it slowly towards one’s nose. The finger disappears from one’s sight when it comes finally to rest atop one’s nose, touching the place where the top of one’s nose joins one’s forehead. It is worth noting here that we can perceive the visual fields of others as corresponding limits on what we notice them able to see. And so we must recognize that *one’s “visual field” is publicly observable behavioral reality, even though the noun expression referring to it does not name an immaterial “thing,” some private “phenomenal field.”*

Incidentally, these considerations about “the visual field” help to dispel the notion that *visual afterimages from retinal overexposure to sun or flashbulbs* are metaphysically “private” mental “entities,” contributory to justified concerns about mind/body dualism. Rather, these visually experienced bright patches, with their predictably shifting “flight of colors,” *are disturbances within one’s field of vision.* Thus, *in principle, one’s visual afterimages will be publicly detectable by others.* The skilled instrumental ophthalmologist will be able to observe and map someone’s after-image as a *roughly cone-shaped volume of decreased visual acuity within the*

affected percipient's visual field, a field of visibility extending outward from the percipient's eyes.

A reader who has by mistake or design glanced directly at the bright bulb of a nearby reading lamp and then focused upon words or colors upon a book page, held at varying distances away from the eyes, can easily verify this loss of acuity from a personal perspective. Rougher judgments of this sort occur when baseball spectators see an outfielder partially blinded by sunlight fail to catch a fly ball "lost in the sun." It should be clear from such examples that not all nouns, especially "mentalistic" noun expressions such as "visual consciousness," *name* or somehow "point to" things. *The word "vision" does not name a thing. It names an ongoing way of interacting with whatever is currently visible to one's eyes.* As we shall later find, vision involves far more than the "raw" basic "sense data" of "sensations of color" or "perceptions of shape," so dear to the hearts of philosophers stuck in customary Cartesian misunderstandings.

Within a percipient's 3-D visual field thus "mapped," we can *distinguish two fundamental visual dimensions*: its expanding circumference (the left/right and up/down dimension); and the "depth of field," or distance from the one's eyes. Let us *define the circumferential dimension as "lateral,"* since what is on or moving along the ground or horizon ahead of us is our most usual focus of attention. *The other perspectival dimension corresponding to "depth of field," we shall call "personal."* The "personal" dimension of vision is also that of one's own experienced "temporality," for it is defined by the succession of publicly observable things successively appearing within one's perspectival field of vision, along one's chosen path or "walk of life."

Note also that *linguistically one refers to people observed in the lateral dimension of our experience by use of "third person" terms* (he, she, it, they, them, theirs, etc.). But when we address directly the people we see before us in personal perspective, we use the second person forms (you, you all, etc.). Speaking with reference to our ongoing and developing experience in the personal perspective over time, we learn to use "first person" terms (I, me, mine, myself, we, us). But we need to refrain from assuming that because "my-self" is a noun expression, it must name some single non-bodily thing. For *much of what we assign to one's "selfhood" are the observable behavioral dispositions, characteristics, and group identity labels* (first and family names, biographies, etc.) that have given one a usable and remembered public or private identity in social life and subsequent personal reflection.

At this point, it is paramount to realize that *from one's own personal, temporal, first-person perspective, one's eyes as they are for oneself are not like the material colored orbs we see in the faces of others. My eyes as I experience them are precisely my seeing of whatever is present around me,* from the perspective of my ongoing personal history of successive personal perceptual interactions with whatever publicly perceptible surroundings are visible from my changing personal viewpoints as I move along my "path of life." *One's seeing or "vision" is for oneself simply the ensemble of things one sees present. In an important sense, the "present" time for*

each of us is continually defined and redefined by the ensembles of things successively presented by the series of situations in which we successively find ourselves. Of course, the "focus" of our consciousness is upon is whatever seems most relevant to solving current problems, as we happen to define them in social and cultural terms. The "clock time" duration and focus of one's present "situation" is thus quite variable, depending upon how much work or assistance it takes to resolve the kinds of problematic situations thus defined.

The eyes one sees reflected when one looks in the mirror are one's eyes as seen by others, described in third person terms. Put simply, *you are not the body whose eyeballs you can see whole in the mirror! You are the living, perceiving "embodiment" of a seer whose seeing is simply what is presented in vision by the environing situation, a seer whose sensitive lived body is not reducible to the sensible body perceived by others, or by oneself in the mirror. How we best describe ourselves as seers rather than seen is by reference to the search for unhindered, unproblematic satisfaction or fulfillment of needs, wants, wishes, purposes, aims, hopes, etc. that happen to be true of ourselves at this present moment of our ongoing interactions with persons, things, events, etc. of an environing world. And though one sees other persons laterally moving across one's field of vision as behaving "bodies," we perceive others' own "mentality" or "consciousness" of surroundings directly, by noting what they're looking at or seem to be looking for, in shared cultural terms acquired in our prior socialization.*

In everyday experience, we easily make quick estimates of what others are able to see within their respectively perspectival and shifting fields of vision, *by noting the things within the very roughly conical scope of the visual fields centered around their eyes.* We learn this skill beginning in infancy, since we are at first helpless and quickly learning to see if our parents or other caretakers are looking at us, ready to satisfy needs that we can not yet satisfy for ourselves. Playing games like "peek-a-boo" and "hide and seek" begin to sharpen this perceptual skill as we move from infancy into childhood and learn perceptual terms of speech ("I see you;" or "I saw her)."
Our perceptual interactions with others are thus from the beginning relational, quickly understood in terms of a set of human needs and activities we easily come to see as common to our species (e.g., being hungry and crying or calling out for food, within the customary forms of receiving nutrition particular to our culture).

Let us now sum up the import of the forgoing observations. *Confusing one's lived embodiment of environmental interactions with "the body" as an object seen and studied in scientific inquiry by others is a primary source of the confusions that land us in purported mind-body problems about relating experiential "consciousness of colors" (or sounds, or smells or tastes, touches, feelings, etc.) to the bodily existents or processes identified in physical, biological, and psychological inquiries. Those sciences investigate the necessary conditions of optimum human functioning and flourishing, amidst the universal evolutionary quest for survival.*

Despite the seeming certitudes of scientific textbooks in those disciplines, the results reported are always tentative, provisional upon the current state of theory and instrumentation. Puzzling as we do over quantum phenomena, particle “entanglements,” as yet undiscovered “supersymmetry” particles, and the like, we can hardly be assured that current frameworks for interpretation of “brain processes” may not become outmoded by new discoveries, consequent theoretical advances, or perhaps even validation of Eastern notions about bodily “meridians” of energy flow, underlying success of acupuncture or “energy massage” techniques. In short, what is real is what we live, not the construals others place upon the behaving human body during scientific experiment and observation, electronic scanning, surgical procedures, or dissection of the human corpse.

Keeping these many cautionary observations in mind, we are ready to try out our strategy of deconstructing analyses purporting to find intractable problems of mind/body dualism. Typically, mistaken analyses in analyzing perceptual experience lead to problems of ontological dualism, seeming then to require complicated metaphysical “solutions.” Our task right now is to show that those faulty analyses are *pseudo-problems*, better dissolved and abandoned than pursued. We shall consider two main examples, one historically early in the age of modern science and then another, more modern, version of that.

B. Cartesian Confusions about Perception, Mind, and Body

1. The Problem: How Mind-Body Dualism Contradicts Everyday Experience

Philosophers today sometimes refer casually to *the* mind-body problem. But that is shorthand for a whole entangled cluster of problems. It is clear from the history of early modern philosophy that there were primarily *two* distinguishable but related mind-body problems, which philosophers today continue to find intractable.

First, how does each of us come to have reliable beliefs or “knowledge” about bodies perceived in the surrounding world, including one’s own body? This problem is called *epistemological*, derived from the Greek word *episteme*, which means “knowledge,” and can also mean “belief,” in the sense of “acquaintance with something.” It is a problem about how one gets knowledge from our “outer” senses (sight, hearing, smell, touch, taste, and touch)—and today, knowledge also from the “inner” sense of “proprioception,” the felt disposition or situational location in visual space of one’s arms, legs, mouth, etc. and body as a whole.

Secondly, what is the nature of the relation between these conscious perceptions and one’s observable body, particularly as studied in the physical, chemical, and biological sciences? This second problem is termed *ontological*, from the Greek word for “being,” or “things that exist.” It is about what kinds of “things” or “existents” conscious minds and bodies are. There are additional mind-body issues arising from findings about “unconscious mind” in modern depth psychology. But

despite later brief mention, fully detailed discussion of those more recent issues is beyond the scope of the present critique.

The view that conscious minds and bodies are two radically different kinds of things is known as “mind-body dualism,” a threatening *metaphysical* position about what the most fundamental kinds of things in the universe are. This underlying reason that philosophers find this view so troubling is that it violates our most fundamental intuitions about *what we are, in everyday experience*. Whether going about our daily routines or solving novel problems, *we seem to find conscious mind and body functioning inextricably together, as a single unified whole*. But mind-body “metaphysical dualism” is totally at odds with this intuitive belief. In particular, it finds what each of us experiences from our own unique perspective (described linguistically using the “first person” pronouns “I,” “me,” “my,” “myself,” and “mine”) in connection with words about sensory experience (sights, sounds, smells, tastes, touches, and feelings or “raw feels”) to be logically incompatible with talk about our bodies, particularly as known and described by modern science in terms of matter and energy flow.

It is worth noting that in Greek, “meta” can mean “comes after” or “is beyond.” In Aristotle’s ancient but influential usage, “Metaphysics” meant the book that came after his book “Physics,” or scientific study of the many different kinds of things in the world and their essential natures. Aristotelian metaphysics went “beyond” empirical observation, to a very general consideration of what can be learned about more general features of “being,” apart from the existence of particular subject matters discriminated by respective methods of the various different sciences. Borrowing from Aristotle, medieval Christian scholars included in their version of Aristotle’s metaphysics questions about the “essential natures” of God, Angels, Jesus Christ as a Trinity, etc. and also about human beings and their immortal souls, believed separable from the body at death.

2. The Mind-Body Problem in Descartes’ *Meditations*

The specter of metaphysical “mind-body dualism” that continues to haunt modern Philosophy of Mind was bequeathed to us by the French Catholic philosopher Rene Descartes (1596-1650), most notably in his famous scholarly treatise *Meditations on First Philosophy* (1641). Following is a compressed and highly simplified presentation of Descartes’ views in the *Meditations*. But it may suffice to bring out some significant problems in his approach that still persist in various forms today. So exposition will be accompanied by brief critique of some Cartesian mistakes, especially as those still arise in some more recent treatments of mind-body issues.

Descartes was raised as a Catholic and educated within its Scholastic tradition of Christianized Aristotelian philosophy. It was a relative closed conceptual system, hierarchically organized by the logic of syllogisms. Scholasticism had little room for the new knowledge then emerging in optics, astronomy, anatomy and physiology. Descartes himself did dissections and corresponded with the Dutch physicist

Christian Huygens, who propounded a wave theory of light to explain optical phenomena of refraction related to lenses. Studying optics as well, Descartes had also discovered the power of combining algebra with geometry, so that scientific equations about optics or its applications could be expressed visually as straight or curved lines on graphs.

Wary of being censored by the Church or even punished as a heretic, Descartes sought to establish natural science on a firm empirical basis of rational investigation that also did not contradict Catholic doctrinal beliefs grounded in Church authority and Biblical faith. Impressed by the certainty of mathematics, Descartes sought reorganize scientific knowledge as a deductive system, using axioms of logic to suggest testable new truths deduced from old ones that are certain.

The system's definitions and "first truths," or postulates, would have to be consistent with official Catholic teaching as certified by the Papacy in Rome. That way, Catholic principles would get their pious due at the system's beginning, while leaving the systematic development of science to experimental observations free of the outmoded categories of Scholastic tradition. But to make his deductive system work empirically, Descartes also needed to add some absolutely certain "first truths" about how one can study bodies and their motions in space. Working out those principles and displaying their consistency with Catholicism was his task in the *Meditations on First Philosophy*. Its argument proceeds very roughly as follows.

Given our many tendencies to misperception of the bodies far and near in space around us, including our own bodies, how can anyone's mind ever reliably come to have absolutely certain knowledge of the world? To meet this challenge, a deductive system of scientific knowledge akin to Euclid's system of geometry needs an absolutely certain starting point. Amidst all one's skeptical doubts, the only thing that one can understand clearly and distinctly is that "*Cogito, ergo sum*—"I think, therefore I am." In other words, the only thing of which the skeptical Descartes could be certain was the existence of doubting going on in his own mind. His immediate consciousness of doubting guaranteed at least the existence of his own skeptical mind. Using medieval Scholastic categories of the time, Descartes identified his mind as a thinking "substance," whose many "attributes" were lesser functions of mind, such as perception, imagination, feeling, willing, passions, and the like.

Let us pause here to notice what has already gone wrong. That an individual such as Descartes is sometimes mistaken about things seen does not imply that he or everyone might possibly always be mistaken. For the notion of a mistake logically implies a prior background of veridical perception by oneself or others. Even in Descartes' time, scientific study was already becoming a group project. Scientific inquirers worked or corresponded together, describing their findings in third-person terms about visible things they could observe together. That "intersubjective" cooperation ensured that what a scientist reports to have found

can be checked by the observations of others, thus “confirmed” as accurate, conveying truth.

Meditation, on the other hand, is generally a silent activity. Its content is unknown to any observer, unless the meditator speaks aloud or writes out the meditation’s wording. For all an observer knows, the silent meditator might be daydreaming, too tired to think, or even on the verge of falling asleep. So “thinking” in the Cartesian *Meditations* has already become a silent “meditation” severed from observation by others. The mind doing the thinking then becomes the invisible place where thought occurs, an immaterial “thinking substance.” Descartes has not yet tried to connect this non-spatial mind with his own body in the three-dimensional space of everyday life, but once he does so, he will struggle with a “mind-body dualism” of two “substances,” mental and physical, that seem logically and hence metaphysically incompatible.

This Cartesian version of mind has been likened to an immaterial “inner theater,” a “ghost in the machine” of the human body as portrayed by mechanistic materialist science. As an activity of mind, one’s silent inner speech thus becomes also the model for what today’s philosophers too easily identify as a thinker’s existent “consciousness,” incautiously taken as the home also of sensory perceptions and all other experience supposedly only available from one’s unique “first-person perspective.” If one also thinks of mind as a part of a “self,” then one seems stuck with an immaterial self as well, immune to empirical scientific observation--not unlike the immaterial “soul” of Scholastic theology, something bestowed by God and thought complete in itself, hence separable from the body at death.

Worse yet, by taking silent and unobservable reflection as the model for what the word “thinking” means, Descartes also has actually made it impossible for himself or anyone else ever to have learned what the word “thinking” means. Children do not acquire language by looking directly into the minds of parents or caregivers and perceiving their silent inner speech or hidden “sensations of redness.” Nor can we look into children’s minds and see their inner speech or sensations to confirm that they really do know what we call “red” is like. For as more recent philosophers have pointed out, the only way we can learn to use correctly words for mental activities in our common language is if *there are publicly observable behavioral “criteria” for correct usage* of such words. Using those behavioral criteria, teachers can check our usage of supposedly “mental” perceptual color words like “red” and if needed correct our usage. On this *more recent view, mental words actually refer in general to observable behavioral “dispositions,” more or less regular habits of activity in particular kinds of situations, defined linguistically by customary social context.*

Perhaps Descartes made mistakes in this regard because he accepted the Scholastic notion that rational thought is a unitary God-given “faculty” or ready-made natural ability present in the soul at birth. For he speaks at one point of finding in his mind “innate ideas” about God, apparently also implanted there by God. On such a view, “actualizing” this ready-made cognitive “potential” would make education a simple

matter, of hearing the truth “clearly and distinctly” expressed and learning to repeat it as taught. One would then discover new truths by using what Descartes takes to be the proper “method” of analyzing things clearly and distinctly into their elements for later synthetic knowledge of the whole. This method was described in his prior *Discourse on Method* in 1637, and much earlier in the *Rules for Direction of the Mind* of 1628 (published only posthumously in 1701 from manuscripts privately circulated amongst, and later collated by, his friends and correspondents).

However, concluding that his mind or self is a “thinking substance” puts Descartes in an “egocentric predicament.” For it immediately raises another question. Since he had set aside as dubitable the perceived existence of all bodies, including his own, how might his non-spatial mind be related to the particular body so evidently his own in everyday life, the body that moved when he willed it, or felt pain when injured? As we have seen, Descartes’ way of answering the question about the nature of the mind that studies bodies has hopelessly skewed toward mind-body dualism his development of any answer to the question of how his mind relates to his own body. Having defined mind in terms of thinking without reference to spatiality, he began with considerations about the essential nature of bodies in space. But now he will be involved in a logical contradiction, for there is no logical way talk of how a non-spatial meditating mind can get rationally connected to talk of a purely spatial body. Nevertheless, let us go on to see how Descartes goes on to remove his deliberately exaggerated skeptical doubts about the existence and properties of bodies, in the world outside his own non-bodily mind.

Descartes reasons that God’s essential goodness would certainly not allow Him the unworthy attribute of being a consistent deceiver about the world, to those very beings for whom He had created the world. So religious faith assured Descartes that the world’s bodies really existed outside his doubting mind. Their substantial nature was evidently to have “extension” in three-dimensional space. Moreover, the God-given intellect of his immortal soul could have reliable knowledge about bodies outside his mind, by methodically taking care to “clearly and distinctly” observe and measure their extensions and graph their motions, using the analytic geometry he himself had invented by combining geometry with algebra.

But here arose the fateful question. How could the mental “thinking substance” by which Descartes had conducted these “meditations” possibly be connected to the purely “extended substance” of his own body? The definitions of “thinking substance” and “extended substance” were logically independent. One’s conscious mind had no measurable extension in space, neither size nor shape (though Descartes perhaps inconsistently held elsewhere that the immortal soul itself formed an indistinguishable unity with the body, but was separable at death). One’s body was defined solely by location, extension, and motion in space. One could not see the minds of other people, only infer their mentality by analogy, based upon similarity of their bodily appearance to one’s own body. Yet in everyday life mind and body seem intimately connected, an inseparable unity. After all, I will my hand

to pick a red apple and it does so. I stub my toe and my mind feels pain. But how and where are my mind and body connected? How might they “interact”?

Perhaps recalling Aristotle’s idea of a “seat of the senses in common” (“*sensus communis*,” in the Latin of Scholastic treatises), Descartes suggested that the single pineal gland in the dually lobed brain, connected by nerves to pairs of eyes and ears, might be the unitary place of integrating bodily transmissions from the various bodily sense organs. These would be somehow impressed upon the pineal gland to help form unified perceptual knowledge of external objects. But philosophers then and thereafter saw clearly that was no help, for the pineal gland itself was a small body within the brain. So the pineal gland hypothesis is no help in explaining how a mentality defined solely by invisible silent reflection could “interact” with a physical body defined solely by its visible “extension” (length, width, and height), located at some observable position that provided the mind with its unique perspective upon the world.

To overcome this purportedly metaphysical “mind-body substance dualism,” post-Cartesian philosophers soon resorted to theories reducing mind to matter (materialism) or reducing matter to ideas in the mind (idealism), doctrines of divinely established or coincidental correlation (parallelism), or claiming that consciousness is an “epiphenomenal” or irrelevant accompaniment of the real bodily machinery doing the work of perception, cognition and action. Twentieth-century philosophers later tried theories of neutral monism (a stuff neither mental nor physical, but perhaps of a “double aspect” both mental and physical), a consciousness-brain identity hypothesis, with consciousness being the way we live or subjectively experience our “brain states,” notions of “supervenience” or emergence of consciousness with features dependent upon complex properties of brain states, and even outright denial that mentalistic terms are anything but verbal fictions, needing replacement by more precise neurophysiological talk.

There is no need to consider these purported “solutions” of mind-body dualisms in detail, for they all rest upon the mistaken idea that the conscious mind/body dualism is a serious threat to our common intuitions of normal mind/body unity in everyday perception and activity. That threat continues to be a pseudo-problem based upon philosophical errors. To show this most effectively, it is useful to consider now some seemingly less Cartesian modern interpretations of the relationship of “body” to conscious mind, or “consciousness.” Like Descartes, however, *many contemporary philosophers begin with a flawed analysis of perceptual knowing, thus finding themselves stuck with a seeming incompatibility of lived “consciousness” to the “body” as studied by science.*

C. Contemporary Reinterpretations of Mind/Body Issues

1. Mind as Dispositional Behavior

Refined by centuries of subsequent discussion, Cartesian problems of “mind” have had to be reframed more narrowly, in terms of perceptual “consciousness” in relation to both its own body and to other bodies, or to occurrences originating “outside” one’s socially distinct bodily “self.” As suggested earlier, 20th century advances in philosophy and psychology have made quite clear that so-called “operations of the mind” or of one’s “mentality” are in many instances quite obvious from bodily behavior or conduct, observed within a learned perceptual/linguistic cultural context acquired from infancy onward, through manifold daily interactions with others within one’s society.

When I see someone smile, I can see that person’s “pleasure” or “happiness” (in the absence of circumstances suggesting deception, deliberate acting, etc.). If I see a lecturer writing on the board, I see at least part of that person’s “thinking.” If I watch a sculptor chiseling a recognizable form in stone, I see that artist’s “creative vision” at work. If there were not “paradigm cases” in which we learned to use these “mental concepts” correctly as children, we could never learn to make sound interpretations of such behavior as adults, on occasions when it is or becomes clear that we are not mistaken or deceived.

However, when someone is evidently “conscious” but not speaking or otherwise behaving—as in Rene Descartes’ meditating before writing down his famous “Meditations”—we often do not know what is going on “inside” that person’s “mind.” It is on such occasions that we are tempted again to think of “consciousness” as something “inner,” or an “invisible” and “private” mental place. It appears that this invisible place is not “physical,” for surgery upon brains and nervous systems of people does not reveal “thinking,” as we ourselves may experience it “in ourselves” upon such occasions. It only reveals “grey matter” or “synapses,” or “nervous conduction” visible in the “waveforms” or “spikes” of encephalogram or other electronic “readings.”

In such circumstances, we may become puzzled as to how this so-called “inner consciousness” of perceived qualities could possibly relate to “physical processes” in the brain and nervous system. Because we experience directly a connection between our thoughts or plans and our own consequent actions, in ordinary circumstances *we believe that mind and body are one in daily life, forming an experiential unity.* Yet it still seems upon reflection that one’s consciousness and body are fundamentally different and incommensurable—an unacceptable philosophical “dualism” of “conscious mind” and bodily process.

2. Why “Sees Red” Refers Only to Our Behavior, Despite Our Seeing Red

Updating the science in Descartes’ reasoning, let us consider a generic modern version of the Cartesian mind-body situation, which contemporary Philosophy of Mind still tends to find so problematic. *Due to the centrality of vision in our lives, these problems are most apparent when we consider scientific accounts of visual perception and memory.* First, how can the transmission of qualitatively bare

electromagnetic radiation of various wavelengths from objects around us register in one's consciousness as the different colors, shapes and textures we see? Second, how can these perceived visual qualities get "stored" in mere "grey matter" cells or electrochemical circuits within the brain, then be "retrieved" again later as qualitative visual imagery? As noted earlier, the first problem is *epistemological*, about sense perception's relation to knowing about things around us. The second problem is *ontological*, about the differing kinds of "things" consciousness and brain processes are.

One way in which this restatement of the mind/body relationship goes wrong is a *basic methodological error, to which familiar descriptions or pictorial illustrations in reports, textbooks, or philosophical writings contribute*. We have grown very accustomed to mass media and journal reports that update information about scientific advances in understanding the neural and brain processing of optical excitations from external bodies. So we may forget a basic fact about correct application of the scientific method. *Any scientific explanation of human perception must begin with proper description of the phenomenon reported!* For example, suppose we want *to know what goes on in the head when someone sees the color red*.

Assume that we set up a perception laboratory for this purpose. An experimental subject named Jones was previously shown normal in discriminating colors such as red one from another by naming them correctly. We then expose Jones to a uniform area of red on a laboratory wall while simultaneously undergoing electroencephalographic (EEG) scans of neural excitation of Jones' optic nerve cells from light reflected in electromagnetic waves from that red wall. Suppose further there are instruments scanning Jones' brain for detailed illumination of associated brain areas that were shown necessary in vision. That would be proved by prior study of cases in which these areas were so damaged or absent that the person could not report seeing color red, nor properly discriminate red from other colors.

Let us suppose further that particular areas of Jones' brain light up on an instrumental brain screen image, due to prior injection or consumption of an appropriate dye that becomes luminescent when activated. As a result suppose we identify particular optic nerve pathways that lead to an area of Jones' brain that is necessary for seeing red, at a terminus within the occipital cortex. Additional experiments with other normal percipients will give similar results, that show this brain region to be the last link in an "afferent" perceptual chain before transmitting these processed "afferent impulses" further. They will then become "efferent impulses," that travel down the spinal column to activate an arm's musculature to point out a red object, as discriminated from those of other colors others. As a result of these experiments, we can now reliably report reliably identify certain region of the brain as "visual cortex," a last afferent link in the brain, at which point our subjects are now able to report seeing red. What we have discovered inside the head are *necessary conditions* of visual perception, but not by themselves *sufficient conditions* of such perception.

A complete report of this experiment would have to begin with a simple statement that Jones and others were seeing a uniform area of red as the experimental measurements were recorded. So far there is no visual consciousness/body problem. But what happens if we begin our analysis of the experiment with a familiar statement that light of a certain electromagnetic frequency selectively reflected from the red wall excites optic cells and nerves, leading finally to a terminus in the brain that we can reliably identify as “visual cortex,” a “vision center” in the brain? We might now be tempted ask mistakenly how mere excitations of electrochemical cells in the occipital cortex at this point could give rise to qualitative “sensations” (or “sense data,” or “raw feels,” or “qualia,” as philosophers are wont to call these supposed entities arising in “conscious perception”).

We might pause here to reflect a bit upon the apparent habits of scientists working today in biopsychology and brain science. As noted briefly earlier, in reporting their studies of perception, they become used to thinking of colors, such as red, in terms of electromagnetic frequencies of light, selectively absorbed and reflected according to physical properties of the particular colored surface seen as red. After all, “everybody knows what seeing red is like.” So they find it “natural” to begin explanations of color perception with electromagnetic excitation of retinal cells continuing neural transmission of the radiation to brain areas. This process is described in electrochemical terms derived from a long prior tradition of scientific research. After all, that is *what scientific explanations do: find another terminology to describe what is “really going on” in phenomena initially reported in everyday “ordinary language” terms.*

And so these researchers take it as obviously understood that this is the explanatory terminology to be used in scientific diagrams and explanations of color discrimination, in both their private professional thinking and correspondence, also in their published articles and books. Including textbooks. So not only generations of students, but news reporters and other “popularizers” of brain science become accustomed to talk of color as “really being” this physical sequence of events ending in—you guessed it—“synaptic currents” in the “brain’s visual center.”

It thus begins to appear that such happenings in the brain and nervous system are not merely necessary but sufficient, for describing what happens when we “see red.” Redness simply *is* stuff going on in “visual cortex.” Incautiously accepting this frame of mind, “Philosophers of Mind” immediately protest that this kind of talk fails completely to describe “what seeing red is like,” so we are threatened again with mind/body dualism. Descartes must be smiling in his grave. Has nobody noticed that something crucial to every scientific explanation has been left out? These “shorthand” accounts of “seeing red” have failed to leave out, using ordinary terms, that the persons described in these accounts not only correctly pick out red things of other colors, but do see what all normal percipients do: from their own personal perspectives *they do really see the redness* reflected from some surface, or emitted by a Christmas tree’s light bulb, a neon sign, or a laser pointer.

What has gone wrong in our analysis by not beginning with the normal percipient's correctly identified seeing of red? We are forced to think that somehow the “redness” of the object is riding along “piggy-back” on top of, or somehow within, the electromagnetic waves of light from the surface reflecting that radiation, awaiting some mysterious transformation within “visual cortex,” back into what all normal percipients see as red. That is what threatens to put physically “explanatory redness” firmly “inside the head,” as a ghostly visitor that no physician will ever see in any operation exposing to public the “grey matter” or electronic readings of “synaptic currents” within the living brain.

Because these seemingly transient “sensations of red” and the like do not fit within scientific accounts based upon scientific norms, one philosopher of science years ago termed them “raw feels,” that are “nomological [lawlike] danglers” in correlations of consciousness and brain processes. Red “qualia” seem to be left hanging, without an objective place in a proper scientific account of human perception. To remedy the issue, he proposed a mind/brain “Identity Theory,” in effect making these “raw feels” or sensory data the experienced inner side of ongoing material processes in the brain. This tempting gambit, later termed “central state materialism,” quickly failed. For by Leibniz’ Law, to be identical two things must have all properties in common—found impossible in this case. Electromagnetic waves, neural excitations, and brain cell activations are publicly detectible by instruments, but no instrument can get inside one’s head and register directly the redness that one sees from one’s own perspective.

Nor is this merely a problem of having two separate languages, everyday “color language” and scientific “electrochemical brain process” terminology. If that were the case, we could in principle reform language and start speaking about our various brain states (“my r-fibers are firing”). But the situation is even worse than that. As suggested earlier, our words for “sensations of color” do not refer at all to our private seeings or “sensations of red.” In our original learning of ordinary language, sensation words can refer only to observable picking-out behavior. Once again it is time to remind ourselves how our ordinary language gets properly and necessarily used, in the close analysis of color perception within the context of scientific inquiry.

D. Who Sees What in the Scientific Study of Color Perception

We have suggested earlier that there are behavioral criteria by which to decide if a child has learned to discriminate, for example, the red block from blocks of other colors and report this in words (“This is the red one.”). We first establish that the child has learned distinguish colors from shapes (“block,” “ball,” “cup,” etc.) by presenting a variety objects of the same color but of different shapes, naming those shapes and pointing out that they all are the same in some way. When the child can eventually pick out, for example, the red block from a pile of blocks all of different color, we know that he’s “got “ the concept of red. Notice this is all established by observing the child’s *behavior*, since he cannot see into our minds and see what we

see when we see red, nor can we see into the child's mind and see his "color sensation of red," as we are prone to speak.

The surprising conclusion here is that *in the color-word learning situation, our color words never refer directly to private "sensations of color," but to the learner's observable picking-out behavior.* So in a certain sense, *it does not matter what "visual sensation" the learning child has when picking out the red block from those of colors, so long as the child does it in a way consistent with our own adult discriminations of color! Nor do any of us adults need to worry about "whether everyone else sees the color red the way I do."* So there's no need to worry about some people privately having "inverted spectra," different from "normal," in their perceptual color discrimination of colors such as "red." Linguistically, "normal" in such cases *simply means being able to pick out or point out* what normal percipients have agreed to call "the red things," from amongst similar things of other colors.

But how is this possible? The answer is that *for all normal human percipients, it is part of their "human nature" to respond the same way to red things* the same way, in their color-picking-out behavior. At this point modern science comes to the rescue, by drawing upon optics and electromagnetic wave theory. Experiments demonstrate that, indeed, things with what we call red surfaces selectively reflect white light's electromagnetic radiation of red in wavelengths between 782-622nm, where the "nm" or "nanometer unit" is one billion times less than a meter. Orange's wavelength is 622-597 nm, and so on down the color spectrum for all the other colors, when ordinary visible light gets refracted through a prism.

So here is a plausible explanation for why we all see red in a similar enough way, that *we simply recall "what it's like" to see red, after being told as children "Now you've got it!" by our adult caregivers.* Once told we've mastered "picking out the red one" we see in a group of similar things of other colors, *we simply remember "what red "looks like" in that kind visual color interaction* with some publicly visible object within our field of vision. We shall consider later what evolutionary theory importantly adds to this account. For what happens in the lab leaves out why we--and numerous other animals--evolved distance receptors called "eyes," out in "the natural world." But first we need to get clear who sees what, when scientists do study visual perception in the laboratory.

When scientists observe a normal percipient, Smith for example, perceiving a uniformly red wall, Smith's "seeing red" is for the scientists simply first having properly demonstrated picking out red objects from those of other colors of the red object from those of other colors, then naming it correctly, while the scientists detectors and scanners to study the neural path of optic excitation across Smith's brain to its destination in the brain's "visual center." The only red reported seen in the lab study is by the scientists is their own first-person sensations of redness while looking at the wall in front of Smith, confirming that what they are studying is Smith's visual response to "what everyone knows" is "red" or "redness."

Since they are studying Smith, the red surface is reported in strictly scientific terms of red-frequency radiation from the object and subsequent electrochemical activity in Smith's eyes and brain. No report of the *scientists'* red sensations is properly included in the report. From personal experience, they simply *know* that Smith, a correct discriminator (picker-outer, and accurate identifier) of colors in ordinary language of everyday life, must be seeing what they see when they see red. That is because *long after having themselves learned to "pick out the red one," most adult "normal percipients" (not "color-blind," nor otherwise visually impaired) simply recall immediately "what it's like" to see red.*

Hence in their final report of the experiment, there will not be left over any sensations of red or red "qualia" left "dangling," needing to be stuffed into verbal accounts or diagrams of things going on in Smith's head while seeing red. Their report *begins* with the fact that Smith is a normal percipient who reports "seeing red." *No visual mind/body problem arises in this third-person scientific account!* Nor does it happen if other scientists were studying the scientists seeing the red wall as they were perceiving red, while studying Smith doing so, nor if Smith happened to be a perceptual scientist and is able to study everyone else seeing red, while being a subject of their study! *Studies of someone's visual perception in the physicalist terms of modern science have to be done in the third-person, lateral perspective that treats the perceiver as a behaving and reporting bodily object. That is the only way they can confirm or disconfirm the "objectivity" of their findings.*

Let us sum up. The mind/body or consciousness/brain-process problem arises only if reflection from the first-person perspective leads a philosopher or incautious scientist to wonder "how the red I'm seeing now" could ever arise from the "brain processes" detected instrumental studies done in the third-person point of view. *Mixing the two perspectives up is the source of the phenomenological mind/body problem. That is why the perceptual sensations/sense data/ supposedly left dangling from scientific respectability in the mix-up are phantom entities, and the seemingly threatening Cartesian first-person dualism is a pseudo-problem.* It needs to be dropped, for the really interesting problems about conscious mind in relation to body arise within the modern Theory of Evolution.

We now need to *begin inquiring into how the forms of "interiority" we personally experience, such as color perception, could have slowly "emerged" in the long course of human evolution; and how it could possibly be transmitted by parental DNA in sperm and egg, only to emerge again in the ontogeny of each generation through sexual reproduction. That is, we now have to make room somehow for "interiority" in a radically revised theory of evolutionary "emergence," without again getting into consciousness/brain process quandaries.*

Part Two: Reformulating The Theory of Evolution to Include Interiority

A. The Significance of Light in Human Evolution

In Book VII of Plato's crowning philosophical book *The Republic*, he has Socrates present the famous "Allegory of the Cave." People used to living in a fire-lit cave might mistake for reality the transient shapes projected upon the wall by someone covertly lifting up objects of those shapes before the fire that casts those shadowy images. Upon finding a way up outside the cave, one of those people might be stunned to find that the world brilliantly illuminated by the sun is what is truly real, not the ephemeral images cast upon the cave wall. That person might go back down into the cave, feeling morally obligated to "shed some light" upon the cave-dwellers' predicament, then try to "turn them around," lead them out of "the darkness of ignorance" in the cave into "enlightenment."

From ancient times until the present day, finally "seeing the light" has become an enduring metaphor for coming to know the truth. *For humans and other animals with intact vision, "the world" is primarily a visual world, lit up by light.* So it is no accident that philosophical issues about our sense of vision, especially of color perception, have persisted until what we now term "The Philosophy of Mind." It is time to reframe the supposed mind/body issues arising within that field in terms of human evolution. Doing so will bring out more clearly *why the Cartesian errors previously singled out in this paper so seriously distort the prevailing scientific view of what we human beings really are.*

B. The Nature of Color Perception Within Hominid and Human Evolution

That perception of things in daylight is associated with an important quest for truth about the world is no mistake. Not only we humans, but numerous animals of widely different species, at many different times during the long, faltering course of animal evolution on Planet Earth, have developed some form of those crucial "distance receptors" that in ordinary language we call we call "eyes," for "vision" or "sight." The "sense of sight" is of crucial importance in animal striving from birth onward, not only to survive amidst threats such as predation, natural disaster, or deliberate conflict, but also to perceive within the environment whatever may be beneficial in the evolutionary "struggle for survival of the fittest."

But "sight" does not really name some self-contained capacity, despite talk of "modular functions" associated with scientific findings described in such shorthand terms as "visual brain center." These noun expressions in fact denote carefully made analytical abstractions from a more wholistic bodily cluster of genetically inherited felt "needs" and evolved felt sensitivities adapted to satisfying those felt needs. Those needs and sensitivities are best described as integral aspects of the natural animal and human over-all "drive" to survive and reproduce, within the chancy and uncertain world of a biologically-natural and culturally-shaped "competitive struggle for survival."

Use of the word "competitive" here does not entail some kind of "Social Darwinism" that makes competitive marketplace economies or warlike imperial political structures seem more "natural" than cooperatively supportive ones. For there is *plenty of evidence for evolved species' inclinations toward "empathy," that can be*

culturally shaped into moral “sympathy” or “fellow-feeling,” perhaps also into religiously shaped agapeic “love of neighbor,” or into socializing “virtues” such as “generosity” or moral “self-restraint.”

It is worth considering also how such “species” empathy” might not be merely be genetically “internal” or “instinctual” to individual members of the species. *“Empathy” might also be rooted in the situational universalities of both human and other animal development within the womb, then in the longer period of hominid infants’ helpless dependence upon parental or tribal “caregivers” for support and survival into the age of generational reproduction and parenting.* That may be the reason why many view the family as the basic unit of humankind, rather than the individual, considered in isolation from the family.

From a philosophical perspective, even discerning different hominid species amongst the evolutionary chain leading to humanity might seem an arbitrary decision. For at what exact point ages ago did some archaic hominid individual first leave “prehuman” parents and step over a mythical taxonomic border and become the first member of “modern humankind,” *homo sapiens*? But let us return to consideration of the common hominid capacity of “vision.”

For us and other species with some form of eye, “seeing” things close up or afar is all of a piece with coming to know how to avoid envioning threats, and thereby also satisfy basic instincts to survive and reproduce. So highly simplified experiments of color perception, as described in the *hypothetical lab situations described, earlier fail to capture adequately the full importance and true nature of sight in human life. We need to inquire more fully into the survival value of this fundamental human visual capacity to survive in the “natural world” around us.*

C. “Visual Perception” as Abstraction from a Multisensory Experiential Whole

Discrimination of colors is crucial in perceiving potential environmental threats (the striped tiger lying camouflaged in tall weeds) or benefits (the presence of rich ripe fruit, like a red apple hanging on a tree). We can glean from these two simple examples at least five important facts about our adult visual perception in natural conditions outdoors, or in any situation sight is needed or useful.

First, *“the seen”* is not simply “sense data” or “qualia” of red-shaped walls or patches. Rather it is of a *“figure” that appears upon a less defined “ground,” a “focus” with a less distinct “fringe” of what is construed as irrelevant* to solving problems in the present situation. That present construal is generally based upon discernible *“episodes” of past experience.* As we shall find, that visual *“fringe” is precisely the totality of one’s past experience of learning to make vital visual and other sensory discriminations over a lifetime of “body of experience.”* That lifetime “embodiment” of increasingly sharp sensory perception is coordinated by that very same “social self” which we later find in the most fundamental mind/body quandary of all, wondering why one’s thinking self is tied to a material body whose mortality threatens the self’s very existence.

That “social self” is not exactly a unity, but is felt as a socially “necessary” coordinating center of selecting approved “conduct” from sometimes competing impulses. It is shaped from infancy onward by social example and guided by moral praise and blame, reinforced by inducements of reward and threats of punishment.

“Bringing up” by family members and others helps to “civilize” the developing young human animal, instilling culturally acceptable habits of self-control and social interaction. The child must acquire habits of cleanliness, moral judgment, and eventually enough independence to separate from the family of origin, in order to form a new family for perpetuation of species and culture. The child’s developing “socialized” embodiment of cultural norms consists of habitual behaviors the infant must acquire. It learns from infancy onward *how to “inhabit” its body*, the way caregivers and others around it in society do and insist upon. We call the twofold process “socialization” and “acculturation.”

In the second place, the social self’s figured “focus” of attention arises because *vision at the moment is shot through with anticipation or purpose*, depending upon what motivated the individual to look that particular way at this particular moment. What we regard as “consciousness” in visual perception is best defined by what is literally seen as central, deserving focus in solving whatever social or environmental problem has led to this present observation. For the biological lifespan is organized as a never-ending, overlapping, and interpenetrating sequence of problem-solving attempts. These may turn out successfully or not, or perhaps be interrupted, abandoned, or deferred until later. *Visual and other sensory perception does not simply happen to people; it is more often than not deliberately sought out, in the conscious “focus” of a “fringe” of past problem-solving interactions, carried forward as habitual methods of solving recurrent problems.* Our contemporary departmentalization of “perception” and “memory” as separate fields of inquiry risks distorting the truth: *perception is always shot through with anticipation, remembrance, and past learning!*

In the third place, that anticipatory or purposive integration with basic strivings demonstrates that “present perception” is, quite literally, *perception of what is most relevantly “present” or presented in sight at this point.* That happens either *in ongoing focused problem-solving or else in continuing to carry out that routinized behavior we call “habitual” or “characteristic” for this individual.* Temporally, without culturally imposed distinctions of calendar and clock time, *one’s “specious present” is defined visually by the latest ensemble of things seen that one has come upon in one’s uniquely unfolding “path of life,”* in moving from place to place in the world we share and learn to “inhabit” with others.

What organizes that life “journey” spatially is the experience of continually encountering “problematic situations” of blocked motivations, then undertaking steps of inquiry, followed by action to resolve the situation of blocked valuation. One’s “biography” simply is some form of recounting the series of those overlapping and interpenetrating problematic situations, and of how one solved, failed to solve,

or abandoned trying to solve the problems one took to be presented by them. Of course, individuals may take the whole of life to be one single problem, solved by selection of a particular “way of life,” as their different cultures may themselves said to do within their particular geographic “ecological niches.”

The big point here is that *there is no personal time that is not also of a particular place within a perceived “situation” localized at that place.* Whether routine or problematic, the *narrative of one’s situational position at that perspectival “point” in one’s life has the familiar beginning-middle-end structure*, of defining a problem, taking steps of inquiry in thought and behavior to solve it, and succeeding or failing to solve the defined problem. One might also defer or abandon novel situational response, in favor of behavior habitually made “routine” or “regular,” governed by implicit rules of proceeding after solving previous problems. We are, after all, often very much “creatures of habit” with regular “daily routines,” repeatedly following the same perceived “routes” to solution of recurrent problems. Analytically, we may term those acquired systematic problem-solving procedures “methods.”

On this view of human spatialized temporality, *one’s “life experience” is best likened to one long day, punctuated by pauses for nightly naps called “sleep,”* awakening from each nap to solve again life’s inevitable problems. As indicated earlier, one’s perceptually guided problem-solving is best construed as a series of *reciprocal interactions.* Each perception-guided behavioral response to what one constitutes as a stimulus influences the way in which further perceptual inquiry and activity are organized, as observation of the stimulus object’s motions or properties continues. *Both memory and anticipation fuse together in ongoing daily perception and its attendant behavior, shaping what we become.*

Fourthly, that *visual focus upon what is immediately relevant to both basic need and anticipated activity to satisfy that need expresses an inherently evolved species “intelligence.”* One matured and fully developed in shared language, a primary facet of human intelligence is the culturally shaped ability that we call “thought.” As highly civilized beings, we tend to equate “thinking” with the seemingly unique linguistic ability to communicate by means of the spoken and written symbols we call “words.” Our words are embedded within that habitually employed complex of grammatical patterns, syntactic relationships, and referential usage that we call the “meanings” of our common spoken, thought, or written language.

But if our unspoken linguistic thought is not lodged within some non-bodily “thought-place” called “consciousness,” then where is it in the body? The short answer is that it is in principle observable by others and detectable by the child in a school-age learning process called “subvocalization.” That process builds upon learning experiences rooted in the infant’s earliest experiences of parental speech to the child, in the warmth of nursing and other early caregiving. One of the child’s earliest and most vital problem-solving experiences is learning to use words instead of crying, to get quicker and more rapid response to unmet needs. This very early achievement happens by imitation of adult or sibling caregivers, who encourage the first efforts

to frame words vocally. What is learned is to bring one's vocal musculature under control, just as learning to grasp or crawl was learned by feedback from trial and error, with parental or other caregiver help and encouragement.

Having already learned control of vocalization, the child learning to read at school is now asked to call upon that learned control of bodily vocal apparatus for further refinement. We first teach children to read aloud, usually in unison with classmates. Then we ask them to "read without moving your lips," inhibiting the normal vocalization of everyday "speech." They do this by first reading softly, muttering, or by whispering quietly "under their breath." This inhibition requires focusing attention upon the preparatory muscular changes of customary speech located in thorax and chest, used in reading aloud. *The "place" in which silent thought occurs, including eventual adult "meditations," is found within this learned bodily ability to inhibit the words one reads, and focus attention upon the "vocal apparatus" in the throat by which one has learned to inhibit each seen word "read," rather than speak it aloud.*

One learns "silent reading," aware of coordinated preparedness within throat, lips and jaw to speak the words now inhibited and thus silently "thought." Silent inner speech is thus "embodied," its subtle "subvocalization" in principle publicly observable by a carefully trained observer. It is not in some metaphysically private non-bodily "consciousness" apart from the ordinary space of observable daily life. This is not the whole story, for there is further analytical work to be done with regard to the earlier non-linguistic thought of the infant lying in the crib, as in learning from immediate perception of parental example how to coordinate natural grasping reflex with seen approach of its hand toward close object to be grasped and held or manipulated.

Fifth, and finally, all four aspects of one's everyday present seeing cited earlier demonstrate that *visual perception is implicitly temporal*. That is, our problem-solving nature is not only selective, because anticipatory, and intentionally organized for activity to solve novel or routine problems of daily life; but it also involves the socialized acculturation of the human capacity we call "thought." The long development of that capacity, from helpless infancy through childhood, adolescence, to adult competency for survival and reproduction, means that *present visual and other sensory perception are based upon past episodes of learning, "carried forward" to the present toward a partially anticipated future*. How that happens needs a lot more close attention in future phenomenological studies.

Thought, therefore, is not something tacked on to present "sensory data" after registration within some more central "consciousness." Genetically inherited intelligence and its development into culturally mediated thought during "upbringing" are inherent within in the situational response that philosophers may call "present perception." Past experience is somehow "baked into" the perceptual mix. How that occurs is a very big problem worth more thinking about, for our analytical distinction between "perception" and "memory" in philosophy and psychology obscures their intimate interpenetration in life experience.

How present visual perception is retained in memory has always been the crux of the traditional mind/body problem. If visual memory is not a sensory datum mysteriously "stored" in merely material electrochemical circuitry of "visual center" within the brain (occipital cortex, perhaps in association with the thalamus) and then reawakened by passing through some unintelligible transformation back into visual consciousness of what is sometimes called "visual memory imagery," then how are we to explain the capacity for visual memory? Can we displace third-person physicalist and behaviorist dispositional terms from their current primacy? Can we instead initially explain it in first-person terms of phenomenological "embodiment," that preserve qualitatively the seeming visual vividness of many personal memories?

D. Our Present Embodiment of Past Visual Interactions With a Now Changed World

1. Some Assumptions About The Problem of Visual Memory

It must be admitted that people's ability to recall or recollect or remember the past varies considerably, if their oral or written reports on the subject are to be believed. It may even appear that some people have "photographic memories," whereas others seem to have no ability to "picture the past." One gets the impression that most people's ability to visualize the past "pictorially" lies somewhere in between these extremes. For most "normal percipients" seemingly can answer questions or volunteer conversational reports about the color of things worn or seen recently, as well as describe with reasonable accuracy in words what happened yesterday or in their youth. Whether dreams involve conglomerations of past visual memories, simultaneously reactivated from "repression" by present recurrence of past conflicts by present circumstances, is a possibility beyond the scope of this paper. For that discussion depends upon first getting clear about how people are at all capable of sometimes having vividly qualitative recall of past experiences, of visual interactions with persons or places long gone or now changed, perhaps reorganizing these in a synthesis of "imagination."

For purposes of our present discussion, let us *distinguish two forms of memory, visual and verbal*. Let us assume further that these abilities may be somewhat different in nature, even though necessarily capable of interrelation in the act of verbally describing vividly our visual "memories of the past," of what we've literally "passed" by and "gone through" in the course of our lives. We shall leave for the future discussion of reports that some people's visual memories might seem, like some reports of dreams, oddly drab--like old black, white, and gray films before Technicolor--apparently devoid of emotional "color" by recall of associated emotion.

The present account will assume, from the author's personal experience, that some people do have visual memories so vivid with color that they seem to be directly in contact with some past interaction with our colorful world. The question is, how is that possible? *How can we explain vividly visual memories without reference to a mysteriously non-bodily "consciousness" of the past, trailing along behind the*

observable body like some diaphanous sack or balloon, mysteriously attached to the brain and full of snapshot entities called "past visual perceptions"?

2. The Phenomenology of Embodying One's Past Visual Experience

How might some children learn to both recall and report their past visual experiences well, while other children do not? *Let us assume that visual remembrance is a natural human bodily capability that requires practice to develop.* This is a reasonable assumption, for how else could archaic cave dwellers otherwise begin to learn to scratch or sketch those fascinating pictures of earlier beasts upon cave walls? How else could contemporary artists come to sketch or paint from memory? The point here is that evolutionary necessity shaped early humans to be vigilant in the present, both to find food, shelter or mates and to avoid predators or other environmental threats. But with the coming of agriculture, towns, and cities, these more settled ways of life required ever more foresight, planning, and recall of past episodes relevant to present or anticipated problem-solving. Development of those abilities is an essential part of what we term "memory" or "remembering."

Memory, foresight, and planning are natural human capabilities. Faced with a problem, *one may find an emotionally charged memory simply "pop into mind," with a focal "suggestion" of what worked, or didn't, once before.* Such experiences may in part account for the common tendency to *think of memory often in terms of pictorial "images," like discrete "snapshots" of the past, rather than in terms of "episodes" of longer duration,* as represented visually today in radio, film or TV "serials." But to overcome our natural focus on things present, memory requires learning and practice. *To be become useful, accurate, detailed, or fully satisfying, memory needs exercise.*

People who lack the capacity to focus upon and report past experience might simply not have practiced enough. Perhaps they are so "other-directed" that they spend most of their time engaged in ongoing present group activity. Maybe no adult caregiver had neither time nor inclination to teach the child how to "play the game" of learning to talk about what happened yesterday or last week, focusing upon only what was immediately necessary to keep family life going on in the present. Perhaps in an isolated tribal society people might learn to engage in recall primarily by sitting around the fire at night, repeating stories of a mythological past, "visualized" only through associated dances that re-enact those stories along with chanted invocations of deities. Some people in demanding manual occupations might rely primarily on "muscle memory," repeating each day the habitual skills learned by imitating others who model the appropriate skills, orally guiding their behavior and correcting errors in performance. The ways of memory are many and should richly repay careful empirical study and comparison.

There are perhaps innumerable ways in which people might fail to develop the capacity to develop the potentiality associated with practice in talking about one's personal past. But what are the ways of learning to develop the capacity for visual

remembrance? Ancient philosophers wrote of an “art of memory,” useful in remembering names, faces, and other things useful or required perhaps in everyday commerce or other occupations. In part, those teaching “the art of memory” got students to focus intently upon a particular room until it the focus upon repetition made it continually present to them visually. Then they were to imagine hanging pictures of people or tags with names at various assigned places within the room, setting up a learned “association” between each of those many places and the name or faces to be recalled later.

But how does learning to refocus visually upon the past occur in our present-day world? One philosopher suggested that the proper way to describe “*having a memory image*” of a certain mountain is to liken that experience to a presumably subtle bodily “*readiness to respond*” to actually seeing that mountain again. Such readiness might be motivated by shared verbal recall of shared past pleasurable feelings voiced at the time, in present discussion of where to vacation. The “readiness to respond” might further be associated with subtle twitch-like anticipatory feelings of “what it’s like” to be ready to grasp ski-poles and again enjoy skiing down the mountain. This might be a form of “*muscle memory*” perhaps imperceptible to all but the most skilled observer of “body language,” maybe even to the person thus preoccupied, until directed to focus attention upon what was felt subtly in the hands, shoulder, and leg musculature at that moment.

The reference to body language reminds us that some contemporary psychotherapists are skilled in “bodywork” aimed at alleviating various bodily tensions, habitually localized in learned “repressive” inhibition of forbidden impulses. One might learn in childhood to repress unacceptable angry hitting or shouting, or to stifle screams of overwhelming grief by strangulation of subtle preparatory muscular impulses in face, throat and abdominal breathing. *Modern psychoanalytic practice offers another doorway to learned remembrance of the emotionally significant past.* Its practice includes using a natural capacity for “free association” to dredge up memories of emotionally significant past relationships or episodes, associated in some way with current neurotic expressions symptomatic of long-standing emotional conflicts. Years of this “talking cure” can lead to continuing expansion of one’s ability to visualize the emotionally significant chapters of one’s emotionally significant personal past.

This approach initially was based based upon the assumption that the repressive past is somehow located “in the head” and could thus be cured by cathartic talk alone. But there is increasing evidence that undoing repressive inhibition of unwelcome expression of overwhelmingly conflictual emotions can only be achieved by supplementing the developing psychoanalytic personal narrative with attention to the bodily signs of “repression.” That requires using carefully designed “bodywork” exercises to release in an insightful way the localized bodily muscular inhibitions that hide longstanding conflicts continuing unhealthy current neurotic distortions of interpersonal behavior. *Freudian “repression” is not something lodged out of sight “in the head.” It is found localized in the bodily musculature itself, as*

strangled affect outlined in facial rigidity, or forbidden speech choking in tightened throat, in angry outburst constricted by shallow restricted abdominal breathing, in sexual inhibition maintained by rigidity of pelvic girdle of muscles and so on.

The surprising *ability of skilled bodywork therapists to “read” some of a person’s emotional past by careful attention over time to the “body language” of the client’s posture, stance, facial expression, characteristic gestures and speech habits suggest a hypothesis about the visual recall of past situations found personally significant.* Visual perception of those situations was simultaneously suffused or “charged” with emotional response to the whole unfolding situation, including pleasurable fulfillments of anticipatory desire or the pain of frustrated expectations. *Visual perception is a total bodily response to the emotional significance of the whole colorful situation in which it occurs.* It is not a bare “conscious” registration of those highly abstract shapes and colors termed “sense data” or ‘raw feels” or “qualia,” by some Philosophers of Mind.

Therefore *our tentative conclusion has to be that the only place that past visual memory can be retained is throughout the lived body, somehow recalled by subtle bodily visual and emotionally expressive muscular adjustments.* To put it simply, *one’s slowly aging lived body simply is the one’s visual/emotional past.* We have said that life “experience” is simply a shorthand way of talking about the literally developing “body” of interactions with people and other parts of Nature that constitute the duration of one’s life history. Those interactions always remain a part of what one has become. There remains a lot of careful phenomenological work to “flesh out” this surprising hypothesis. Fundamental to the task is making *a crucial distinction between the body as “sensible,” or available for observation, and the body as “sensitive,” accessible to the embodied “social self” that has learned from childhood on to control and direct its bodily functions through imitative behavior and adult guidance.*

From infancy through adolescence and onward through middle age, *the child slowly learns how to inhabit its body, by learning ways of nascent “self-control” and social expression. It is in developing a “social self” that the child comes to use its body instrumentally. But there is need to be cautious in using this term, since that nascent “self” is divided in a threefold way, familiar from psychoanalysis. It is at once an embodiment of parental strictures (“conscience”), a bubbling of inchoate but urgently expressive impulsive needs (“desires”), and a forming center of problem-solving behavior organized to mediate between these competing personal foci of attention (the everyday social self, or “ego”).*

This growing locus of self-control is clearly bodily, but internal to the infant. That is why we speak of “embodiment” as a process of adjusting to how the body matures in various stages, over a lifetime of growth in awareness of changes in ability in each phase of life. We watch the the infant in the crib slowly learning to coordinate hand and eye and reach out to touch or grasp, then learn to roll over, to crawl, to pull itself upright, then to walk, while all the while learning to respond to parental

smiles, speech, and routine of assistance by learning to transform cries and gurglings into speech, that better defines and gets response to felt needs. There is need in this regard to refine the idea of a slowly centering "body image," focusing attention upon coordinated expression of bodily activities in accordance with parenting schedules and individual needs. Rooted in remembrance, this bodily coordinating center underlies, but is shaped by, the parts of the developing triune "social self" that gets stimulated in diverse ways by parental upbringing, family life, playmate socialization, schooling, and exposure to the mass media.

Dissolving mind/body quandaries requires that we give up thinking that the lived, sensitive body with its "social self" stops at the visible exterior that we call "the skin!" For in fact the lived body is defined by its ongoing interactions, particularly with other people. We call continuing interactions with others "relationships." A large part of a personal relationship with another is literally "how one sees" that person, and is in return seen, in terms of past experience with "significant others" (parents, siblings, persons liked or disliked, loved or hated). As Freud pointed out, a significant part of our "relationship problems" arise from the fact that we all too often see others in terms of earlier conflicts with parents or siblings, a "transference" that makes it difficult to see the present relationship's person in an accurate way. This distorted response to the other is what we call "neurotic" behavior. And neurosis is one significant way in which we literally "embody" the past, by "carrying forward learned habits of emotional response from predictable "ancient grievances" of infancy and crises in childhood "stages of development."

Keeping such tendencies in mind helps to avoid mistakenly thinking that felt "emotions" are private "inner" entities of some non-bodily sort, significant of a philosophical mind/body problem. It is true that we sometimes keep to ourselves emotional reactions that our past experience has taught us are dangerous to express openly. But what we experience silently upon such occasions is precisely the inhibition of vocalization or bodily expression of the emotion. For as noted earlier, the only way we could ever learn what constitutes such emotions and the words that "name" them is on the basis of observable situational criteria, that are commonly accepted ways of identifying and socially regulating their behavioral expression. Again, our "mental" words refer in the first instance to expressive behavior that is visible or audible, not to whatever inner feelings or old emotions that may accompany that behavior, in a particular person with a unique past emotional history that extends back to earliest infancy.

Moreover, the nascent personal coordinating center we call "the self" consists of habits that cannot be separated from learned response to all manner of environmental cues, from overt promptings by others, to subtle visual cues in a familiar daily environment. Long habitual response to things successively encountered in one's dwelling place cue in successive behaviors required for meeting daily survival needs in culturally approved ways. Arising from sleep brings sight of doorway to bathroom activities, sight of clothing to be worn, shoes to be tied. And of course the clock or wristwatch or angle of sunlight tells one where to go next, in mind of plans for the day's work or

household chores. As modern humans, we each tend to live in a four-dimensional “hodological space,” in which we move sequentially along ensembles of habitual paths, responding at every instant to established cues that prompt us further along that daily part of our life’s journey.

But lest we be too tempted to think of “the self” as a noun that names some always unitary center coordinating one’s journey, it is useful to recall that we are often “of two minds” what to do next, or may seem to “have as many selves as we have different friends.” That diversity that can easily lead to inner conflicts, if one meets conflicting overt or felt demands on time or activities from emotionally close family, friends, or daily associates. One’s everyday “self” is thus highly malleable, subject to change, and strongly dependent upon learned cues and memories from all parts of one’s personal past and habitual pathways through daily activities.

The development of personal visual memory goes hand in hand with learning the way to speak about episodes in one’s shared past. We talk to the child about “what happened yesterday, what needs to be done “right now,” sharing family plans or expectations for “tomorrow.” Later we may ask the child if it remembers how happy or sad someone “looked” yesterday, perhaps helping it to draw the happy or sad face. Later on there will be reminiscences in family gatherings, and wonderings aloud about “what happens next week” or next year. And teachers will be constantly “reminding” students of “what we did yesterday” and of “homework due tomorrow.” All of these locutions provide opportunity for the growing young person to practice the ability to focus visually upon the past, sharing comments about it with others. For speech is perhaps the primary way that we organize group and individual memory of the past, as well as to stimulate creative use of the visual past to “imagine the future” and think about “possible choices.”

E. Why Instrumentalism Best Fits a Revised Theory of Evolution

Let us keep in mind that the idea of “physical science” comes from from Aristotle’s notion that the things studied as diverse “subject matters,” subjected to inquiry in each of the different sciences, are said in Aristotle’s Greek each to have a “*physis*,” or “*nature*” particular to study by that science. *From the start, scientific inquiry imposes upon whatever is studied a way of picking out from our point of view something that “catches the eye” as of possible use.* Aristotle believed that there was for each specific science a more general way of organizing inquiry by looking for four “causes” (termed in translation as *material*, *efficient*, *formal*, and *final*), to discover the physical “nature” of whatever is subjected to inquiry. The four causes named are respectively about the kind of *material* we’re looking at, what is *efficient* in bringing about growth or developmental effects in that material, the *form* best descriptive of that material in its successive changes, and the *final* end of that process of development from start to finish. One can easily find correlates of these descriptors in modern scientific work, though it is way beyond the scope of this paper to do that. *Our purpose here is to point out what is really going on in scientific research, whether*

in Aristotle's time or ours, by repositioning our view of science within the overall framework of a reformulated evolutionary theory.

The idea of a "subject matter" in a science comes from the Latin preposition "*sub*," meaning "under" and the verb "*iacere*," meaning "to throw." The Latin verb "*subiacere*" thus means to "throw under" or "yoke," or thereby "tame" something for human uses, as when we "yoke" oxen to pull a plow or wagon. So the physical natures of things thrown under the yoke of scientific procedure and instrumental investigation are ultimately about learning how to predict and control whatever we see as potentially useful in controlling uncertainties in the evolved world around us. Knowing the means of control helps us to better survive, reproduce, and flourish in the long run. The word "science" itself comes from the Latin "*scire*," meaning "to know." Its derivative form "*scientia*," means "the things known," or "knowledge," of whatever is seen as potentially amenable for instrumental "yoking" or "control" for human uses. Science gives us reliable *methods* of *how to do* that.

In summation, "*Nature*" describes a culturally learned most general way of "viewing" our various evolutionary surroundings or "natural environment," so that we can find for each specific science the most appropriate investigative "method." That is a word that comes from the Greek "*methodos*," meaning a road, "*hodos*," that leads along by reason's guidance from "*meta*," meaning "above." That rational guidance is thus supplied literally by a prior "overview" from above, giving literally a "grasp" of our subject and how best to investigate its parts. The final end of scientific inquiry is thus to understand each *subject matter* under inquiry, from the standpoint of an overview how best to intervene *effectively* in that material's natural "causes."

With that "knowing," or "knowledge" we can manipulate and control that material with more certainty, putting it in a form more finally useful to human survival, reproduction, and culturally most secure ways of living "the good," or progressively "better," way of life that we now term "flourishing." Note that from this "instrumental" way of looking at science, there are no such things as metaphysically prior universal "causes" or ultimate realities." We find only the ways of operating upon material best suited subject to instrumental study, control, and finally use, through inquiry within each specific subject matter.

The view of science thus presented, in one earlier version earlier termed "Operationalism," is better described as "Instrumentalism." From the beginning of the modern "Scientific Revolution," empirical observations and experiments have been carried out with the use of "instruments." *Emphasizing that "instrumentalism" helps to point out the historical importance of humankind's use of speech, tools and other "instruments" from archaic times onward, in the evolutionary quest for more prediction, control and certainty in a very uncertain world.* That initially biological quest for more assured human survival and reproduction has evolved to include culturally defined ways of "flourishing" in "a good life," as best we are able to see that now. Our ongoing search for "betterment" or "progress" in the human

condition is itself a culturally “evolving” quest with no evident guarantee of certain success.

Finally our “instrumentalist” view of scientific disciplines rejects the “realist” view of science, which mistakenly reads back the results of scientific inquiry into prior existence as pre-existing realities. The mistake is basically “reifying” the “inferred entities” or “processes” that seem to be theoretically “confirmed” within the instrumental confines of current technological advance. For inquiry at each historical stage of scientific inquiry is limited by the scope of scientific technology and instrumentation currently available. It is also limited by the success of current metaphors for explaining those results, as illustrated by the advance of physics toward discovery of ever-smaller parts of atomic parts, or discovery of entirely more complex ways of construing basic forces and energies and their interrelations throughout the cosmos. *“Instrumentalism” is not only a more accurate view of scientific discovery, but it fits much more readily within the needed radical revision of evolutionary theory.* It is time now to turn to some much-needed philosophical work in beginning that important scientific project anew.

Current discovery of both “dark matter” and a differently “dark “ energy suggest that we are approaching or perhaps amidst another “scientific revolution,” in our understanding of at least the “physical universe.” But recent intimations of a reformulation of evolutionary theory suggest that it is about to undergo a revolution of its own, that has to make way at last the “interiority” for both human and, to a different degree, our evolutionary animal companions.

F. Revising Evolutionary Theory on the Basis of “Interiority”

Ultimately, the best way to avoid mind/body pseudo-problems is to reframe the relationship of conscious minds and bodies in terms consistent with a properly framed theory of human evolution. For at bottom, the seeming dualism of conscious mind and body amounts to puzzlement about how we as experiencing or “conscious” beings could have bodies at all. Yet the theory of human biological and cultural evolution is precisely about the long development of human *embodied* consciousness and mentality over the eons of a slow planetary evolution and a more vast cosmic evolution. That unitary evolutionary process may be traceable in physical terms back at least as far back as the hypothetical “Big Bang” of contemporary scientific cosmology. From an evolutionary standpoint, then, any philosophy that finds it problematic that *human consciousness is embodied* has gone seriously astray. A primary source of that mistake is failure to distinguish between our “having bodies” and “being embodied,” a crucial distinction touched upon earlier.

Ultimately, dissolving the traditional mind-body quandaries will require examining what it could mean to say that mentality and consciousness “emerge” slowly over time, amid the interplay of innumerable species developments and extinctions in a chancy universe and solar system. For coherence, it must turn out that an adequate concept

of “emergence” is a notion overlapping with a needed redefinition of “life” itself. Within this evolutionary framework, findings of ethology, cultural anthropology, comparative animal cognition, and linguistics will each find their appropriate place. But we must be careful not to claim, improperly, that concepts such as *perception*, *meaning* and *personal perspective* are in some sense “reducible” to categories employed so successfully in the progressively unifying scientific disciplines of astrophysics, chemistry, and biology. To do so creates a falsely materialistic picture of what we fundamentally are.

Avoiding such “reductionism” will entail abandonment of the reigning “realist” interpretation of scientific results, in favor of a thoroughgoing “*instrumentalist philosophy of science*,” nascent in the tradition of Pragmatism of John Dewey and the Radical Empiricism of William James. As noted earlier, the results of scientific inquiry are not “ready-made,” pre-existent realities that science merely uncovers in its “discoveries.” Rather, they are “inferred entities” that have their existence only within an ongoing Western experimental tradition of instrumental operations. Those instrumentalities allow us to probe ever deeper into what scientific popularizers may euphemistically term the “layers” of nature. At work here is a metaphor comparing our planet’s molecular, atomic, and subatomic nature to successively deeper layers of an onion with a genetic seed at its protected core.

As it happens, use of such metaphors based upon more familiar regularities of everyday experience has in fact been central to the scientific enterprise itself. For scientific reportage of experimental operations is guided by evolving theories that push to the limits metaphors drawn from everyday experience (particle, wave, field, string, etc.). When contradictions arise in what is experimentally detected (is light made of particles or waves?) scientists struggle to find new metaphors, finer measurements, and more sophisticated technology at higher energies, along with needed redefinition of basic concepts (force, gravity, mass, spin, charge, etc.) and ever more complex mathematics. Successive stages in this metaphoric evolution of modern science have been fittingly termed “scientific revolutions.”

Essential to the instrumentalist reinterpretation of modern science will be returning the concept of “causation” to its proper role as *an instrument of investigation* into the situational context of problematic correlations, rather than seeing it as some unifying metaphysical feature of the universe prior to human inquiry. In particular, the dubious notion of “mental causes” as just another species of some more universal process of cosmic “causation” (studied most successfully in the physical sciences) will need careful critique.

Further, a properly framed evolutionary theory of bodily emergent mentality and consciousness must be based upon a *phenomenology* that interprets the human being’s perception of the world in terms of an ongoing personal *history of experience*, rooted in acculturation to a society’s habitual or “common sense” world of daily life. That *unitary history of experience is what we each fundamentally are*, and must be understood in terms of a *continuing lifelong interaction* with whatever

is taken to be the culturally significant environings of daily life. On this view, our past experience is “carried forward,” with what is presented in current perceptual interactions always being a *focus* of experience appearing against a “fringe” of past experience. That is to say, we always experience present sensory interaction as a new “figure” against the “ground” of our earlier interactions with the world. This view of recollection or memory may be termed a *direct realist interpretation* of one’s personal past. One’s past is always an integral part of that ongoing and growing history of experienced interactions of the world that is what one basically is. *One’s personal “past” is literally what one has “passed” on one’s path or “walk of life.”*

It is a fundamental mistake to claim instead that experience consists of an evanescent series of “mental events” or “perceptions,” arising mysteriously when electrical impulses from external objects arrive at some terminus amongst cortical and thalamic cells within the brain and then mysteriously transform into the perceived qualities and meanings of one’s culturally mediated conscious experience. Upon that view, we encounter the unavoidable specter of dualism. For we then have to ask how qualitative experience (“sense data,” “raw feels,” or “qualia”—colors, sounds, touches, etc.) first could be magically transformed into mere material or energy for “storage” amongst brain circuitry, then in remembrance again “miraculously” transformed from mere brain circuitry into purely qualitative simulacra of the earlier sensory experience.

In addition, we must abandon the Cartesian assumption that our animal companions in evolution, lacking the human “souls” central to Western religious doctrine, are devoid of something akin to consciousness. For it is increasingly apparent from comparative studies that something roughly like a genetically based and perceptive intelligence equivalent to environmental learning is at work in even some of the simplest organisms that we know about. Therefore, distinguishing between human linguistic rationality and simpler displays of animate intelligence—as philosophers have done since antiquity-- does not obviate acceptance of the fact that humanity is not as unique in this respect as than the ancients thought, when they defined the human being as *the* “rational animal.”

In this regard, we shall need to accept that some animals do have rudimentary “languages” that operate effectively in their particular species environments, though not with the temporal scope and descriptive power of human language, abstraction, and symbolism in our own various cultural environments. Nevertheless, some of our nearest relatives in the anthropoid line do in fact exhibit foresight, planning, and the use of tools afforded by their environments, to solve problems of cooperative social cohesion and staying alive. From a comparative evolutionary standpoint, it has thus become evident that varying forms of consciousness and intelligence are more widely “natural” amongst living things than once supposed. But recognizing this finding need not commit us to some kind of simple-minded panpsychism that also finds selfhood in unicellular organisms or consciousness in stones and quarks.

It does, however, necessitate taking seriously a growing realization among thinkers in diverse fields that *what is most definitive of humankind is the fact that through our long evolutionary emergence in the cosmos we not only bring into existence "shimmering light and ringing sound," but participate in the material universe coming to know itself and its own potentialities.* Through the evolution of human cultures, *recognition of beauty and moral goodness become no less emergent facts of the universe than the objects and results of scientific study.* Nor can animals discovered by science to perceive ultraviolet light or sounds at frequencies ordinarily unavailable to us be denied their own participation in bringing into existence modes of perceptual reality in species worlds (called "umwelts") no less factual than our own. Increasing public fascination with the scientific search for "life on other worlds" and the "alien civilizations" of science fiction testifies to the initial plausibility of these ideas.

Evolutionary theory so far has been formulated primarily in the third-person terms typical of empirical historiography and modern science. Its needed reformation must begin with recognition that what is most essential to the hominid line, modern humanity, and many of our animal companion species, is our shared interiority. *As parts of the universe, we are in fact the universe coming to awareness of itself and its history. Nor can our evolution be separated from the Earth's.* Surviving genera of life on this planet are a part of our planet's long, chancy evolution, as *a single living system pulsating with the innumerable rhythms of life and death of countless many species long gone.* Understanding how our own embodied interiority, with evolving "mentality" and "consciousness," has come to be part of that living system, is the most worthy task ahead in the emerging "Philosophy of Embodied Mind."

Select Bibliography, With Commentary

The author is well aware of his debt to many more philosophers than those cited below. Included here are only a few whose works have influenced his thought on mind/body problems, from studies at the U. of Chicago 1958-67, then through 32 years of college teaching, subsequently in retirement, and during preparation of the present paper.

Part One: Deconstructing the Bogey of Mind/Body Dualism

John Dewey, *Experience and Nature, Second Edition, 1929* (La Salle, Illinois: Open Court, 1961)---There is no finer attempt at dissolution of the traditional mind/body problems. Dewey views human beings as temporally developing "histories of experience." Experiences are culturally shaped direct interactions with the world around us. For Dewey, "mind" and "body" are "functional characteristics" derivative within life experience. They are *instrumental means* of resolving fundamental or recurring problems we face in nature. Mental or material *qualities* that we learn to discriminate perceptually, *are aspects of our interactions*, but for purposes of inquiry may be referred either to the thing perceived or to the perceiving organism, or its

sensory organs. Material results of inquiry into “bodies” are not ultimate ends in nature, but temporary *means of securing prediction and control*. For Dewey, “mind” has to do with human organisms’ intelligent grasp of the regular sequences discovered in materials or “bodies,” and the cultural significance or personal meaning of those discoveries for betterment of group or individual life.

Ludwig Wittgenstein, *Philosophical Investigations*, transl. by G. E. M. Anscombe (New York: The Macmillan Company, fourth printing, 1953)---Wittgenstein implicitly attacks a then-prevailing “correspondence theory of truth,” that Dewey also rejected as a mere “spectator theory of knowledge.” Wittgenstein investigates linguistic meanings by analyzing how there always must be implicitly behavioral “criteria” that typify *the actual use of words*, in the different “language games” we learn to play in our culture. Wittgenstein does not deny the existence of inner “sensations” such as “pain,” but makes clear that “mental” words of that sort can only be learned and ascribed on the basis of *observable behavioral criteria*. “I’ve got a pain” does not *name* or *describe* some private sensation, but emotionally *expresses* an often observable need for relief of perhaps visible injury or distress. To think otherwise indicates a “bewitchment” by the subject/predicate forms of our language. We may mistake the personal pronoun “I” as the *name* of an unobservable “subject” (the mind, the self) within the body, entertaining metaphysically private sensations (pains, sense data, emotions, etc.) devoid of logical connection to the bodily behavior expressive of them.

Gilbert Ryle, *The Concept of Mind* (New York: Barnes & Noble, 1949)---A contemporary of Wittgenstein, Ryle mounts a direct linguistic attack on the Cartesian notion of mind as a private “inner theater, a “ghost in the machine” housing hidden “mental” entities, such as “perceptions” or “knowledge,” or “memories,” and the like.” For Ryle, to say that a person “knows how” to play chess not to describe some hidden knowledge processes in the mind, but on public occasions to *exhibit a “disposition”* to sit down at a chessboard and exhibit correct “moves” of the pieces and, in doing so to “develop a position,” or make a sequence of moves in a “counterattack,” and so on. Ryle recognizes that silent “inner thought” is a learned inhibition of speaking aloud, and that to have “a strong will” is to *display a propensity* to stick to a task tenaciously in difficult circumstances, not have a hidden inner faculty of “volition.”

A. R. Hall, *The Scientific Revolution 1500-1800: The Formation of the Modern Scientific Attitude* (Boston: The Beacon Press, 1954)---Hall’s work includes an excellent account of Descartes’ philosophic and scientific contributions in the transition from medieval thought to “natural philosophy,” on the road from empirical to experimental science. This sweeping history of early modern science is notable for its comprehensive focus upon advances in instrumentation, mathematics, and technique that gave rise both to halting advances and to blind alleys, in theoretical understanding of the natural world. It is a book both scrupulously detailed and thoughtfully evaluative of contributions by major figures in diverse fields of nascent physical and biological science. Hall’s emphasis on the quite different forms of

“scientific method” appropriate to their particular subject matters, technical apparatus, and modes of practical application provides support for the instrumentalist interpretation of science made in the present paper.

Herbert Feigl, “The Mental and the Physical,” pp.390-497, in Vol. II of *Minnesota Studies in the Philosophy of Science, Concepts, Theories, and the Mind-Body Problem*, Ed. By H. Feigl, M. Scriven, and G Maxwell (Minneapolis: U. of Minnesota Press, 1958)---In terms reminiscent of C. D. Broad’s exhaustive survey of mind/body theories *The Mind and its Place in Nature* (1925), physicalist Feigl perceptively summarizes objections to dualism, phenomenalism, epiphenomenalism, parallelism, etc. and opts instead for what he termed “central state” materialism. Feigl’s “Identity Theory” takes the form of a “conceptual analysis.” Despite the seeming differences between descriptions of personal “phenomenal fields” of “raw feels” or “qualia,” on the one hand, and descriptions of scientifically “inferred entities” such as a certain class of “neurophysiological processes” centered in the brain, on the other hand, Feigl argues in Section V that “nomological” correlations between the two could be shown identical in their reference. He thinks that the best evidence for this empirical but lawlike identity would be by correlating one’s own perceptual experience introspectively with simultaneous readings or scans of isomorphic events in one’s own brain displayed by an “autocerebroscope” of some advanced kind. Rejecting Spinoza’s “double aspect” theory of a neutral stuff with both mental and physical “sides,” Feigl argues that his “realistic-monistic” theory equating two kinds of descriptive knowledge is more in line with “the Principle of Parsimony.” Feigl’s scientism leads him to grant that inferred “neural processes” are what our perceptual sensory “qualia” really are, somewhere inside the head. By reducing associative meanings to causes, Feigl’s reductionist view will entail a scientific determinism difficult to square with purposive behavior and creativity. These are better described in terms of reasons and spontaneity, rather than the lawlike correlations caught in Feigl’s “nomological net” of current theorizing aimed at some eventual reductionist “unity of science.”

Jonathan Westphal, *The Mind-Body Problem* (Cambridge Massachusetts: The MIT Press Essential Knowledge Series pb, 2016)---A useful short summary of 20th century and more recent strategies for solving or dissolving the Cartesian hypothetically inferred mind/body “hard problem,” currently posed in terms of relating “conscious mind” to “brain processes.” Westphal’s typical example of this pseudo-problem asks how sensations of enjoying a cup of coffee could possibly arise from a mass of neurons. This common starting point of the mind/body “hard problem” assumes that hypothetically inferred “neural processes” are what is *really* going on, then finds it difficult to find ontological status for the *really lived* “what it’s like,” to see, smell and sip that cupful of coffee. Unfortunately, that sight, smell, and taste in contemporary “Philosophy of Mind” get reduced to highly simplified and abstract “qualia,” today’s term for abstract mental simples variously termed “ideas,” or “sensations,” or “sense data.” Westphal goes along with currently misleading formulations of seemingly intractable dualism for much of the book, fully revealing his laudable revisionist spirit only in the final two chapters. His brand of “neutral

monism” draws upon Ernst Mach’s notion of “neutral elements” in perceptual experience, that can be placed in either a physical (material “body”) sequence or a psychological (“mental event”) sequence, replete with personal associations. Unfortunately, Westphal’s way of trying to do justice to “what it’s like” to sip coffee would reduce both the intersecting sequences of biochemically processed steamed bean liquid arriving at parallel cortical processing centers, and also the personal associations to sipping coffee at grandmother’s dining table, to highly abstract little “qualia” slices incapable of bearing the explanatory load placed upon them. The required number of explanatory “temporal qualia slices” of the cupful of coffee moving from table through pleasurable consumption, in either the physically or the mentally analytical sequence, is literally infinite in both sequences. It is far easier to “save the appearances” in both sequences without the reduction to experiential atoms called “qualia.” Just accept that what is real is the enjoyed sips of coffee, while the biochemical-cum-sensory excitation-brain process account is a highly useful fiction instrumental to better living. It is merely a temporary and highly inferential scientific story based upon incomplete knowledge of brain function and the world as studied in the sciences. Today’s reports of “brain processes” use current analytic concepts always subject to possibility of later replacement, by quite different theoretical terminology required by more advanced instrumentation and investigative technique, in some future scientific revolution of a magnitude akin to quantum mechanics.

Jean-Paul Sartre, *Being and Nothingness: An Essay on Phenomenological Ontology*, Transl. Hazel E. Barnes (New York: Philosophical Library, 1956)---Sartre’s emphasis on one’s being-in-the-world as a being “for-itself” rather than “in-itself” emphasizes the way in which our perception of people and things around us occurs “in and through projects of action.” But for Sartre, one’s body in these actions does not appear in the same way as it does for others, for it is *lived*. Others may see my eyes as objects, he says, but I cannot see my eye seeing. In that sense, my seeing is functionally a “nothingness,” indicative of my visual organs themselves only in the viewpoint uniquely available to me, conveyed by the things I see arranged in perspective around me. Phenomenologically, *I live my eyes as vision*, the successive ensembles of seen objects toward which my actions are directed. Moreover, in acting, my hands are not primarily *objects* I observe. Rather, they are *lived sensitive instrumentalities*, reaching out with purpose to manipulate the things I see. Taken as a whole, my lived body is the sensed world I perceive spread out among things around me. I perceive things in terms of their immediately sensed meaning for my projects, thus being “at hand” or “in hand” as instruments or tools, ready for my use. For Sartre, one’s immediately perceived situation in the world is thus a lived “hodological space,” furrowed with optional pathways to tools and perceived possibilities instrumentally available around one. Sartre further holds that one’s body-for-oneself is always a lived as an instrumental “facticity,” already being “surpassed” by action toward a future implicitly “embodied” in a future consciousness of one’s ongoing “projects.” One sees those projects, which Dewey would interpret in terms of problem-solving steps, ready to unfold among the relevant people and things selectively defining one’s currently lived situation.

Part Two: Radically Reformulating a Theory of Evolution to Include Interiority

Frans de Waal, *Are We Smart Enough to Know How Smart Animals Are?* (New York, W. W. Norton & Co., 2016)---DeWaal believes that ingrained attitudes about human mental superiority over other animals are rooted in outmoded Cartesian assumptions about our supposedly unique rationality. These anthropocentric biases have blinded many animal researchers to comparable displays of mentality in many other highly developed species. Like Descartes, researchers have assumed that animals' inability to speak to us makes them into soulless automata, trapped in their present surroundings by merely instinctual stimulus-response mechanisms of reward and punishment. Such assumptions have skewed laboratory design of animal behavior in ways incapable of finding otherwise about animal intelligence. But DeWaal reports striking evidence to the contrary, from detectable behavior reported in the the growing field of "evolutionary cognition." Carefully observed in their natural settings, chimpanzees, crow-like birds, and dolphins give evidence of episodic memory, detectable in their foresight, planning, and use of rocks and sticks in their "tool kits." Comparatively, many apes in the wild have virtually an early "Stone Age" group culture, transmitted by example to their young. Some apes are able to outperform human children up to a certain age, mastering complex tasks in the animal lab setting. Dolphins, birds, chimps, gorillas, monkeys, and dogs give evidence of passing the "mirror test" of self-recognition, and animals of several species recognize each other as individuals. DeWaal suggests that these accumulating findings make it increasingly possible that many such animal species may have forms of mental "interiority" or "inwardness" heretofore attributed only to humankind. So he cites examples of smarter experiments, deliberately designed to find just how smart other animals are, in their own ecological niches. The findings that DeWaal reports suggest need to recast evolutionary theory in terms of an "interiority" not limited to homo sapiens alone.

Rudolph Hermann Lotze, *Outlines of Metaphysics*, transl. by G. T. Ladd (Boston: Ginn and Co., 1886)---Lotze was a German philosopher/psychologist (1817-1881). He originated the "Theory of Local Signs," by which an immaterial soul could assign locations in public space to visual and tactile perceptual "sensations." He believed we make these localizations visually by association with points in sequences of neural excitation on the retina as it focuses and the eye moves, and by tactile association with excitations arising from the way skin stretches over bones and muscle at various locations in the body, with the aid of a "body image" formed from observation of one's own and other bodies. Lotze believed that all things external to the soul had a spiritual "being for self" of Divine origin. Presented to us only in the qualitative phenomena of human sense perception, external things exist for the purpose of awakening within our spirits a world of ideas without which the contents of the world would be imperfect. Light and sound waves of nature, says Lotze, have for their fulfillment have "an absolute need of spirit, in order that the latter might realize in its own state of sensation the beauty of shimmering light and ringing sound" (p. 145). He believes that this mutual fulfillment of spirit and thing in the

aesthetic enjoyment of cognition is the Highest Good—the sole reality and purpose of the Creator’s world (pp.140-142). Lotze thus provides a striking anticipation of the 20th century metaphysics of Alfred North Whitehead in his 1925 book *Process and Reality*, which holds that all actuality consists in “occasions of experience,” in which the “enjoyment” of feeling participates in God’s fulfillment. This idea is also found later in the writings of Teilhard de Chardin, among others in the 20th century, John Haught’s version being the most recent.

John F. Haught, *The New Cosmic Story: Inside Our Awakening Universe* (New Haven and London: Yale University Press, 2017)---Haught believes that current attempts to frame a “Big History” in scientific terms of cosmic evolution from the Big Bang up to now leave out the most important part of the story: the emergence of human “interiority.” Our interiority, he believes, is manifest not only in objective accounts of humankind’s scientific advances, but human religious aspirations for a better world in the future. He thinks that the many human “centers of experience” in the world’s history are parts of one bigger reality. We are evolutionary parts of the universe. Through our growing cosmological knowledge, the universe thereby is awakening to its own history. So Haught argues that our present merely objective account of evolution needs supplement, by recognition of our subjective human yearning for a morally better world, as addressed by the world’s religions. But evolution is chancy and unpredictable in its continuing evolution. And religions can fall woefully short of their own moral aspirations. So Haught sees cosmic history as both factually and morally incomplete. Our efforts at “Big History” must not look merely to the evolutionary past or some idealized version of the present, by which we fall short. We must recognize, claims Haught, that “Big History” has at its core a dramatic structure, and is a cosmic story still unfolding. Hence his emphasis upon the necessity of adding to scientific understanding of our situation an account of evolving human “interiority” that includes the incomplete groping for a dimly grasped spiritual fulfillment that may emerge in the future. Secular moderns may readily accept Haught’s idea that what best defines humanity is being a part of the universe coming to awareness of itself, through the emergent aesthetic appreciation and cosmological awareness that we are bringing into being. But lurking in the background are metaphysical questions of how this evolutionary emergence could be implicit in merely a materialistic Big Bang. Whether religion’s vision of a divine Good is essential to the project of human betterment will thus remain subject to the usual controversies.

Thomas Lombardo, *Future Consciousness: The Path To Purposeful Evolution* (Winchester, UK and Washington, USA: Changemakers Books, 2017)---Lombardo presents a contemporary Futurist vision of the human quest for full realization of our being, leaving open the question of what we may find ahead spiritually. He asks how we can create a future that is truly good, both for ourselves as individuals and at the same time for humanity. Drawing insightfully upon the history of both philosophy and his own field of psychology, Lombardo explains how human evolution is now not only biological but cultural, an emergent “evolution of evolution.” Modern advances in understanding and reshaping the human situation

instrumentally now enable us *for the first time to take charge of our own evolution*. But the nightly news makes clear that possibilities for disastrous choices abound. So wisdom is required in order for us *to both survive and to “flourish,”* amidst the ongoing flow of our biological and cultural evolution. Lombardo has immersed himself in recently renewed efforts in diverse fields to better define “wisdom” and to understand conditions requisite for attaining it. As an educator experienced in attempts at reforming general education to better prepare students for wise choice of individual, social, and species futures, Lombardo has developed *a system of intellectual and ethically informed character virtues of “future consciousness.”* Fully integrated, these “future virtues” would be conducive to perceiving fully and then choosing wisely amongst diverse possible futures. Lombardo urges that each of us *take individual and group wisdom as our explicit goal, both in formal education and in personal lifetime learning.* Integral to developing a sound philosophy of life, Lombardo urges, is the importance of developing and continually revising a future-oriented personal narrative that aims at personal flourishing. But that ideal personal future needs to be an integral part of some coordinate “grand narrative,” within which we find ourselves engaged in working toward a mutually better future, for which we are together ethically responsible. The more people who rise to share this challenge, Lombardo believes, the more likely that together we might initiate a “New Enlightenment” and enter upon an emerging “Age of Wisdom.”

Donald H. Sanborn, *An Inner Path to Truly “Lifelong” Learning*, Presented to the Association for Development of Philosophy Teaching at its Fall 2016 Conference, on “Lifelong Learning” (Published online in the March 27, 2017 issue of *Wisdom and the Future*, of The Center for Future Consciousness & The Wisdom Page, by Thomas Lombardo)---Many ideas on the mind/body problems discussed the present paper appeared in this earlier paper, but set within a wider historical context. There was particular focus on mind/body problems encountered in psychoanalytic psychotherapy, with emphasis upon “embodiment” of neurosis and its treatment in contemporary “insight-oriented bodywork” therapies.