

SITUATED INTELLIGENCE
An Introspective Model of Consciousness

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Abstract.

The model of consciousness developed here is a *cooperative venture* between mind, brain, body, nature, culture, community, and family. The overall unity of consciousness is provided by the *loop of engagement* that conducts intentional action into the ambient. The loop continues onto *perception*, which entails participation by memory, arousal, expectancy, attention, and patterns of sensory energy, to generate sensory impressions that invite recognition, classification, taxonomic organization, and understanding. Each successive round of engagement between subject and world generates a *gap* of disparity between remembrance of purpose or intent and the effect achieved on the operative level of understanding within a larger taxonomic scheme in experience. That gap sends a *delta signal* that arouses various parameters of motivation to form a configuration that constitutes a felt situation within subjective experience. That delta signal and felt situation are nothing other than our *subjective experience of consciousness*. *Situated intelligence* is the first-person awareness stimulated by a particular complement of motivational parameters. That intelligence gauges the flow of situations in terms of a *polarized assessment* at each stage of engagement. That assessment is conveyed to the mind's *judgment faculty* for presentation, evaluation, and summation in terms of a specific goal to be sent on to the brain's *planning and action faculty*. Performance of a particular program of action sets off *another round of engagement* on various levels of the surrounding ambient.

[T]here / is nothing either good or bad,
But thinking / makes it so.
Shakespeare, *Hamlet*

What is philosophy but one mind at a time
doing the work of the world to understand
itself? Introspection turns up the pieces;
the world is then the puzzle that unites them
to reveal their coherence.

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Introduction.

Before I die—and with my two brothers now dead, I feel the imminence of that coming event—I am driven to understand the polar relationship between my mind and the world of experience that kindles my consciousness. I put it like that because I do not see myself as being conscious before I enter that world of experience; rather, I come to consciousness in the act of engaging that particular world. The world is not out there waiting for me to grasp it as it is; my mind and my world come into being in the process of fulfilling one another, so making each what it is in that particular moment of interaction.

Put differently, my mind and my world are both coupled and ever-changing as a result of their interdependent relationship. Each profoundly affects the other in the most detailed and intimate fashion. I cannot picture them as existing apart. They come into being together, always together as an item in my experience, each reflecting and influencing the other as a unified system. I don't just look at the world or live in it, but, from my perspective, sense its presence in me at the same time I would say that I live in the world. I am as much *of* the world as it is *of* me. It is as distinctly *my* world as I am *its* creature.

The polar situation I am trying to depict is somewhat like boarding a spinning carousel that slows but never stops. You have to get up to speed to safely make the transition from being a bystander to being a participant riding up and down on a painted horse. You take on the double motions of the ride on its terms, up and down, round after round, and it takes you on as a passenger sharing in a certain kind of experience. That's a crude way of illustrating my taking on my world as my world admits me to its ways. The relationship is always reciprocal.

Minds have the double ability to act and perceive at the same time, so establishing ongoing loops of engagement with their worlds, loops that are far more than conveyors of feedback. We may be separated from the world as just one of its parts, but to survive in relative isolation we must keep up an exchange with the world to stay abreast of what's going on both within us and in the ambient of which we are not only a part but a part dependent on its surroundings to meet our many needs such as food, air, water, shelter, companionship, stimulation, and so on. While the world, which has a multiplex consciousness of its own comprising myriad intelligences (I's,

egos, selves) and their relative perspectives, wants to understand how we can play a role in meeting its multiple needs, compulsions, and desires.

A great many thoughtful people in many different ages and circumstances have pondered and written about such matters in terms of mind, body, world, and consciousness. I am only one who shares in that general human perplexity. I am not at all sure whether we form a collaborative circle whose individual efforts add to a meaningful body of thought or whether our independent thoughts amount only to a general sense of wonderment, uncertainty, or confusion. I find that much of my reading on the topic of consciousness does not speak to my condition or life experience to any helpful extent.

Two authors who have spoken to my condition are Edmund Husserl and Maurice Merleau-Ponty. In the next section I offer a smattering of their respective thinking as a complement or foil to my current approach and understanding.

World, Style, Faith.

Minds have a wonderful capacity for bundling different items of experience together because they resemble one another in sharing a limited set of features or characteristics, and then labeling the group as a whole under a common term that applies to all—birds, quadrupeds, clouds—while excluding those not sharing that chosen set of features. The broader the range of features included in the set, the less detailed and exclusive it becomes, the more conceptual, abstract, and general—things, stuff, matter. The class of all “balls” includes billiard balls, bowling balls, baseballs, softballs, golf balls, soccer balls, tennis balls, footballs, basketballs, and Ping-Pong balls—all different in size, weight, and construction—spherical (except one), and available at sporting goods stores, though definitely not interchangeable among the particular sports in which each plays a central role.

Like “ball,” the word “world” is very useful because it can apply to so many different groupings of things. Its uses share a common meaning rooted in the idea of *humanity taken in its larger context*, but that context can be material, social, economic, behavioral, or related to almost any particular human interest or endeavor—food world, sports world, political world, animal world, pet world, physical world, fantasy world, psychological world, domestic world, and so on.

“World” crops up frequently in philosophical and psychological settings dealing with the properties of consciousness and the minds that display them. Each unique perspective opens onto a corresponding *world of awareness*. Points of view look upon entire worlds of experience. Every aspect of the ambient which a given mind occupies makes up or is part of a perceptual world. It is not surprising, then, that mind-talk frequently leads to world-talk around the idea that minds are coupled to, and even defined by, the worlds they subtend. For instance, in reference to the experiential basis of knowledge, German phenomenologist Edmund Husserl (1859-1938) writes:

Natural knowledge begins with experience and remains within experience. Thus in that theoretical position which we call the “natural” standpoint, the total field of possible research is indicated by a *single* word: that is, the *World*. . . [A]ll that is real comes to self-concentration in the form of a cosmic unity—“Being in the World” (Husserl 1931, p. 45).

Here he adopts Heidegger’s phrase meant to couple subjective consciousness to the immediate world it reveals. There is no apparent medium for this coupling of self with world—it

just happens through the fact of “intentionality,” the consciousness *of* one thing or another. I prefer my own formulation of the give-and-take of a patterned flow of energy that links purposeful action on our part to our receptive understanding of what is happening via what I call *loops of engagement* between our situated intelligence and the ambient world that enables us to live and to thrive.

Husserl goes on to treat time and space as properties of the world:

I am aware of a world, spread out in space endlessly, and in time becoming and become, without end. I am aware of it, that means, first of all, I discover it immediately, intuitively, I experience it (Ibid., p. 91).

My view is that time and space are measured in units, and that those units—whether seconds, days, meters, or miles—are concepts (like numbers) invented by humans for the convenience of comparison and measurement, and as such are bestowed by minds onto the world (what I refer to as the ambient) rather than the other way around. In a forthcoming section I tell how I came to realize that *time* is a product of our perceiving while remaining still, and *space* is a product of our perceiving while taking the initiative to move our bodies in a course of deliberate action. As I see it, we don’t acquire such units by discovery of qualities inherent in the world around us, but we actively calibrate that world in terms of how we meaningfully engage with it.

Husserl then treats the qualities of a world-that-we-innocently-witness as properties of a “fact-world” to which we belong as a kind of fixture or appendage (as opposed to a partner, cooperator, or co-creator):

When consciously awake, I find myself at all times, and without my ever being able to change this, set in relation to a world which, through its constant changes, remains one and ever the same. It is continually “present” for me, and I myself am a member of it. Therefore this world is not there for me as a mere world of facts and affairs, but, with the same immediacy, as a world of values, a world of goods, a practical world. Without further effort on my part I find the things before me furnished not only with the qualities that befit their positive nature, but with value-characters such as beautiful or ugly, agreeable or disagreeable, pleasant or unpleasant, and so forth (Ibid., pp. 92-93, italics deleted.)

This view of assumed reality according to Husserl’s “natural attitude” reveals the wrapping of sensory patterns in affective guise as projected by naïve perceivers, so the perceivers cannot separate themselves out from that which they perceive as reality, their free-floating affect, temperament, and assumptions cloaking what they take to be reality in full-dress. This illustrates the problem that Husserl sets out to address through a process of purification (Greek *epoche*, abstention from, or suspension of, previous theories and philosophy) that brackets or “puts out of play” such unwitting judgments, allowing the collaborative link between subject and object, the seer and the seen, to stand revealed.

French phenomenologist Maurice Merleau-Ponty (1907-1961) also writes about the unity of the “world,” but then introduces the notion of “style” as bridging the gap between perceiver and

the world perceived, eventually tracing that stylistic relationship back to our human relationship with the Earth from and to which we are born.

A thing is . . . not actually given in perception, it is internally taken up by us, reconstituted and experienced by us in so far as it is bound up with a world, the basic structures of which we carry with us, and of which it is merely one of many possible concrete forms (*Merleau-Ponty* 1962, p. 326).

Then he introduces the term “style” as explaining what he means in referring to “the basic structure” of the world.

The world has its unity, although the mind may not have succeeded in inter-relating its facets. . . . This unity is comparable with that of an individual whom I recognize because he is recognizable in an unchallengeably self-evident way, before I ever succeed in stating the formula governing his character, because he retains the same style in everything he says or does, even though he may change his place or his opinions. A style is a certain manner of dealing with situations, which I identify or understand in an individual or in a writer, by taking over that manner myself in a sort of imitative way, even though I may be quite unable to define it; and in any case a definition, correct though it may be, never provides an exact equivalent, and is never of interest to any but those who have already had the actual experience. I experience the unity of the world as I recognize a style (*Ibid.*, p. 327).

Expanding on “style,” he then connects the natural world to similar aspects he finds in the meanings of “horizon” and “unity.” These all correlate with qualities inherent in what he means by “the body” as an outgrowth of the natural world:

The natural world is the horizon of all horizons, the style of all possible styles, which guarantees for my experiences a given, not a willed, unity underlying all the disruptions of my personal and historical life. Its counterpart within me is the given, general and pre-personal existence of my sensory functions in which we have discovered the definition of the body (*Ibid.*, p. 330).

After characterizing visible landscapes, he turns his attention to those he can't see on the far side of a hill:

I know only that there is, in the most general terms, something to be perceived, and of those remote regions I possess only the style, in the abstract (*Ibid.*, p. 331).

In a later, unfinished work, *The Visible and the Invisible*, trending along similar lines, the direction of his thoughts led Merleau-Ponty to use of the word “faith” where earlier he might have used “style.”

We see the things themselves, the world is what we see: formulae of this kind express a faith common to the natural man and the philosopher—the moment he opens his eyes; they refer to a deep-seated set of mute “opinions” implicated in our lives. But what is

strange about this faith is that if we seek to articulate it into theses or statements, if we ask ourselves what is this *we*, what *seeing* is, and what *thing* or *world* is, we enter into a labyrinth of difficulties and contradictions (Merleau-Ponty 1968, p. 3).

This investigation leads to the conundrum on which philosophy itself is grounded:

In sum, philosophy interrogates the perceptual faith—but neither expects nor receives an answer in the ordinary sense, because it is not the disclosing of a variable or of an unknown invariant that will satisfy this question, and because the existing world exists in the interrogative mode. Philosophy is the perceptual faith questioning itself about itself (Ibid., p. 103).

Heidegger, Husserl, and Merleau-Ponty all lead philosophy in a search for unity between the mind and its world, away from any smattering of the Cartesian duality of mind stuff and world stuff. Perception is all of a piece, whole and entire, but nobody yet has quite figured out how to square mind with matter, so the search goes on to this day.

Neither introspection nor physical investigation can wholly locate the mind because, as I see it, *it is exclusively in neither the brain nor the world because it is in both* at the same time, all of the time. And its primary characteristic is that it is ever-changing, producing a flux of awareness, a veritable stream of thought energy and conscious experience that courses within and without our bodily mantle, producing a unity between each mind and its world.

In my own thinking, I offer *loops of engagement* mediated by the body's intelligence as situated in one life situation after another, so constituting the flow of consciousness from action through the ambient of nature, culture, community, and family, back to expectation, recognition and understanding, where perception can never quite fulfill the intention behind the original action, leaving a gap, which is precisely what keys our conscious minds to focus on striving to match our achievements to our actions in the world of matter, force, and energy, so establishing a unifying flow of energy between mind, brain, body, and world.

Worlds within Worlds.

Introspection generally assumes the existence of two kinds of worlds: subjective worlds of personal experience, together with an ambient world of physical beings, objects, forces, and energies. Since each person (being, or animal) is unique, there are as many subjective worlds as there are minded beings. Since all life that we know of inhabits our one planet Earth, there is only the one ambient world hosting diverse lifeforms in their respective planetary habitats.

Myriad subjective worlds collectively embedded within a single ambient world—that is the picture that introspection presents to us. The challenge facing each conscious mind is to intuit, divine, derive, construe, or otherwise construct a workable model of the proximal portion of the ambient world on which its livelihood depends in order to engage that portion in an effective manner producing the greatest happiness for all at the cost of the least discontent. That challenge of modeling the ambient world from a subjective point of view is what I call *solving the world puzzle*.

Is the assumption of distinct inner and outer worlds adequate to support a full understanding and description of perspectival, personal experience? That is, does it fully support a coherent view of the interactions between different minds engaging one another from a myriad of perspectives?

Over and against the introspective view of dual worlds stands the so-called objective or reductive view that, since bodies and brains are constituted of physical matter and energy, the subjective mind as a property of bodies and brains cannot be other than a manifestation of the one and only physical world of particles, atoms, molecules, forces, and energies. That view reduces the supposed duality to a singularity of only one world that accounts for both mind and matter as aspects of a single coherent system.

A great deal of human thought and energy has been spent on trying to resolve the differences between these two perspectives on minds and the worlds they seem to imply, creating a winner-take-all rivalry within philosophy and psychology, both disciplines being enabled by mind itself, which, at the center of the controversy, has so far eluded explanation—even though everyone's thoughts on the topic flow from his or her unique mind. In the meantime, the bulk of humanity goes about its business not caring how many worlds there might be while doing its best to get through each day as it comes.

Another possibility is that there may be more than two worlds—perhaps as many worlds of interest, employment, and specialization as there are people with perspectives focused on, say, geology, mathematics, theology, baking bread, beachcombing, meteorology, particle physics, chemistry, agriculture, or where the next meal is coming from. Such perspectives are not fixed but change through a lifetime as influenced by personal genetic makeup, childhood nurture, education, professional training, employment, experience, diet, health, climate, newsworthy events, chance encounters, zeitgeist, wealth, happenstance, and hundreds of other factors.

Worlds, that is, are highly abstract concepts acquired through the process and experience of living a minutely specific sort of life. Worlds are products of the conceptualizing abilities of minds. There are no worlds that exist apart from one or more minds to witness, conceive, and entertain them. Minds that would shape any such world according to their previous experience, expectations, interests and curiosities, associations, sensory impressions, ability to recognize familiar patterns, understanding, imagination, and motivation to conceive any world at all. Worlds are made bit-by-bit, not discovered as being fully formed in and of themselves. They are produced through the abstracting process of conceptualization by which a wide range of experience is refined down to the nugget of a pure idea in a particular mind.

Think of the history of our grasp of the universe, or understanding of the rise and fall of nations, species, mythologies, theologies, explorations and discoveries, particle physics, atomic physics, molecular chemistry, organic chemistry, biology, astronomy, and every other -ology or field of experience. Such worlds may be waiting in the wings until cued to make their entry into human consciousness, but they are formless abstractions until we give them place in our experience and ordered taxonomy of understanding.

For example, in my copy of Grant W. Sharpe's *A Guide to Acadia National Park and the Nearby Coast of Maine*, there is no mention of plate tectonics. Volcanoes just happen. Earthquakes just happen. Magma just rises to the surface. One geological upheaval follows on the heels of others without rhyme or reason. There is no understanding or even mention of continental plates forming, spreading, colliding, folding, faulting, plunging downward along steep faults between plates (Sharpe 1968).

Another, later, book in my library, David Kendall's *Glaciers and Granite: A Guide to Maine's Landscape and Geology*, sets the record of drifting continental plates straight, introducing and detailing a new world to my mind that was desperately trying to stay abreast of my days on this Earth. The part of the Maine seaboard I live in was once part of an offshore island-plate now called Avalonia that collided with the North American plate some 400 million

years ago, giving rise to volcanoes, plutons, and what I now think of in their eroded form as the Bar Harbor Hills, but were once an impressive range of jagged mountains before erosion and glaciation reduced them to their current, humble size and graceful contour (Kendall 1987).

In my early years there was no world of plate tectonics. Some geologists had their suspicions that continents moved around, but it was only in the late 1960s and early 1970s that word of such doings got around as a demonstrable fact. That revolution in consciousness changed everything, providing a new foundation for the unified world of formerly unrelated geological events. The random events characterizing the world I was born to in upstate New York died away, leaving that world to be born again as a radically renewed world that made far more sense than the version I had inherited in an earlier and more primitive era.

Such rebirths are common occurrences in these onrushing times of technological and conceptual advancement. Now we understand that not only species evolve, but so do continents and even galaxies as they shift from one class or stage into another. We are all born into latent worlds that evolve as we grow into them through the accretion of experience. But those potential life-worlds do not exist before we make them happen through the summation and consummation of our engagements. Our fates and worlds are nowhere written beforehand. We fulfill their latent horizons by living the lives that we do in the times and locations to which we are born. We fashion our destinies and our life-worlds in response to the psychic situations we find ourselves in as we move through a world that changes both in and around us as we move through our lives.

Such musings on the relationship between minds and the worlds they subtend have been the stuff of our formal disciplines of psychology and philosophy since their respective beginnings. Each generation of thinkers has refined those musings to suit the outlook and current idiom of its times, producing, if not progress, a revisioning of the world puzzle.

In my thinking, it is now time to introduce a new draft solution to that puzzle, much as in the 1960s it was time to announce the arrival of plate tectonics as a revision of our then current take on the long-term geological processes that have shaped—and are still shaping—our planet in ways that, we see now, are evolving even faster than our understanding had thought possible.

Background.

People take roughly twenty-one years to become fully conscious. Once their nerve fibers are finally myelinated, they have an opportunity to advance beyond their childhood depth of experience, so all are at least potentially, if not yet fully, human.

We start out as one-celled animals (fertilized eggs), each having a unique genetic heritage, which largely determines our subsequent pattern of growth. In the womb, we quickly establish a two-way exchange of food, oxygen, and waste through a placenta connecting with our mother's circulatory system. As developing embryos in the womb we pass through stages of rapidly growing cells, first a lump-like mass, which becomes hollow, then opens at opposite ends as a worm-like tube running along a spinal column, which in utero collectively comes somewhat to resemble a fish, then an amphibian, a reptile, a mammal, unto a fetal human being ready at birth to drink breast milk and breathe air.

At one point during our fetal development we all pass through a stage equivalent to our species' standing up on its hind legs, so removing the nose from access to pheromones at ground level. That stage of fetal development voids smell as a significant medium for environmental engagement. But, too, opens the way to rapid acquisition of our "smell brain" and newly enlarged cerebral cortex by the sensory media of sight and hearing, which become our dominant

means of engagement, enabling consciousness as we experience it today, along with symbolic communication as the basis of the cultures our various subgroups share in common.

The revolutionary innovation of standing on our hind legs not only frees our hands for dexterous manipulations of all sorts, but opens the way to social languages in which pheromones are replaced by meaningful phrases, rousing tunes, and significant visual shapes and patterns. Too, we might well give thanks every day that we no longer mark our home territories with urine but can now use stones, hedges, fences, durable markers, motion detectors, colorful tape, signs, street numbers, and barking dogs. In a very real sense, the adoption of erect posture opens the way to our modern repertory of flexible behaviors guided by exploration and conscious feedback loops that are not available to quadrupeds committed to keeping their noses to the ground.

Our species' adoption of erect posture comes at the cost of a lifelong struggle to hold our own against a relentless gravitational field that trips us up when we least expect it to. Childhood development is largely the story of our muscles, tendons, bones, sinews, and minds learning to counter the effects of gravity. And when we get the hang of it, we celebrate by taking joy in showing our prowess on the field of athletic activity by throwing balls, disks, and javelins as far as we can; leaping and vaulting toward the sky; showing how fast and far we can run; how we can knock, tackle, and pin our opponents down; and generally rule any and all fields of anti-gravitational activity. Our vertical posture and mobility are our species' pride and joy, true markers of our physical and mental style.

Even our consciousness—*especially* our consciousness—benefits from our continually having to take unseen gravity into account in every move we make. Think what a triumph ballet dancing really is, figure skating, downhill skiing, skateboarding, playing a musical instrument, getting good at any competitive sport you can name, or any display of human dexterity. Our every thought, gesture, throw, and leap must take gravity into account. We are no stodgy quadrupeds, or leaping ones either; we are the species that defines poise, balance, agility, grace, and prowess in a force field that would otherwise bring us down in an instant. We must never forget that our minds thrive under the influence of gravity, and, if we pay attention to what we are doing, they seldom let us down.

Other markers of our Earthly style include the atoms that make up the fluid architecture of our bodies and brains: mainly (99.4 percent) hydrogen, oxygen, carbon, and nitrogen. All drawn from the atmosphere, soil, and waters of our native planet. Water in every cell allows us the flexibility of our gravity-defying motions. And above all, radiant energy from the sun provides the fuel we take from our food and release through our metabolisms into every cell to power our daily mental and physical activities. Indeed, we are literally risen from the Earth, and its style shows in our embodiment and every move we make, as well as in the myriad of flora and fauna we host on our skins and in our guts.

Loops of Engagement.

While we are developing in the womb and ever after, we carry on that two-way engagement we first established through the placenta set up for the purpose of exchanging oxygen for carbon dioxide, food for waste. At birth the radical shift of being born into an ambient world rich with energy coming at us from all directions expands our rudimentary engagements to include sensory impressions of sound, sight, touch, taste, smell, warmth, pressure—all of which spur us to make appropriate motions and gestures in response.

It is those ongoing loops of engagement with our surroundings that generate consciousness within us. We are ever on the *receiving* end of patterns of energy, and the opposite, *delivery* end

of physical actions intended to serve as a more-or-less-suitable response. Infancy and early childhood are largely devoted to learning to match sensory impressions to a selection from a growing repertory of potential responses (sounds, gestures, facial expressions, and eventually speech and deliberate motions).

Our loops of engagement end and then begin again in the *mental gap* between perception and action. It is that gap that challenges us to match an incoming pattern of energy to an appropriate (and so meaningful) bodily response. How we individually learn to bridge that psychic gap is, in each case, the story of our subjective and imaginative consciousness.

In a very real sense, we are course correctors, ever vigilant in steering ourselves clear of reefs all around in order to reach the goals we have set for ourselves. Emotions signal the relative success (positive or negative, good or bad, glad or sad) of our engagements in furling our life journeys. Positive emotions such as joy, happiness, and a general well-being confirm our progress, while disorders of engagement as marked by frustration, discontent, anger, or anxiety signal that we are lost to ourselves through misengagement. We are fearful of or upset with those who thwart or interrupt us, and smile upon those who cooperate and help us on our way.

For better or worse, right or wrong, good or bad, so do we wend our way every day of our lives as guided by a compass of emotions and biological values that tells us whether we are on course or not toward the great end of happiness. In *The Descent of Man*, Darwin wrote of the greatest-happiness principle as a moral force in the context of moral instincts and behavior, but I think the principle applies to our every engagement, with the intelligence situated at the core of our awareness as the evaluator of our relative failure or success (Darwin 1874, p. 699).

We steer our way through our life's engagements by a compass that gauges the polarity of our progress on a value/emotional scale. In a very real (not metaphorical) sense, the gap between the poles of that duality is precisely what we are conscious *of* as we go along, guided by our values and emotions in an *intentional* (as Heidegger and Husserl would say) manner. Our minds focus precisely on that which renders us notably either happy or discontent.

As the mariner values the compass he depends on, so do we value the tools, instruments, equipment, and even toys with which we engage on a regular basis. Our powerful senses of *ownership and possession* stem from that which enables us to engage in activities that propel us toward the goals we set for ourselves. We engage with books in reading (and writing) them, plants and flowers in growing them, games in playing and watching them, cigarettes in smoking them, meals in eating and preparing them, words in speaking and hearing them, our partners in committing ourselves to them. As indicators of our commitment, such feelings as love, desire, possessiveness, and jealousy are sure signs of the vital importance of engagements in our lives.

When we persist in engaging in antisocial behaviors, our neighbors put us away in confines that severely restrict our opportunities for engagement. Solitary confinement, if not the ultimate punishment, certainly inflicts the essence of cruel and abusive treatment in denying inmates any hope of developing life-promoting attitudes, skills, and habits by precluding any and all engagements that might be considered humane.

As we engage, so do we live and project our expectancies before us as we go. Hope of achieving our goals depends on establishing reliable routines and strategies of engagement. Our individual identities spring from our desiring, developing, and achieving successful rounds of engagement. At home, work, school, and play, our styles of engagement tell the world what we value most in our lives. This is no superficial claim; it is a frank declaration of our innermost nature. Goals, desires, appetites, commitments, possessions, skills, daily engagements—these are the badges we wear that tell the world who we are.

Disorders of engagement include stressful anxiety; hearing-, vision-, and memory-loss; the full autism spectrum; rigid, violent, abusive, compulsive, and perseverative behaviors; addictions of all sorts; schizophrenia, chronic detachment, and bipolar disorder. Behavior that might be read as “wanting attention” may more likely signal a dearth of engagement.

Sleep itself might qualify as a “disorder” of engagement due to lack of arousal. REM sleep allows minimal stimulation to kindle situations that cannot be adequately dealt with, prompting our sleepy intelligence to wrestle with those steamy trickles of awareness we call dreams, which often prove frustrating because we are unable to direct them into channels of appropriate action.

Genetic Heritage.

The psychic and physical genetic plan we inherit at the moment of conception shapes not only our biological development, but equips us with means for meeting our survival needs while, at the same time, dealing with potentially dangerous situations. Yes, that genetic plan builds into us a digestive tract with mouth at one end and anus at the other—but (beyond equipping us with grasping and sucking instincts) it does not dictate what specific foods and fluids we are to put into our mouths, nor (other than flight or fight) what tactics we are to use in pursuit of the good life and avoidance of harm. Such tactics are left largely to the teachings of cultural and personal experience as they gradually accrue through one lifetime.

Our genetic heritage, that is, shapes our bodies, but leaves it for experience to teach us how best to use them, so shaping our minds in the process. Such is the wisdom that evolution represents in our case. If our habitats stayed the same season-after-season, year-after-year, perhaps evolution could tailor us to our respective niches, but that is not the case. Every aspect of the Earth is subject to change at any time, so there is no way to predict where the most hospitable niches might lie, or how we might find and make use of them. A commitment to fangs, antlers, or a horn sprouting from the ridge of our snout is now obsolete in our line of descent.

Instead, the job of getting through the day and the season is left largely to the combination of mind, intuition, imagination, and cumulative life experience. We must learn to survive through experimentation; that is, through trial and error at every juncture in engagement of perception with prior and subsequent action. Memory retains the emotionally charged episodes we endure, as well as those episodes repeated often enough to be worthy of remembrance. Expectancy, then, promotes recognition of precisely the memorable situations which we have learned through personal investigation to master, and so survive. Our personal loops of engagement build a store of wisdom to draw upon in meeting similar situations.

If on the other hand we find ourselves in unfamiliar surroundings that strike us as novel or strange, we rely on the alternative strategy of exploring those surroundings to familiarize ourselves with the lay of the land. Novelty or unfamiliarity kindle consciousness by way of a discrepancy, disparity, or *delta* (Δ , δ) *signal* that arouses our curious minds and leads to investigative behavior meant to complement our store of experiential understanding. So do we bridge the gap between perception and action with the conscious intent to undertake a course of exploratory behavior.

The result of our ongoing process of engagement throughout one lifetime is perpetual adaptation to each new situation as it comes at us. Life is guaranteed to pitch a wide variety of challenges that we have no way of anticipating. In earthquakes, typhoons, harsh winters, broiling summers, dry seasons, and deluges, for example, if we cannot adapt accordingly, then we become increasingly vulnerable just when we thought we were secure. Loops of continual engagement put the possibility of lifelong learning within reach whenever we need it. The

personal end of our species' bargain with evolution is to rise to difficult tasks when we meet them. Ongoing engagement is our pathway through thick and thin. Our deliberate dedication to continual conscious *reevaluation of our current situation* is precisely what keeps us going much of the time. It is the basis of the hope, confidence, and prowess with which we face into each day in succession, no matter what happened yesterday. Without such a gift, each setback might send the signal that our days have come to an end.

Situated Intelligence.

Investigative behavior is guided by our intelligence, which is situated within the particular configuration of the novel situation we find ourselves in during episodes of unfamiliar experience. That configuration is determined by the various motivational parameters that may come into play, parameters including relevant *biological values and drives, understanding* of each new situation, significant *sensory impressions, sense of danger or risk, emotions, available metabolic energy* (what I call the life force), level of *arousal, focus of attention, background of similar experience, situational priorities, imagination, aesthetics* (notable sensory relationships), *comparison* to similar engagements retrieved from memory, among many others.

Our intelligence, that is, is situated in, and so complementary to, an array of such parameters so configured as to create a given situation in psychic awareness. Intelligence is no impartial observer of situations but, rather, partakes of and is itself constituted by successive parametric arrays as they shift in degree and relationship from one situation to another. The gathering of food, its preparation, serving, consumption, then washing up afterwards, and putting dishes away, are examples of different situations that are closely linked together in a sequence, but might well be handled by different persons. If all managed by the same person, they constitute a flow of situational intelligence, concentration, and awareness within a single stream of consciousness. I have witnessed that flow in myself across a great variety of engagements.

Where *perception* leads from arousal, to expectancy, to paying attention, to forming a sensory impression, to recognition, to classification according to our scheme of understanding, it then becomes the job of our *situated intelligence* to deal with the specific configuration of parameters that defines the felt experience, which in turn shapes the situation that emerges from our current round of engagement and understanding. Felt situations are within us rather than in external situations in the world. They mark our participation (being) in that world.

Our minds vary widely in how our personal intelligence grasps each new situation. We can take an intuitive approach, an emotional one, a reasoned, dependent, routine, habitual, imaginative, or a wait-and-see approach, and so on. However we do it, the makeup of our current intelligence complements the parametric configuration of the situation at issue, and becomes a felt representation of that situation in light of the cumulative experience that amounts to our bodily wisdom and capability on just such an occasion.

Our situated intelligence routes that assessment to our *judgment* faculty, whose job is then to decide what goals to set in response to the situation as defined in the light of experience. Judgment reviews the polarities elicited by that assessment, the pros and cons as it were, the points good and bad, favorable and unfavorable. Then gauges and prioritizes their respective importance and relevance, to arrive at a conclusion concerning what course of action best meets the challenges posed by the situation at issue. Judgment then passes that determination on to the mind's *planning* faculty as a set of goals to be achieved by means of a coordinated motor response.

In my view, then, the initiation and guidance of our loops of engagement falls to our framing of the current situation by our intelligence as constituted in just that particular situation. That assessment is then sent on to our judgment faculty for interpretation in motor terms as a set of goals to be achieved as an action plan specifically generated in response to the situation at issue. In that sense, evolution has equipped us, not with a set of instincts or pre-figured reactions, but with the creative ability to assess and respond to a wide variety of unanticipated situations on the basis of the autonomous intelligence and judgment we commonly refer to as “free will.” If we are indeed naturally selected, we are genetically enabled to serve as agents of that process by advancing our interests on our own behalf.

As I see it, that sequence of analysis and interpretation is the core psychic structure responsible for steering our conscious engagements with the world, so proposing a solution to the world puzzle one situation at a time. Through close introspective study, I have witnessed that process take place in serial order within my mind on countless occasions. I have felt my words flowing from specific situations I’ve been in, first as kernels of incipient thought, ending as a sequence of coherent words and phrases issuing from my pencil or from my lips. I used to puzzle over where words came from. Now I look to the situations they address. I’ve felt my situated intelligence hand over the matter of what to do next to my internal judge, which time-and-again gathers evidence pro and con, weighs it, then resolves what to do. That’s an easy one to study because mulling things over takes me so long. As a writer, I am very aware of working on drafts, rereading them, making changes—like a musician eternally rehearsing the same piece by a method of successive approximation to the ideal performance. By way of introspection, I witness my inner process of engagement as it advances one step at a time.

I would say now that the process of engagement is who I am. It is my way of doing myself in the world as best I can make it out. I can’t do it once and for all; I have to go through the entire sequence in each and every situation—precisely because no two situations can be exactly the same. What I did last time is often largely irrelevant. I must take the current state of affairs as parametrically configured into account every time.

That commitment to engage is exactly the cost that evolution extracts as the price of free will. Either we pay that price, or settle for some cheaper substitute (doing as we are told, or following the example of others, for instance) that may not be as effective—and will certainly prove to be more constrained and less flexible. As I see it, the price of subjective consciousness is a lifelong commitment to using and refining the tools we are given at birth by the arduous embryogenetic labor each of us undergoes in achieving the privilege of being born into this world as the person we each strive to be. Our growing accomplishments are a product of our own striving, not settling for where we are now. We are works in progress for a lifetime.

The Gap.

The essence of consciousness is the gap in ongoing loops of engagement between psychic presentation and subsequent sequences of action intended to serve as an appropriate response. The gap stems from a discontinuity in awareness between original intentions and accomplished facts or done deeds—that is, it is a gap between memory (working, short-term, and long-term) of intent and perceptual confirmation. Seldom do we achieve our aims in the first or even early rounds of a particular engagement.

We fire at a fixed target, say, fifty yards distant, and our shots form a group somewhat below and to the left of the black circle we were aiming at. So we either adjust our sights, or aim higher and to the right, then fire off another round of tests. This time the group of shots is, say,

roughly halfway between our first group and the bull's-eye. We adjust our aim accordingly, and fire a third round of shots. Which, if we are careful, now lie scattered within the central circle we were aiming at all along.

Skill-building is our species' major talent and inheritance. At birth our gifts may be few, but we quickly learn to be *constructively dissatisfied*, and so head off to achieve one milestone after another because, in a reasonably supportive environment, that is our nature. We work in collaborative fashion with our family to achieve our goals in serial order. We may be unique, but we are not alone. Together, child and mother, child and family, with support from many others, we engage the current challenge (discrepancy) at hand. We get to be good at closing the gap by pulling ourselves ahead, if not by our bootstraps, by our own efforts as guided, modeled, and encouraged by those around us.

Left alone without stimulation, we would mean well, but with insufficient engagement would not be able to grasp the challenge we needed to work on, and so would be unlikely to thrive. We are born to engage the world around us. If left lying on our backs in a crib for long periods, we may flail our arms and legs, but to no purpose. We don't get the point because there is no point to be made. Without the shaping effect of engagement with others, we stay as we are. Not by inclination, but through lack of challenge, example, and encouragement.

On the other hand, with adequate engagement, we quickly find ourselves moving ahead hour by hour, day after day. So do we grow into ourselves by shaping and reshaping our unknown potential. Even if our engagements proceed by trial and error, they eventually lead to successively more impressive results, which narrow the gap between action and achievement each time. The fine-tuning of our intentions and observations leads us on from one stage of engagement to another, and to the next beyond that.

That is precisely what we expect consciousness to provide us, improved success over a series of trial engagements. Intelligence is the guide and navigator that gauges where prior efforts have taken us, and estimates what steps we should take next. Our intelligence is sparked by a gap of polarized successes and failures between what we wished for and were able to accomplish. Or if we succeed beyond our wildest dreams, consciousness is sparked by the relish we take in exceeding our expectations, a gap of a different polarity. For better or worse, it is the gap between our efforts and accomplishments that is the essence of consciousness.

Our minds, that is, flow from a series of disparities (delta signals) between successive rounds of engagement—physical actions broadcast to the world, and reflected, modified, or resent by the world which we receive as updated sensory impressions—spurring the succession of joys and disappointments that makes up our mental life. Consciousness is not a fixture of mind so much as it is an ongoing *process* connecting (for good or ill) one moment of awareness to the next and then the next after that. Hand-eye coordination makes a good start at learning to engage effectively, whether we are learning to knit or pilot a mission to the moon.

Once we have learned to knit a scarf or been to the moon and back—once we have mastered the skills of a certain kind of engagement—what then? Quite simply, in such situations the gap between perception and behavior is effectively bridged, close attention is no longer required, and our routine engagements become habitual below the threshold of consciousness. As William James put it:

The more of the details of our daily life we can hand over to the effortless custody of automatism, the more our higher powers of mind will be free for their own proper work. There is no more miserable human being than one in whom nothing is habitual but

indecision, and for whom the lighting of every cigar, the drinking of every cup, the time of rising and going to bed every day, and the beginning of every bit of work, are subjects of express volitional deliberation (*James* 1890, p. 122).

We all have a host of fallback strategies for dealing with familiar routines. *Reflexes* and *instincts* are built into us. Much of our learning is the product of *following instructions, imitating others*, or of *rote memorization*. Our culture provides *examples, rules, laws, traditions, ceremonies*, and *orthodoxies* by way of a social infrastructure meant for all to fall back on as memes or cultural milestones. On our own, we can develop *dependencies, prejudices*, and *addictions* for dealing with situations we don't want to think about.

Habits may be useful fallbacks, but in an ever-changing world we often find ourselves treading beyond the limits of our previous expertise, so they prove inadequate in bridging the gap between novel situations and the behavior we expect of ourselves in meeting them. That is when consciousness and situated intelligence take charge in finding an effective and appropriate way ahead.

In adding a sense of depth to our visual perception, binocular vision, even if unconscious, provides a model of the detailed effort it takes to put the disparity of the gap to good use. It is precisely the discrepancy between images viewed by our left and right eyes that generates the sensation of spatial depth. That depth is not something seen by one eye or the other; it does not exist on either retina; but it is based on the mismatch between two comparable images, resulting in a host of different delta signals interpreted as respective forays into three-dimensional space.

Our sense of visual depth is created by thousands of fine comparisons between the specific images cast onto the foveae of our left and right eyes, the neurally mapped comparisons taking place in the outer reaches of our primary visual cortices where details of those images are placed in close proximity to one another. It is not a particular neural signal that gives rise to depth but the *difference*, gap, or tension between two signals that does the job. Our field of hearing is created in much the same way as our field of seeing, as is our field of bodily orientation and movements in space. It is the difference between mapped signals—the gap prompting comparison—that matters, not two different signals taken by themselves.

Consciousness, then, arises within the physical brain as the *tension between* two given sets of signals, not in the signals themselves nor in the resolution of their differences. It is in the act of comparing those signals as a kind of *virtual presence*—virtual in the sense that the observer must look directly into the stream of light within an optical instrument to grasp the coherence of its pattern—a process that has no set embodiment because it requires active participation.

Consciousness arises in the gap like a river passing between its banks, the essence of both residing in their flow. Can the river be said to exist? Can you examine it with a microscope in fine detail? No, you can't even point to *it* from one bank or the other any more than, as Heraclitus observed, you can step into it twice. To understand a river, you must submit to its flow. To understand the virtual comparison between signals on either side of the gap you must experience the tension between them to discover how one complements the other in creating an entirely new entity, a vestige that exists nowhere else than in the psychic gap between volitional desire or intent and perceived accomplishment.

The proper work of our mind's higher intelligence is not habit formation but making the flow of virtual consciousness clear through the gap that reveals it simply by containing it, so stymieing its dissipation, as a telescope aligns attention with its optical axis, as the banks of a river constrain its fluid motion as driven by gravity.

Wayfaring.

A familiar example of the application of delta signals to solve problems in daily life is provided by the image of the helmsman at his wheel in a storm, mindful of the reading on the compass before him in relation to the course he has marked on his chart. If the storm blows his ship off-course, his job is to correct that error by turning the wheel so the rudder yaws to an equal degree in the opposite direction. Or if the blow is steady, he might steer upwind to the same degree he is being driven off course, so attaining progress in the direction he originally intended.

This is no trivial example. All of us play the role of helmsman every day of our lives. We are born navigators, our duty being to maintain our life journeys on the respective courses we have set for them. To a man, to a woman, we are goers, each heading off in the direction that we believe will best meet our needs in a given situation, while at the same time avoids danger. Each of us steers between reefs on either hand. That is our job. To keep ourselves, our families, friends, and relatives both healthy and safe.

Step by step, walking is an act of deliberate engagement. Our perception shifts with every stride, so we have to keep revising our estimate of where we are to take our next step in relation to where it is we want to go—to the store, the pharmacy, the beach, the mountains, to work, to school, to lunch, to bed. We go by walking, running, hiking, climbing, skiing, skating, boating, rowing, sailing, driving, skateboarding, flying, biking, sledding, hopping, skipping, jumping, and so on. We adjust our course as we go according to the frequent changes in direction our senses bring to our attention.

Again, this is no trivial example. We are made to hunt and gather, to go the distance, to return home with the resources we need to stay well fed, warm, and safe from harm. Think of files of African women bearing jars of water on their heads as they trek to the river and back. Even one-celled animals have flagella to move them toward what they want and away from potential danger. In utero, we ourselves were once one-celled animals. As we became increasingly multicellular, our needs increased, and our bodies grew more sophisticated in preparing us for the lifelong journey that lay ahead of us.

We are born voyagers, travelers, goers, helmsmen, navigators, go-getters, and getters-away from. My term for that ability we all share is *wayfaring*. We are wayfarers—goers—by evolution's design. If we weren't, we would never have made it as far as we have come.

Our primary tool for getting about is the consciousness that guides our every step and action. Without minds, our legs and hands would be useless. We step, reach, and grasp to a purpose every day of our lives.

It is consciousness that drives our loops of pedestrian and manual engagement, both our comings and goings, successes and failures—our two-way interactions with the surroundings that support us during every second of the life we are privileged to share with other members of our species and other Earthlings of all sorts.

The inner secret of consciousness is the gap between success and failure, happiness and discontent, that keeps us actively engaged and on course, striding to reach our goals.

Polarization.

In my study of Peter Mark Roget's *Thesaurus*, I discovered that 78.6 percent of his 1,000 word headings are paired with a different heading that means just the opposite (Roget 1933). That is an astounding statistic. It suggests that we are made to think in terms of contrasts, conflicts, negotiations, and oppositions.

Why should that be? I link that statistic to the workings of our brains that function in terms of activation and inhibition. Our neurons either fire or they don't. For us to act effectively, the hemming-and-hawing middle-ground is largely forbidden or simply ignored. Muddling, uncertainty, and ambiguity are inconsistent with our need for decisive action. If we hesitate, we are lost. The enemy horde will fall upon us. Our best defense is to assume the worst from the outset, to build sturdy walls accordingly, and to keep all gates securely guarded and locked.

Dutch artist M. C. Escher (1898-1972) made a life for himself by depicting ambiguous situations. He put his skill to tickling us and driving us nuts with images of twisted reality that seemed logical in part but illogical when viewed as a whole. His art just couldn't be—but there it was. In a very real sense, he devoted his art to mocking consciousness by tweaking the gap that kindles consciousness in the first place. No wonder he drew crowds of admirers. We were hooked by his mocking the mind's vulnerability to indecision. By having yea and nay at the same time, yes and no, seeming certainty and certain indecision in one image.

Our children go through a stage of taunting us with spurts of gleeful contrariness when “no” means yes and “yes” means no. They are testing their latest discovery that ambiguity gets the goat of even their favorite adults. My guess is that M. C. Escher never got beyond that phase once he discovered its power to get adult attention. Contrariness creates a delta signal that tells us things are not as they should be. My claim is that it is just such signals that jolt our minds awake and thereby give birth to consciousness.

Necker cubes have the same annoying effect. They just won't stay put in either one state or the other, but keep cross-dressing, then donning their original attire. Countless figure-ground studies have the same effect. Is it a black whirligig against a light ground, or a white one against a dark ground? First it's one, then the other, then back to the first. Escher was a master of that game, turning negative space into a positive something-else, or two complementary somethings-else. Successive loops of engagement come back upon themselves, ever seeking the decisive way of looking to make sense of the whole—producing a series of alternative choices. What is your pleasure, a box pointing up and to the left, or down and to the right? But there is no way to decide, so we drive our loops to keep up the search, knowing it will ever prove futile.

My point being that our minds are intended to be made up so that we can readily choose a course of decisive action. Ambiguity is a nonstarter because it gets us all riled up with nowhere to go. We can't be both fishers and cutters-of-bait at the same time. It's got to be one or the other. On that and similar issues, our brains tell our minds to lay down the law.

Consciousness is that way because our brains are that way. The gap between effort and result must be addressed as a gap, as a polarity with a good side and a bad side. Positive and negative. Pro and con. Yes and no. Green and red. Up and down. Go and no-go. Rich and poor. Easy and hard. Pass and fail. Consciousness insists the gap be viewed one way *or* the other; ambivalence (ambi-valence) is sure death to a mind trying to establish a basis for decisive action.

I know this from disruptions when I am seriously trying to concentrate. I can be either engaged or not; there's no half-way measure. When I am engaged, I am happy. When I am thwarted or interrupted, I get mad at whatever is disturbing me. Engagement is good; disengagement is bad. I am on a roll and want to get this project done to my satisfaction. Don't taunt me, don't heckle me, don't whisper through the door. I am busy, can't you see! My livelihood—my very survival—depends on my doing this work. That's how it seems. Peace and quiet is good; any and all distractions are bad. It's that simple. Our loops of engagement, once established, are that decisive.

Think of baseball umpires having to call strike *or* ball, safe *or* out, for a living. Whatever they call, half the fans will boo and hiss. There is no middle ground, no maybe he's right. When a game, playoff, or series is at stake, there is no pleasing a crowd with two opposing loyalties. Umpires are damned whether they call it one way or the other. Their only option is to commit to both fairness and accuracy in calling each play.

This is human nature; it is how our minds work. The harder the call, the more visceral it becomes. The more revelatory of how elusive the truth really is. *Trompe l'oeil* (fool the eye) is a style of painting that deliberately tries to convince the viewer that a flat rendition is truly a scene or collection of objects in three dimensions. We are fascinated by the tension that arouses in us.

Every artist has a repertory of tricks to enhance the illusion of binocular vision: one object partly hidden behind another, increasing mistiness with assumed distance, higher figures seen as being farther away, far objects tending to be bluer, near objects displaying a full spectrum, smaller figures being more distant, framing elements being in the foreground, perspectival lines leading the eye toward a point on the horizon, and so on.

Our minds delight in being fooled by such tricks precisely because we recognize them as tricks, but enjoy the effect even so as the subject of the image itself. This is akin to the foolery by which the caped magician saws a shapely lady in half, or puts a rose into a hat and draws out a rabbit. This is the very stuff of consciousness that elicits our attention. When something doesn't match up, we really want to know why, so concentrate on every detail (particularly on the pretty assistant), in the process overlooking the very detail that would reveal all. The harder we look, the less we see, the more effective the illusion. Reading whodunits, each chapter ending with a new turn of events, propels us from one state of engagement to the next, until the culprit is found out in the last chapter and we can bear to lay the book down.

I began my study of consciousness by paying close attention to appearances that turned out to be illusions. In my career I have seen roadside trash bags in the wake of passing cars as dying crows, snow-capped mountains as a row of white clouds, a stranger ahead of me on Fifth Avenue as unwittingly impersonating my good friend Fred in both garb and gait, two motorcyclists donning black raingear with white arm stripes at the side of the road as cows flicking their tails, a swept-back TV antenna as a downward gliding jet about to crash beyond the roofs of Bar Harbor, a shaped cedar blowing in the wind as a man scraping paint in midwinter, a turtle shell as a human skull during an archaeological dig, and streamers in a cartwheel display of aurora borealis as an unending flow of lifelike figures thrust toward the zenith along spokes all around the horizon. I have heard a squeaking hinge as a cat whose tail I was stepping on (even though there was no such cat, but for an instant I believed there was), and a hoarse old man crying "Fa, Fa, Fa," into the night while what he was really shouting was "Fire!, Fire!" in his worn Boston accent.

Where ambiguity is bad or undesirable, polarization to one extreme or the other is good because meaningful. My favorite opposition in *Roget's Thesaurus* is that of gravity versus levity, heaviness against lightness. Such are the dualistic terms in which we think: light v. dark, new v. old, good v. bad, yes v. no, girl v. boy, them v. us, dead v. alive, here v. there. Categorical thinking is far easier than thinking in terms of shades of gray or subtle distinctions. Philosophers have made a profession for themselves within the limits of *true or false* out of subtle gradations in-between, as have attorneys between the limits of *guilt or innocence*. That is why reading philosophy or law is often so demanding—you have to find your way through thickets of ever-finer distinctions. Dramatists know enough to stick to *tragedy or comedy*, and their audiences

keep coming back year after year. In sports, too, teams either *win or lose*, and the stadiums stay full through the season.

If we can view the gaps in our loops of engagement in terms of pro or con, good or bad, we can usually find a way through them in short order without having to waste time hemming and hawing. Consciousness excels at dealing with opposite polarities. It is the subtleties and uncertainties that give us trouble. Fools rush in where angels fear to tread because angels are trained to distinguish good from evil, where fools can't tell the difference. Diplomacy is far harder than going to war, which is why perpetual warfare is synonymous with the human condition. We make far better warriors than diplomats. And erect statues to the one but not the other. Patriots make a virtue of violent conflict, traitors of those who speak for peace.

Consciousness serves primarily to make clear decisions and choices. Our nervous systems parse decisions in terms of only two categories, activation and inhibition. Perception tends to render the world in bold strokes, and our judgments and actions follow through in kind. This is the mark of decisiveness, not parody; efficiency, not folly; survival, not muddling through.

Time and Space.

Perception from a stable point of view—such as a seat in a theater or stadium with gaze fixed on one spot, or while listening to music with eyes closed—such fixed attention results in awareness of *changes we are not responsible for* as the result of personal action. Those autonomous *it-*changes exist in the medium we call *time*.

Action resulting in bodily motions—as walking through woods while brushing branches aside with our arms, or slaloming down a steep slope while swinging one's center of gravity side-to-side—changes due to such self-movement continuously alter the perspective from which we view the world around us, so those changes are generated by our moving through the medium we call *space*. Our brains inhibit the sensory disturbance caused by our own motions.

Many instances of change exist in the combined medium of active engagement in which both self and world are changing simultaneously in the combined medium of *spacetime* when we are both subject and object, actor and perceiver at the same instant in the same place, so we can make out changing landscapes even *as we pass through them*. This generally requires enhanced rules of coordinated engagement between members of small groups—teams, crews, squads, troupes, sections, agencies—who are specially trained to perform a limited set of tasks in synchrony with specialists in other positions to achieve a collective social performance under the direction of coaches, supervisors, trainers, and similar experts in attaining goals across time and space as, for example, in sports, the arts, business, education, commerce, transportation, the military, and space exploration. It takes attentive teamwork to take on such a challenge.

In baseball, the pitcher throwing the ball exists in space, the batter poised still at the plate awaiting the pitch exists in time. Before he swings, if he does, the batter's eyes are the only eyes in the stadium that look from that exact perspective, wholly independent of the approaching ball that grows larger in his eyes as it subtends an increasingly wider arc on his retinas due to no effort on his part.

But if the batter swings against the oncoming ball, his personal actions shift him from an orientation in time to an orientation in space within which he is accountable for his movements if he is to keep his bearings, the smack of the ball against the swinging bat being a consummation of his framework of time turning abruptly into a framework of space as he starts running for first base while fielders jockey to be in the right place at the right time to catch the fly ball at the exact instant it returns to Earth.

I first became aware of watching and listening in time and acting in space during the opening minutes of the film, *Lawrence of Arabia*, a sequence in which the figure of a distant camel (viewed through layers of desert air shimmering with heat waves) looms larger, ever larger, as I, the stationary viewer in my theater seat, experienced an eerie sense of change over time because I was just sitting there, doing nothing to affect the illusion that the camel was coming toward me from out of the flat screen.

That scene with the looming camel opened the eyes of my understanding, giving me a Eureka! moment in which I grasped in a new way something I had never appreciated before. We still talk of illusory “sunsets” and “moonrises,” when in such cases—because Earth is turning on its axis—we should admit to witnessing unfelt *Earth rises and falls*.

Without situated or moving *observers* being present to impose a calibrated framework on change, there would be no sense of time or space, only *change*, uncalibrated change in appearance without reference to standardized units of measurement. As Immanuel Kant maintained, time and space exist in our perspectives before we cast those perspectives onto events in the world. In his terminology, time and space exist *a priori* in our minds and ways of perceiving. We bring them with us as our frames of reference for judging changing events; they are not inherent properties of a mindless universe.

In baseball, I think we sense the difference between the viewpoints of opposing teams at any given moment, depending on whether they are scattered around the spacious green field of play, or stand in serial order, still and alone at the plate awaiting the pitch that is about to come, and so must decide how to respond to that pitch. Hitting pitched balls hurtling directly toward you and catching balls having trajectories in space are two entirely different skills. As it is, players vary tremendously in their skillsets, some being able to play every position, others being specialists in doing one thing exceedingly well. It takes all sorts of players to complete a team.

When hiking, I have two different styles. In one, I stride ahead along the trail, concentrating on where to place my next step. Then I stop every few minutes to look around and listen to the new setting I have come to. In the first style I move right along with an emphasis on reaching a goal in space. In the second, I stay perfectly still while giving myself to surroundings that emerge over time.

Go and stop; stop and go. That’s me on the trail, alternating my engagements by adopting two general strategies, one of taking step after step; the other of taking no steps at all. Always staying aware of what’s happening around me, but in two very different ways. Taken together, those alternating styles give me a good sense of the terrain I am passing through, while moving me ahead toward my current destination. I can’t take pictures as I hike along, so must stop if I see something with pictorial possibilities. That may partly explain my way of hiking, but I find I can’t both move ahead and appreciate the terrain I’m passing through at the same time. I don’t hike just to get to the summit; I want just as much to see (and possibly record) where I’ve been.

Our spatial and temporal experiences are profoundly different. Requiring two radically different styles of consciousness. I think of Albert Einstein *sitting at his desk*, imagining himself *flying through space* at the speed of light. Could he really do that, conjoin two such radically different perspectives? He apparently thought he could, but he gives no account of any damaging effects that the extreme acceleration and deceleration required might have had on his body. He called it a thought experiment, and didn’t seem to worry about its difference from physical experimentation involving bodily motions.

Einstein treated his thoughts as goodwill ambassadors from Earth to the far reaches of unobservable space, but in so doing from his chair, he violated any conventional limitations

imposed by our normally low tolerance for rapid acceleration and deceleration. He would have self-destructed had he tried it for real. After almost a century, judgments are still pending on whether his fanciful claims have any practical application. As far as I am aware, the evidence in favor is not all that compelling (Ferreira 2014, *passim*).

Introspection.

To start off knowingly on the wrong foot, I offer this curt dismissal of introspection that suggests the tenor of the chief argument against introspection being its unverifiability, and hence its suspected inaccuracy:

[L]iterally immediate observation, the introspection that cannot lie, does not exist. All observation is a process that takes some time and is subject to error in the course of its occurrence (Boring 1953, p. 187).

Saying introspection is subjective and so unreliable in the study of the mind is like saying knives are sharp and have no place in the home. In both cases, the art is in how we use their features as tools to do what needs doing. Through introspection, I take errors of consciousness as an invitation to investigate how they are caused by the workings of the mind. In my view, we will never learn the secrets of consciousness by peering ever-deeper into the brain itself. Consciousness emerges as a cooperative effort between brain, mind, body, and their immediate surroundings. In serial order, loops of engagement reveal the full story, but have to extend beyond brain and body to do so.

For over a decade now, in whatever article on consciousness I pick up, I find a furor over *qualia*, the subjective sensory qualities of conscious experience that seem such a mystery to many observers because there's no accounting for them in the brain. They are identified as being at the heart of the "hard problem" in consciousness studies by David Chalmers (Chalmers 1995). If they have a neural representation, no one has yet come across it. But I find *qualia* all along my loops of engagement with the world. If I but open my eyes to given sensory impressions, there they are in the glory of their full redness or roughness or roundness or brightness. And if I close my eyes or turn away, they disappear, for they are not in my brain at all, but in the particular pattern of energy impinging upon my senses at any given instant.

To repeat myself for emphasis, consciousness is a cooperative venture between mind, brain, body, and world. It is a process by which each cooperator contributes its share to the overall effect. *Qualia* result from the surface interaction between an incoming pattern of energy and the sensory receptor that receives it and transduces or converts it to packets of neural energy. Pigments in so-called cones in the retina of the eye turn incoming radiation into a combined sense of brightness, hue, and saturation, all of which disappear when I blink or avert my gaze. It is not that the color red exists in the world, but that is what the pigments in my eye make of a certain combination of wavelengths of radiant energy falling upon a group of interlinked receptors, which cooperatively resolve those wavelengths into the signal I ultimately perceive as "red," "azure," or "chrome yellow."

If I but turn my head, I have no lingering sense of redness. It is gone (except, on occasion, as an afterimage of complementary color that waits upon replenishment of exhausted pigments). Redness is not in me; it is in the interaction between my eye and the world of ambient energy. Like Muslims leaving their shoes outside the mosque, I leave redness at the door to my senses,

and if I am to relive or retrieve it, I must go to the door—return to the source—each time I want to repeat the experience it invokes in my mind. To see red, gaze at a fire engine.

Qualia are aspects of my loops of engagement with the world beyond my sensory perimeter. They are figments of those loops, but they are not mine for keeps. If I close the door to my sensory apparatus, that pattern of energy is no longer available to my sensors, and I must reopen the door if I am to recover the qualities it engenders in my nervous system.

Think of a cellist playing her instrument, bowing and, at the same time, fingering the strings to achieve the proper sequence of notes as realized in the sounds she produces. Those sounds are available to her as long as she keeps bowing and fingering; if she stops, those sounds cease, and with them the qualia they engender in her ears. Those qualia no longer exist, not even in memory. They are gone. What lingers is what made her stop: a wrong note, itch, or ringing phone, disrupting her good intentions to make music. To hear those qualia again, she must replay the passage at which she left off bowing and fingering. She must recreate the situation in which those qualia seemed to her so real.

Think what mental life would be like if we had instant recall at will of any or all qualia we ever saw, heard, smelled, tasted, or felt. We would be overwhelmed by a chaotic medley of sight, sound, smell, taste, and tactile sensation. We would quickly have a seizure from an overload of stimulation, go mad, or succumb. Instant forgetfulness cleanses the palate and keeps us fresh and open to new experience. There is great wisdom behind our qualia being so fleeting and vulnerable to neglect. Some things are meant to be forgotten, and qualia are chief among them.

Qualia are experiential; they exist only as long as we open our awareness to them. That is their saving grace. Once gone, they cannot be retrieved other than by recreation of the circumstances appropriate to their appearance. I don't worry a whit about qualia, or why they appear as they do in a largely conceptual world of thought. They are fleeting phenomena we are privileged to enjoy under the right conditions. Under the wrong conditions, as in a raging battle with bombs and flares going off in every direction, we experience the negative side of qualia, the relentless pounding and blazing of sensations we cannot shut out by any means. Some hearing-impaired children can speak only profanities because they are the only words shouted in their presence loud enough for them to hear.

For me, introspection puts the matter of qualia in a new light, avoiding the *sturm und drang*, head bashing and scratching, that characterizes a good deal of worrisome discussion of consciousness. Worrisome (to me) because needlessly wide of the mark. Needless because the assumed answer to the qualia question, by definition, is sought solely in the brain, so the problem becomes the neural substrate or correlate of qualia, which doesn't exist because qualia are a cooperative production of ambient energies interacting with sensory receptors.

Loops of engagement and polarized gaps are other figments (that is, inventions or creations) of my active introspective sensibilities. In that sense, introspection is like sex because nobody can tell you how to do it; you have to learn for yourself through an intensive course of trial and error. Another link between introspection and sex is that I like them both. You know what I like about sex, but what I particularly like about rounds of introspection is the opportunity to be wholly original and creative about a subject that people avoid in everyday conversation, usually because they are wholly unaware of it as a possibility for engagement. I am most alive when I open myself to self-reflection. The challenge of finding a coherent relationship between the workings of my mind and how they insert me into a world really turns my consciousness on.

I have been at it now long enough to appreciate the progress I've made and insights I've had over the past thirty-odd years. In the past three-or-four years I've been spurred by the feeling that

I'm finally getting somewhere, and that proximity sharpens my engagement even more. I have convinced myself that I know what I am talking about in regard to my particular case. By writing these words in this essay, I mean to test the waters to see if anyone else has had experiences similar to my own. If not, then I am a cohort of one striving under my own banner.

Two things I have learned are that moments of full insight can be almost instantaneous, and that coherence between several different strands of thought feels like a form of validation. Two additional learnings are just how hard it is to work myself into a place where I can do effective thinking and writing, and once I am in that place, how difficult it is when outside forces compel me to abandon it. Effective introspection doesn't come easily or naturally. The world is way too clamorous a scene to allow easy withdrawal into the seclusion I require to focus in an inward, not outward, manner. Introspection requires my full attention in an attitude of deep questioning. By social example, it is a rare exception to the rule enforced by conventional behavior.

Even so, my chosen course in my later years, now that I have time to myself, is the way of first-person reflection. I have come this far; I cannot turn back. So for me, it's situated intelligence; loops of engagement; gaps of discrepancy; dualities in mutual opposition; levels of engagement; the quartet of perception, analysis of response, judgment, and intentional action; and the four questions: 1) What's happening?, 2) What is my situation?, 3) What should I do?, and 4) How should I do it? All taken together as a set.

My primary gleaning from introspection is that if I give myself to my own mind, then my mind will reveal its telling details to me. It is I who must take the initiative in making the effort. The rest will follow naturally upon that if I only stick with it. It is certainly true that if I simply sit and wait for enlightenment, it will never come to me on its own like a stage-god lowered from the flies in a machine at the end of the show.

Throughout this article, these words constitute the report of findings I derive from a lifetime of first-person, subjective, self-reflective engagements. Some people write of adventures, historical events, or fictional encounters and alliances. They all come to the same thing: gleanings of the mind. I would include philosophical, psychological, and scientific investigations in that category. All result from engagements as experienced inwardly in the form of narratives detailing intimate, personal stories. Loops of engagement develop as a series of questions posed by our respective intelligences in trying to understand in personal terms what is happening in the world, what those happenings mean to us, what goals we might set, and what concrete actions we should take in making a fitting response. Whether we realize it or not, each of us oversees that work introspectively, guiding our progress by the values, emotions, and understandings aroused by our various engagements.

Introspection, that is, is not the exception but the rule itself as felt and lived by us all. The difference between us is how we couch our responsibility for doing the work and living the lives that we do. Are we following orders from our superiors? Fulfilling a job description? Doing what we're told? Making it up as we go along? Following our bliss or inspiration? Playing by the rules? Going for the gold? Following the crowd? Just playing along? Having fun?

However we frame it in our own minds, we are all attempting to solve the same puzzle our own way, guiding ourselves by our own understanding of how the job is to be done. Some may be faster or slower than others, sharper or duller, bolder or more hesitant, but all are indulging in (perhaps stolen) glances of introspection because that is the only way to monitor one's estimation of, and engagements with, a world on which not only our happiness depends, but our very survival.

Even Edwin Boring, in dispensing with introspection, is driven by his own lights, known to him only through personal introspection. How ironic is that? Here is the very situation that Heidegger, Husserl, and Merleau-Ponty were addressing through the means of their respective programs of phenomenological investigation. And I am advancing in terms of loops of engagement as guided by our situated intelligence in dealing with shocks to, and disparities in, our efforts to solve the world puzzle.

To help dispel the irony, in the next section I will attempt to clarify the situation by adopting a new metaphor for describing the relationship between myriad subjective inner worlds and the supposedly one-and-only outer world of reality. Here, I flip the metaphor of the black box around, positing that the only real worlds are those of our respective subjectivities, which, as I mentioned earlier, exist in the same number as there are minded beings.

Black-box Metaphor.

I first encountered the notion of the black-box problem during my two-year stay as a student at MIT in the early 1950s. The problem in electrical engineering is to describe an electrical circuit hidden within a black box that has two pairs of terminals on the outside of the box, input and output. The solution is approached by trying a variety of inputs, to see what outputs the hidden circuit produces in response. Then, knowing the characteristics of resistors, capacitors, and inductors, inferring how the circuit connecting input to output might be wired.

I use the mind-in-a-black-box image to illustrate the somewhat similar problem of determining the nature of consciousness through outside observation, and then taking the opposite view, the mind's problem of constructing a model of the outside world—what I call *solving the world puzzle*—from inside the box. That is, from a perspective cut off from viewing that world directly as it is in itself.

And that is precisely the case when a great deal of neural circuitry intervenes between perception and the world, as it does in our human situation. But being unaware of that intervening circuitry, we simply assume that our eyes and ears give us immediate access to the world as it is. The ocean looks blue (green, orange, or gray), but if we scoop it up in a bucket we find it to be clear, its former color having been lent to it by the sky, also clear, but assuming a color by diffusing or scattering sunlight. We say that words have meanings in themselves, but those meanings are in the situations we are in when we experience those words, so we transfer those meanings to the words we hear uttered in just such situations. Driving on the highway, we experience the landscape rushing at us, even though the trees and fields are still while we are in motion. We say the sun goes around Earth every day, while we unwittingly spin with Earth on its axis. The man breathing oxygen from a bottle shouts “Open the window, there’s no air in here!”, while what he means is that his tired old lungs no longer absorb air into his blood.

The phrase, “in the eye of the beholder” warns us not to overlook the viewer’s perspective in ascribing beauty to a particular subject, as more generally does, “there’s no accounting for taste.” It is a truism that we find pretty much what we look for; even Henry David Thoreau told us that, citing the example of hunters of woodcock being more apt to discover their quarry than those who are out for a casual stroll (Thoreau 1906, Entry for February 28, 1856). How many witnesses have projected their certainty onto a particular member of a police line-up, so assigning guilt to the wrong woman or man?

Perception, it turns out, is highly influenced by expectancy derived from earlier occasions under similar conditions when it eases the effort involved in a current moment of awareness. I introduce the black-box image here to emphasize the uncertainty of both perception and

expression, so giving us pause for deeper reflection on everyday matters we casually take for granted. This is my way of imposing the Husserlian *epoche* (abstention of reliance on what I “know” beforehand). Things—family, world events, the plot of a novel—it turns out, are seldom what they seem at first glance. I use introspection (self-reflection) as a means of slowing down my stream of perception-into-action so that I can savor it in greater detail in order to get a better hold on my subjective influence upon what at first may appear to be wholly objective occurrences.

People are prone to projecting their prejudices onto complete strangers, on a par with, “I don’t like the cut of your jib.” Racial profiling leads to all kinds of trouble. As does protecting your home turf against those whom you don’t think belong anywhere near it. The trouble is likely to escalate if the protector is armed. Acting on snap or superficial judgments—which most defensive judgements are—is apt to be an expression of suppressed suspicion, dislike, or hostility. If such action leads to violence, the results are likely to be tragic on both sides. Concealed sidearms and overt AK-47s lend an aura of great authority to those who can barely think through their hasty impressions. The lesson of our times—one of many—is beware of arming your convenient proxies because sooner or later you will find them aiming those same arms against you.

The idea that our minds are in black boxes is not all that farfetched. We learn to lead very sheltered lives. Our priorities, prejudices, shaky opinions, misconception, and out-and-out mistaken perceptions form a wall between our minds and the worlds they must engage and participate in to survive. An hour watching commercial television is an hour watching what someone else wants you to see. These days we can easily stream the reality of our choice. When our culture captures us inside the going thing that makes money for advertisers, we might as well admit we live in a black box imposed to deliberately skew our spending of money in a set direction to the benefit of someone else.

I grew up with Hollywood musicals that helped millions through the Great Depression, then through the propaganda of World War II (see Disney’s 1943 film *Der Fuhrer’s Face*), then the advertising age that pressured every middle-class family to buy a vacuum cleaner, refrigerator, stove, fancy car; to live in a “desirable” neighborhood; and to dress in imitations of the latest fashions. Many of us share a strong urge to make popular crazes our own.

Though black-box problems are typically problems approached from the outside, my method is to work the other way around in trying to solve the world puzzle from inside the confines of my own mind. The first approach is illustrated by use of *The Diagnostic and Statistical Manual of Mental Disorders* to classify, diagnose, and describe the workings of minds from the outside in terms of symptoms (American Psychiatric Association 2013). Psychotherapy exemplifies that approach. Rather than focusing on mental disorders or pathology, however, I am more interested in the routine functioning of everyday minds doing their everyday thing.

So I stand the black-box metaphor on its head and use it to try to solve the world puzzle from inside my mind through careful but determined application of the methods of introspection. In doing so, I find that inside my mind I wear many hats. My “self,” that is, seem to play many roles in doing the work of simply processing and maintaining my ongoing loops of engagement with the world. Here, to detail some of the intricacies of natural (as opposed, say, to artificial) intelligence, I will list a few of the key roles in order from perception to situational analysis to meaningful judgment to appropriate action.

My roles in *perception* include: recaller of similar situations in the past; anticipator of how events will unfold; attender to notable patterns of ambient energy; composer of sensory impressions; discriminator between familiar and novel patterns; recognizer of simplified, conceptual patterns; and classifier or taxonomist of sensory impressions in my field of understanding.

My roles in *situational analysis* include: gap inspector of polarities; comparator of complementary signals; chief interpreter of situations; intelligencer-in-chief; overseer of drives and values; supervisor of empathy and emotions; commander of rules of engagement; superintendent of attachment, affection, family, and childcare; master of dedication and concentration; inspector of order, harmony, aesthetics, and beauty; judge of successes, failures, close calls, and nice tries; and sensor of pain, pleasure, and euphoria.

My roles in *judgment* include: meaning-maker by comparison; compiler of polarized evidence; evaluator and weigher of that evidence; judge of cases for specific actions as proposed; setter of goals for appropriate action; head of speech, gestures, posture, and expressions; and director of thoughts, ideas, vocabulary, and syntax.

Lastly, my roles in *planning and execution* include: planner in chief; project leader in charge of timelines and task assignments; human resource specialist; relationship builder to assure cooperation; smoother-over of potentially upsetting discord; trainer of poise, dexterity, and coordination; builder of essential skills and confidence; master teacher to give polish to requisite skills; lead actor on whose shoulders each performance rests; and follower-through on previous actions.

That's thirty-six different roles I perform within my sheltering black box. And all those roles lead up to my public performances in engaging with nature, my culture, my community, and within my own family. And those performances lead onto further incidents of perception, situation assessment, reviewed judgment, revised action, and further rounds of engagement. There's a lot of switching of hats in my black box, which leads to the question, who is it that wears all those hats? Surely not thirty-six different personalities. But am I anywhere near to being capable of coordinating that many aspects of my own personality in just the few moments typically allowed between perception and action?

Rather than wrestling with the experiential qualities of percepts, I see the "hard problem" in consciousness studies as deciding who it is that wears all those hats. Or whether there is any such wearer at all. Or whether there are any such facets of our loops of engagement as I have claimed for my own mind.

The good news is that our minds are given us to solve just such problems. Scientists do it by studying conceptual abstractions through statistical analysis; introspectors by studying their subjective experience as a sample of one. And then asking if anyone else might concur.

My candidate for the hat-wearer-in-chief is my situated intelligence, which would serve as CEO of the wearers of all other hats, whom in turn would serve as her/his deputies. My situated intelligence has access to input from all those other aspects of my inner awareness. In essence, it is the executive director of my looping engagements with the world. The buck stops with the facet of myself that holds that position, which is who I really am. When I think of what I truly do for a living, that is my job.

My intelligence is complementary to every situation as it emerges into my inner awareness. It is specifically shaped or determined by the motivational parameters that collectively form each and every situation in succeeding one to the next. What am I if not that flow of situations as I perceive them from my unique perspective? I am no mere witness to that flow of parametric configurations; I am an actual participant in that flow, that streaming awareness of what I am conscious *of* in being conscious at all.

My mood swings, successes and failures, decisiveness and indecisiveness, sense of one disparity after another—all are due to my intelligence being situated at the heart of my mental response to that flow as translated by my mental apparatus in its ongoing and vigilant response to what's happening around me, to what those happenings mean to me in personal terms, and to what options for making a fitting response I might have available in my kit of habits and skills.

In that sense, I am nothing other than the qualities of experience that collectively bring my situation home to me as a given configuration of diverse psychic parameters. That ever-changing flow of inner experience constitutes my mental life from perception, through motivational assessment and judgment, on to planning, action, and follow-through, which leads on to my next loop of engagement.

The black-box metaphor is extremely useful to my introspective endeavors in helping me focus on my loops of engagement one stage at a time without distraction from preexisting theories of mind. Slowly, through careful study, I gain a sense of what happens in what order to provide a coherent picture of my inner life. Which all makes metaphorical sense to me, and provides the operative sense by which I have navigated my wayfaring for some eighty-two years. The proof is in the living of a rich inner life for that length of time.

Believe me, I have paid close attention every step of the way. I am a goer and a noticer. I check things out because I want to understand them. Why else was I born just when behaviorism was about to go out of fashion? How ironic is it that my childhood was tutored by John B. Watson, for better or worse considered to be the father of behaviorism? I was raised according to the notions (I can't call them principles) he put forward in his 1928 book, *Psychological Care of Infants and Children* (Watson 1928), from which I offer this typical paragraph:

There is a sensible way of treating children. Treat them as though they were young adults. Dress them, bathe them with care and circumspection. Let your behavior always be objective and kindly firm. Never hug and kiss them, never let them sit in your lap. If you must, kiss them once on the forehead when they say good night. Shake hands with them in the morning. Give them a pat on the head if they have made an extraordinarily good job of a difficult task. Try it out. In a week's time you will find how easy it is to be perfectly objective with your child and at the same time kindly. You will be utterly ashamed of the mawkish, sentimental way you have been handling it (Ibid., pages 81-82).

I was born in 1932. Watson wrote the book; I lived the life. With the results I set before you in these pages. It has taken me this long to figure out my own mind because I had such a difficult start in life. I developed an immune reaction to the gluten in wheat because it was introduced into my diet before I was ready to digest it. My celiac disease wasn't diagnosed until I was sixty-five years old and about to retire. I remember my father (whose mother died the day he was born) touching my mother only once in my presence—when she slipped on a newly waxed floor and fell, and he reached down to help her up. He held me in his lap only that one time on the porch

when he helped me on with my shoes. I still remember the feel of hacking all night with whooping cough and nobody coming to give me even a sip of water.

Not one to stand passively by, I set out on a course of discovery to find why the world worked as it did, and how I worked as one inhabitant of that world. Here I am today writing these words that come from a series of very specific situations. A lifetime of such situations, as experienced by none other than myself. I do not apologize for standing outside the periphery of accepted science; its methods often seem outlandish, contrived, or even brutal (as in experiments on live animals) from the viewpoint of my lived experience.

I am a committed humanist. I have never caught my mind processing so-called information, or computing data. I am no statistician, but find that the introspective perspective looking upon the specific details of experience comes naturally to me. Each moment stands clearly in my mind as if taking its place in a series of still photographs. Click, click, click: so has my life run as a flow of concrete images, not conceptual abstractions. Episodes in my life's story, that's what I am left with, adding up to one continuous storyline telling of my engagements with the world, all leading to this exact instant.

Storylines.

I shall conclude by shifting to a wholly different but parallel idiom, relaying a similar message in different words. Here I want to clinch my argument that loops of engagement are evolution's gift to us all by providing evidence of the many ways we engage our surroundings every day of our lives.

Humans are a species of storytellers. For most of our history, we have survived by telling stories around places of fire that offered us comfort and warmth. Stories have beginnings, middles, and endings. From the opening "*Once upon a time,*" to the concluding "*lived happily ever after*" (or "*went to hell in a handcart*"), one thing leads to another by a particular order of events. This happens, then this, then this, making up the succession of engagements in the time and place of particular characters of which a story is told

We all want to hear what happened to the little girl when she walked into the woods to visit her grandmother. Or to the brother and sister when invited into her home in the forest by an old woman. We are driven to sit still and listen, even if we've heard the tale many times. We become captivated by the unfolding of events according to the plots we are all familiar with. Once the story is told, we can't wait to hear it again. To live it again. To experience the drama again. To feel the tension in our own bodies as if it were our own story being told.

Stories are narrations of specific engagements we can identify with. To identify is a way of taking others' engagements as our own. It makes little difference if it is with fact, fiction, or history. What each genre offers is a way to put us imaginatively in someone else's shoes so we can share what life feels like to be them on particular occasions. That is powerful magic.

We gauge that magical effect by how closely it follows our expectations. We don't like it if the happy ending turns sour. Or the tragic ending turns sickeningly sweet. Or if the author of the mystery gives away the solution prematurely. Details of character and form and plot are what we remember because they govern how we feel at different times during the narration.

That is, we read or listen to stories to see how they measure up against our own life engagements. Do they expand or diminish our horizons? Do they hook us or turn us off? Shaggy-dog stories lead us on and on and on, leaving us stranded right where we were at the beginning, making a mockery of our expectations, as in a bad joke.

Sheer violence draws some crowds and offends others. The news is made up of episodes of rape followed by shark attacks by beheadings by school collapses by tornadoes by typhoons by earthquakes by forest fires by nuclear disasters by collisions by busloads of schoolchildren tumbling end-over-end into ravines. We are surrounded by the shock and awe of violence and brutality every day of our lives. Which makes us glad for the safe and secure lives we actually lead—until disaster strikes in our midst.

Whether real or fanciful, our engagements are writ large in films, operas, ballets, plays, sporting events, songs, and every other aspect of our culture. What is a musical score but the latent storyline of audience engagement? What are songs, lyrics, poems, paintings, travelogues, biographies, adventures, novels, recipes, jokes, anecdotes, videos, picture puzzles—what are any of these media of intense concentration but opportunities for meaningfully spurring engagement?

What are everyday conversations around the watercooler at work or table at Starbucks but occasions for human engagement? What is syntax but the turning of a felt situation into a sequence of words that others can experience in a meaningful way?

Think of the milestones of life: learning to walk, talk, dress yourself, count, spell, read, write. These are the essential engagements of civilized human life. Think of falling in love, getting engaged, being married, building a house, having a baby, getting a job, getting a better job, having another baby, putting on a new roof, getting a divorce, traveling to Maine or Alaska or Italy or Cambodia or Kenya or Tierra del Fuego—all major episodes of engagement that connect our minds to our surroundings in specific ways according to certain narratives, schedules, and itineraries.

Plots and stories: cycle after cycle, that's what life is made of. Birth to death, beginning to end, experiences strung together on the storylines by which our lives are told. That's what we are to one another, tellers of stories, enactors of stories, recallers of stories, garblers of stories, forgetters of stories.

We are companions in storytelling, believing, doing, leading our lives. Our commonalities of engagement bind us together; our differences split us apart. Either way, our stories-narratives-engagements make us human. To be a blank slate is to be sub-human. Even animals engage. We know that by watching their eyes, smiles, bared teeth, tails drooping or wagging, the hairs on the back of their necks. Some in greater detail than others, more consciously than others.

Even trees engage sunlight, rain, snow, wind, and predators, so engage their habitats and survive differentially. Are they conscious? I would say in their own way. In the way of life on Earth in its local precinct of the larger whole that supplies the matter, energy, and style by which Earthlings live through the seasons by bridging the gap between inside and outside.

My writing is devoted to the inside picture of our human engagements with one another, and the outside worlds we puzzle together for ourselves. Perception, memory, comparison, intelligence, judgment, goals, actions—all play their parts in telling the story of consciousness that makes us possible.

Our stories tell who we are in doing, going, being, seeing, playing, writing, singing, dancing, shopping, driving, knitting—engaging—as we do by living the lives of wayfarers that we do.

To me, consciousness is the story that begins and underlies all other stories. It is the story of all stories. If we ignore it, can we claim to be alive on that most fundamental of all levels?

I have no doubt that the pains I have taken to tell my version of the story of consciousness have been—if uninvited—necessary for me to live as myself. By telling it, I am paying my dues to the planet that has given me birth, and shared its energies and resources so that I could be conscious in this particular day and age.

As I see it, I owe the Earth nothing less than this account of my mental endeavors. From a wayfarer I have evolved into a *mindfarer*. For me, finishing that work is a happy ending. The best I could have hoped for because, with the recent deaths of my two brothers—both elder and younger—reminding me of the imminence of my own, I haven't been sure I could do it until this minute.

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