

Drilling Down the Fractal Hole
(*thru non- &/or trans- localities*)

connectivity

Parts and wholes change together in response to events and conditions at all scales and distances. All parts are therefore connected. What happens in the Arctic affects us in New Mexico—and vice versa. Even the butterfly’s wings play their part, along with the galactic center.

Science has been ambivalent about the idea of non-locality since Newton grappled with gravity “acting at a distance.” Einstein’s explanation of how mass warped the fabric of space-time made the separation disappear, though the idea of separate localities went next, wreaking havoc with the concept of a fixed reality neatly organized within space and time coordinates.

By eliminating the “and” separating “space and time,” Einstein postulated that the shape of time also varied. No longer a linear absolute, the relativity of time de-solidifies assumptions of everyday experience, including the notion of objectivity, which requires the ability to “stand apart” from what’s described. Where do we go to stand outside spacetime and the universe described?

In the case of a dynamically changing space-time universe, in other words, there’s no outside to observe from. The question of *what existed before the Big Bang?* no longer makes sense either, since there’s no such thing as “before” & “after” before spacetime to manifest & change in. Even weirder, it’s not as if the creation appears in empty space, since there’s *no space-time to expand into*.

It’s space-time itself that’s comes into being, along with all its fundamental properties & potentials—presumably including life & mind. We might say *self-evidently* including life & mind, raising the

apparent presence of an observer to an evidentiary principle, if this didn't call up Descartes' "*Cogito ergo sum. I think, therefore, I am.*" Really? Let him prove that *now*. Where has that *I* gone?

Thinking remains, even if Descartes doesn't, however, with evidence of life & mind seemingly all around us, at least "here" on earth, where it seems improbable that ours is the only solar system harboring life & mind among the billions of solar systems per billions of galaxies. Whatever the frequency—or meaning of it—here we are, or at least seem to be, however temporarily living & minding.

*"Who in the world am I? Ah, that's the great puzzle."
—Alice in Wonderland, Lewis Carroll*

Or one side of it. The other side of the puzzle is what the world is in which we appear, including the where & when of it, even as gravity's ability to warp space-time makes location itself ambiguous. Without a place outside the system as a fixed reference point, trying to define location is like "trying to plant a flag on the sea," claims a physicist in "Where-Is-Here?" (*Scientific American*, Nov. 2015).

It would be even more impossible to map such a sea as if it were an entity with actual, more or less stable circumference, boundaries, depths, and living edges in every dimension, never static across multiple scales—quantum, atom, molecule, wave, heave, surge, tide, sun, moon, atmosphere & irregular shores in dynamic relation with all at once, with irregularities in constant flux at multiple scales.

In a fundamentals sense, the measure of even a specified section of coastline depends not only on the specific time, but also on the ruler-size and other properties of the measuring device. One presumably gets different results on the molecular scale, with a 6-inch scale, and a 100-yard tape smoothing out all the indentations.

The wrinkles of space-time are even less straightforward. How do we reconcile the linear “light-year” by which we measure supposedly objective space-time with the fact that, from the perspective of an observer traveling at the speed of that light, time seems to stand still?

The theoretical implication that the passage of time itself differs for observers traveling at different speeds has been experimentally verified. Similarly, the acceleration observed in falling objects can be described not just in terms of how gravity warps space, but how it warps *time*, which passes more slowly from the object’s point of view closer to the earth, thus covering more distance in the same time, i.e., going faster.

Now add the idea that gravitational fields at supposedly different space-times aren’t “independent” from each other! If that isn’t enough to throw in the towel, add Heisenberg’s Uncertainty Principle, which shows that the act of observation can change what’s observed, so that the way we look changes what we see. Without the separation of subject & object, we no longer see an absolute reality “out there” in definable space-time, but something reflecting ourself & ways of looking.

trans-locality of action & information

Lewis Carroll aside, psychologists already suspected, as much, along with linguists studying how children learn language & how languages shape what we think we see, as well as how we interpret & relate to the world. Each species, group and even individual develops a characteristic range of informative input & templates for organizing the input into functional interpretations, potentially useful as “actionable intelligence.”

Action takes place on many levels, only some of which may be conscious to the individual at the time. Input or intelligence used leaves a track, makes a pathway, exercises and develops the capacity. Use or exercise both confirms usefulness and promotes development of the underlying capacities, like the muscles involved.

Development can mean not just strengthening existing pathways, but adding new stages or levels on which intelligence can be processed. Adding new levels doesn't replace earlier ones, so humans retain an ability to respond quickly to sudden noise, movement or other perceived threat in ways similar to our lizard relatives, even while having other ways of processing for different situations, from emotional intelligence & ethical reasoning to strategic planning & advanced math.

Actions processed by the limbic system may seem relatively straightforward, being most closely based on immediate perception without mediation by thought. Each added stage or level tends to call for greater shaping, more complex processing, less direct reliance on *perception* (what's taken as input from outside), more room for *concept*.

At all levels, there's some overlap of *perception* & *conception*, sensory & interpretive functions, however. The more closely considered, the more the separation between them disappears, as each creature's own point of view, developed from nature & nurture, templates learned & conditions encountered, shapes its view of its universe.

Indeed, this creates strange, Alice-In-Wonderland-Through-the-Looking-glass situations, in which things patently false on one level of reality are completely true on another, as soon as we jump through dimensions or to a different order of magnitude in our lensing of the world.

A side effect of the dimension jumping introduced by scientific progress is to make smug experts look foolish for having believed they'd figured out more of their fields than they had. The next revolutionary shift in level or angle of observation shows how much less is still understood.

The most foolish seem oblivious to even the possibility of levels & dimensions beyond what happens to be on their maps at the time. They're like the pseudo rationalist who "proves" Santa Claus doesn't

exist by using conventional time-task analysis. The *idea* of Santa Claus has no meaning in their equations apart from the idea of a single, physically contained entity operating in conventional geography, despite there being evidence for the reality of the *idea* as an *action-affecting field* all around them, beyond individual agents in the cultural context.

Not long ago, the same “veneer” of logic might have proved that many millions of people could never feel emotional engagement with a single event in real time because they couldn’t all fit where they’d see & hear what was going on. The ability to receive sensory information *across* space & time wasn’t so obvious before radio, TV & the internet.

Factors yet to be discovered and instruments yet to be developed shift the way of looking, showing how short-sighted old-way “proofs” can look, given even a small change in the *time* of the observation. It’s not that the logic behind such claims doesn’t have some basis, just not the meaning assumed. There *is* a difference between awareness of present events while actually there & awareness of them via media, for example.

They’re not the same, just as *reality* and the *language used to describe reality* aren’t the same; even when language reflects what’s real & has its own reality, the map is not the territory—except when discussing maps. In fundamental terms, the territory contains countless maps & mappers dynamically woven into the given topography & subsequent shaping.

How we see the world has effects on what we see, as well as on what we *think* we see, as well as on what we do and make. This applies to our use of instruments designed to “see” across distances, including those rendering information trans-locally, i.e., in many places at once.

Such trans-locality of information is now so present, it’s mostly taken for granted without thought of the *mind-boggling* implications of the rapid development from telegraph, telephone, radio to broadcast tv and the world-wide-web, allowing the mind to experience, even choose, its

scale of contact—exchanging information with particular others, a dozen, a flash mob, a thousand; all the way to being in some connection (as receiver, transmitter, or both) with millions, in a single real-time and/or cumulatively, viewer by viewer across time.

Such trans-locality of information was hardly imagined a century and a half ago, at least by the scientific mind. Only the wildest fantasist, spiritualist, psychotic or ‘seer’ might have considered the information exchange now part of everyday life & taken for granted as even remotely or theoretically possible. The specifics of the history are better known than the meaning. We see each step in the technology, including unintended consequences & side effects, sometimes slowly, and at high cost, as development continues— seemingly in the same direction of ever increasing trans-locality of information & connectivity of parts.

mind in the machine

The most amazing aspect of this is not the technology, but outwardly, the fact of its existence, and inwardly, the active presence of the mind in the process. No one can deny the significant involvement of mind in the development of media and exercise of communication instruments, for example. One may question the logic, taste, or even sanity of style and/or content, but not the fact that *minds are involved*.

The presence of mind may seem so obvious as to be hardly worth a mention, except that, until recently, physics didn’t pay it much heed, trying to describe the “given” universe without reference to it. It didn’t pay much heed to life either, of course. Chemistry was presumably the linking science, where atoms & molecules met living processes, including matter-energy exchanges & transformations associated with sensitivity to light, vibration, nourishment, reproduction, etc.

Out of this complex web of matter, energy, and life, the physicist’s mind nevertheless came to formulate an *uncertainty principle*, recognizing the

role of the observer in effecting what's observed. *Eureka!* They found mind in the machine! Where did that come from? What they thought could be excluded turned out to be an essential of understanding.

Ah, grasshopper, what a surprise! Mind plays a role in understanding, yet hardly understands itself. Or where it fits in the scheme of things, except that it becomes an un-excludable part of the picture in a universe with matter, energy, life and mind—in our case, a mind just barely becoming aware of itself. What else the universe has up its sleeves remains to be seen, but the history of the last century shows we shouldn't sell it (& ourselves) short when it comes to having surprising capacities unsuspected by most.

There are quite amazing example of mind in nature all around us, whether dolphins, whales and elephants, ants, bees and butterflies, or bats and birds in migration map. Certain birds blindfolded, disoriented and taken 200 miles off course over unfamiliar territory find their proper route again in the next few days, whether aware of the earth's magnetic field or angles and directions of sunlight through the day. Even more mysterious is how certain butterflies manage a migration cycle that takes place in stages across generations.

Some may claim this is merely a function of instinct, no mental process required, but that's an arbitrary distinction. Mental processes of any and all sorts will presumably always have genetic associations. There's no *merely* about it, however. If the capacity for a way of processing is transmitted by genetic transmission, it is no less a mental process in the actual practice required for development.

The genetic code can be considered a form of embedded memory, as well as a program for taking form. It seems to exist & perpetuate itself (&/or its components) without reference to mind, yet also contains within itself a detailed template for mind to manifest its various capacities when the developing structure & context warrant.

If where there is the potential for consciousness in the program, that consciousness has little, if any, awareness of the program itself, let alone the range of its routines & sub-routines. The individual organism tends to have little, if any, awareness of the mind that guides the cells, or the neuron firings that accompany particular thoughts. Who can say, then, what the cells know of the organism as a whole?

Each individual is a network, as well as part of other networks—at both the same & greater orders of magnitude. Networks extend across & within generations, both across & within other dimensions. Even the mind of a cell manifests in at least two dimensions. One shows up in the selectivity of its membrane, the medium of exchange between inner & outer environments, whereas the other is expressed by inner guidance systems, the trans-generational program. Neither exists in a vacuum, but only within the active context of its environment, organism or ecology, part of the conditions encountered in that place & situation.

Where the larger organism ends & its colony or social context begins remain an equally open question, with no absolute boundary. At some point, for example, a human embryo may survive apart from its mother, but until that point, there is no complete distinction between the two, with so many systems shared. Even after the separation of birth, an infant cannot survive on its own, but exists only as part of a nurture-group—which goes on providing & shaping the substance of its body, feelings & mind, including both its language & view of the world. The individual's experience of perception, feeling, and thought is never entirely or solely its own, therefore, but connected, over-lapped & interwoven with its social context, as well as with its ecological niche.

The social context provides its language & the technology of its economic relations, the culture that shapes the mind of the life at large. Even an individual's most original thoughts & expressions depend on these shaping influences, and keep on going, besides, whether picked up

on by others directly or not. They don't "belong" to the individual any more than the breath does, or than the thought belongs to the neurons involved in formulating &/or articulating it.

Each individual plays its roles, serves its functions, and expresses (intentionally or not) its own more or less unique perspective, shaping its context, both social fabric & ecological neighborhood. It's not a one-way street, this shaping & being shaped, giving & taking form, organizing & being organized, not a street at all, but a mirror of the inner network, with the complexity of circuits, pathways, systems & sub-systems by which it carries out its business.

The thought itself is non- or trans-local—wherever it comes from, wherever it goes, neurons to fingers to keyboard to you, part of that larger mind by which we carry out the business of reflection. Whether that reflection itself represents the nature of the world it seeks to understand or only the dream of the reflector, we have no choice but to acknowledge the presence of mind in the process, my neurons in this spacetime &/or yours in another.

Mind itself is fundamentally non- &/or trans-local, in other words. There is no such animal, besides, as a totally local mind or self-contained entity. Mind, no matter how internal its focus, gets its content from everywhere, up close & personal to the distant stars, as well as from experience & observation, including observation of itself.

Mind experiences & observes itself more or less directly, in oneself, & at different levels of indirectly, through others. Multiple levels may be present as content at the same time, as in the "Blind Man's Hat" puzzle (www.bodlibrary.net).

the observer of...nothing

An expert has been described as someone who learns more & more about less & less by cutting things into smaller & smaller parts until there's nothing left. *Yet of that nothing itself, they still know little!* They may not even recognize it as *nothing*, or be able to say what that *is*.

In physics, entity turns into field, while locality becomes relative to the observer. When the gaze is cast to the nature of the universe at large, about 95% is said to be unknown, dark, or transparent, meaning undescribed, undiscovered, & not apparent. Perhaps this is a projection of the observer's understanding onto the universe "out there," i.e., really a self-description, with universe as "mirror"?

On one side of the glass, there's Heisenberg's Uncertainty Principle, the physical limits of observation, reflecting the observer. On the other side, there's Harpo Marx, Lucille Ball, & Alice—observers who interpret, respond to, &/or change what's observed.

I once heard a research scientist on the radio claim that the neurology of certain kinds of perception was now almost completely understood, with the ability to trace an in-put signal through its electro-chemical transformation circuits across synapses 95% of the way to what the observer "perceives," just a few more jumps to unravel completely. Really? I think he had his math wrong, since 95% of the mystery is in that last jump—to where the observer is, the witness, the sense of personal experience, and what the nature of that "perceiver" is.

That's where the mystery of perception seems to lead—a meeting of the unknown nothings without & transparency within, the mystery of black holes, invisible matter & energy, quantum vibrations into & out of existence, i.e., what it means to be...at least to be *alive*, for wherever there is life to experience even the simplest perception or sensation, there is some kind or form of mind to receive, interpret & respond.

