

## 8. Quantum Mechanics and Language:

### Upon reading David Bohm's Wholeness and the Implicate Order

From the first paragraph of Bohm's introduction to Wholeness and the Implicate Order, I realized that what he was theorizing about in this book, published in 1980, I was concurrently developing in my poetry since the mid 70's. Bohm's path emerged from quantum mechanics; mine from phenomenology and consciousness, but both of us realized the necessity of interdisciplinary analysis. My ideas have been greatly influenced by the development of quantum mechanics over the 20<sup>th</sup> century, as Bohm's have been by phenomenology and the philosophy of consciousness.

Consider this statement by Bohm, who is widely regarded one of the Illuminati of quantum mechanics:

*It is clear that in reflecting on and pondering the nature of movement, both in thought and in the object of thought, one comes inevitably to the question of wholeness or totality. The notion that the one who thinks (the Ego) is at least in principle completely separate from and independent of the reality that he thinks about is of course firmly embedded in our entire tradition.... But this confronts us with a very difficult challenge: How are we to think coherently of a single, unbroken, flowing actuality of existence as a whole, containing both thought (consciousness) and external reality as we experience it? (Bohm, p. x of Introduction, 1981 paperback, Routledge, Kegan, Paul Ltd.)*

He then goes on two pages later:

*In chapter 2 we go into the role of language in bringing about fragmentation of thought.... We then inquire whether it is possible to experiment with new language forms in which the basic role will be given to the verb rather than the noun. Such forms will have as their content a series of actions that flow and merge into each other, without sharp separations or breaks. (ibid, p. xii)*

Now consider this excerpt from my mid-80's essay, "Wy I Rite so Funnee":

*My second intention with steevspell (which I now call MetaEnglish) was more ambitious and radical. I wanted to develop a grammar in which subject and predicate, object and action were merged. I had heard that this was possible in Sanskrit, and it seemed intuitively right to me. Surely, the actor and the action*

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*are not two separate things, but aspects of one thing.... Perhaps our language was creating unnatural distinctions between actor and action, or between past, present, and future.*

In chapter 1, p. 9, Bohm explores his first love, quantum mechanics.

*In a more detailed description the atom is, in many ways, seen to behave as much like a wave as a particle. It can perhaps best be regarded as a poorly defined cloud, dependent for its particular form on the whole environment, including the observing instruments. Thus, one can no longer maintain the division between the observer and observed (which is implicit in the atomistic view that regards each of these as separate aggregates of atoms).*

Here we see the confluence of quantum mechanics and consciousness in two important areas.

First, Bohm, working from Heisenberg, says that, in atomic spaces, the act of observation affects what is observed. We see this in precisely the same way phenomenologically. The act of self observation modifies what is observed (our thoughts). The closer we observe ourselves, the more completely our act of observation is what we see, obscuring and obstructing a free flow of thought, or merging imperceptibly into that flow. This is a precise corollary to Heisenberg's principle that when we observe phenomena at the atomic level, the more accurately we desire to know where a given object is, the more inaccurate our understanding of where it is going (since the act of observation requires some number of photons, and these deflect the existing trajectory of the object).

Second, just as at atomic level observation we see the breakdown of the "division between the observer and observed," and a breakdown in the invariance of time, so we see in consciousness 3 branching but related phenomena:

1. that there is no clear division between one thought or emotion and another, or stated differently, that each of us is composed of multiple egos and multiple identities and that our perception thru the lens of any one of them changes and distorts how we see any of the others, and the world at large,
2. that the perception and experience of time is not only relative (eg a minute may seem like a long or

a short time, depending on how it is experienced), but that past, present, and future are unpredictably superimposed, inter-related, and interactive, and

3. that the individual experiences, at the margins, overlapping consciousnesses from other beings, and thus an unmediated but inchoate transmission of experience and knowledge passes among individuals, abrogating the belief that there is a clear division between one human being and another.

Concerning phenomenon I, the lack of clear division between thoughts, emotions, identities:

Phenomenological self-observation reveals that, just as the “ultimate building block, the atom” is in fact made up of sub-atomic particles, themselves divisible; and more strangely, that these particles can, at times, change identities, so too, our thoughts and emotions have no ultimate foundation or endplace. As we look into any emotion (or thought) we see that it is constructed of, or emerging out of other emotions. Emotions are more like strange attractors, identified by, and composed of the erratic (or indeterminate) non-linear cyclings of interacting mental states. Thus, for example, as we try to discern what it means to feel “love”, we find that it is composed of excitement, joy, fear, jealousy, despair, confusion, constraint, comfort, need, gratification, lack of gratification, etc, all in their non-linear and often concurrent and conflicting trajectories, creating the strange attractor, the emotion, the state we call love. Upon close observation we find every emotion to be constructed and experienced in a similar fashion. And this is not true of emotions alone, but applies to each thought, as well. Indeed, the more we penetrate down into our thoughts, the more we discover that consciousness is composed of multiple, concurrent, sometimes interactive threads of thought. Each “thought” is more like a ball of yarn, a globe of partially parallel, but intersecting, overlapping, twisted, knotted subthoughts, which appear when casually observed, or when constructed after-the-fact, to be singular, indivisible “objects”.

But the matter does not end there, either. Upon close and persistent observation we discover that our identity, which is composed of superposing emotions and thoughts and experiences, also ceases to be a definable, single entity. There is no “true self”! Instead, we see that identity

is layered, twisted, ephemeral, inchoate, metamorphic, multiple. It too may be more properly thought of as a strange attractor, constructed of truth, lies, illusions, fantasies, hopes, fears, pasts, futures (as per point 2, below), self as well as other, friend, foes, ancestors, passing strangers with their passing impressions (as per point 3 below). In this light, we might newly understand the classic image of Brahma in Hindu art and iconography with his multiple selves spreading out behind him like fringes of diffracted light, or magnetic waves. Of course, such a neat, symmetrical arrangement of our multiple selves is rare, and would only appear in this way during moments of illumination. Most of the time they are scattered around us like so many vibrating electrons spinning erratically around a nucleus in a highly charged field.

Concerning phenomenon 2, the superimposed and interactive nature of time:

The clock, and its metronomic ticking of seconds and minutes creates a sense of time as external, impersonal, invariable, and entirely out of our control. However this is contradicted by the personal experience of time. Besides the well known but commonly dismissed experience of time as “seeming” fast or slow, long or short, there are more subtle and fundamental violations of the apparent unidirectionality of time. Our sense of, or expectations for the future can and will influence our behavior now. Indeed, we constantly measure our progress and revise our goals and behaviors, based on our expectations for the future. Well documented and widely experienced psychological states, such as “mid-life crisis”, are quite specific and powerful intrusions of our understanding of the future on our current state of mind, as we compare who we are to who we want to be. Equally important, our understanding of the past shapes our world views, goals, and our attitudes. For example, many people are strongly inclined to like or dislike other individuals and/or other nations/ethnicities based on ideas and beliefs we derive or inherit from the past, even when we have no direct experience to substantiate those beliefs or ideas. For example, many anti-Semites have never met a Jew. Finally, our inherited knowledgebase, both as oral history and written text engage nearly all people in the transmission of beliefs and ideas. Literature and scholarship are not only accretions to existing knowledge; they are on-going dialogs with authors who are distant in space or in time. All this is quite obvious, yet few people understand its implications, exposing

how consciousness is a product of deeply and complexly superimposed time lines and time frames.

Experiences of superimpositions and multi-directionalities in time that are even more subtle are often dismissed as illusion or delusion. Yet it's the rare person that hasn't experienced one or more of these phenomena, which include *deja vus*, palpable experiences of past lives, premonitions of the future, and some kinds of dreams. Rather than dismissing evidence that doesn't conform to our linear and rationalistic expectations, we need to expand our awareness of the complexity of consciousness. These, and other near subliminal experiences help shape the narrative we construct to understand our life-path(s). Such evidence makes it likely that our personal narratives are shaped not only by what has already happened, but strangely, by who we are yet to become. Our remembrance of the past is influenced by needs we will experience *in the future*, so that we can construct meaningful narratives about our life. I'm sure I'm not alone in looking at the array of memories that now are keystones to my identity, and realizing that many of them, *when I experienced them*, were hardly noteworthy. And yet, I not only remember them, but I now see them as moments of life-changing importance.

As for phenomenon 3, the overlapping of consciousness and experience between individuals:

This is quite obvious by observing the transmission of emotion from one person to another. An individual shouting angrily at another causes an immediate and visceral reaction, usually either anger or fear in like measure. This transmission is not based on proximity, and can be verbal or non-verbal. Two people shouting at each other will each become increasingly disturbed, while an onlooker, to whom their anger is not directed, may be able to observe dispassionately. I have also often observed in myself, when sitting silently with someone who is extremely anxious, that although I am not consciously aware of their anxiety, I will find myself inexplicably anxious, inexplicable, that is, until I ask them, "are you anxious or nervous?" Their answer almost always confirms that what I am feeling is *their* emotion!

All these things we know. They are observable phenomenologically, and they are well documented in

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literature. Sometimes we see only a brief glimpse or fragment in works that have no intention of documenting the stream of consciousness, such as Hamlet's confusion about who or what the ghost of his father is or means. Other times this is the author's essential topic, as in much of Nerval's work, but especially his Aurelia. By the twentieth century this topic becomes a defining conceptual feature, as seen in Joyce's and Faulkner's interior streaming monologues, and Kafka's consuming angst about who he is and what is reality, and Durrell's literary relativity, and Dick's alternate realities and hidden causalities.

However, if we step back, we see that the whole body of world literature stands as the definitive composite document of the multiple threads and states of human consciousness. These states may be accessible to all, but they were individually derived out of specific local conditions of consciousness. Frederick Turner frames this idea in a particularly elegant and erudite way in his book, Natural Religion:

*Perhaps Quetzal, Hachiman, Persephone/Hecate/Artemis, Kuanyin, Kavula, the Loas of Vodun, Baldur, Vishnu, Inanna are the names of those strange collective entities, made up of the neural/cybernetic interplay of many individuals on some unimaginably complex net, and the innervated body of some aspect of nature, that will one day replace such associations as the nation state or the corporation.*

In other words, our mythologies are the distillation of the consciousness of people (ethnicities) who share an identify with specific lands and beliefs. These mythic stories and the beings that populate them are living in each of us variously, the collective essence of our individual visions, tying us together in shared ethnic landscapes, engaging us in “territorial” battles concerning authority and narrative truth with other ethnicities, shaping the contours of our individual identities, and creating us as we create them. Ultimately they are the collective consciousness of the human species. Perhaps it's more accurate to say, the human species has precipitated out of this transhuman consciousness.

With that in mind, compare these two excerpts, one from a scientific journal, one a piece of literature.

*The research team irradiated nitrogen dioxide molecules (NO<sub>2</sub>) with a very short ultraviolet pulse. Subsequently, the molecule takes up the energy from the pulse which sets the electrons in motion. The electrons start rearranging themselves, which causes the electron cloud to oscillate between two different shapes for a very short time, before the molecule starts to*

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*vibrate and eventually decomposes into nitric oxide and an oxygen atom.*

from "Watching Electrons in Molecules",

[http://www.eurekalert.org/pub\\_releases/2011-10/ezfi-wei101411.php](http://www.eurekalert.org/pub_releases/2011-10/ezfi-wei101411.php)

...Everything around me was changing its form.... I watched myself journeying in the streets of an unknown and well-populated city.... From where I was, I descended, following my guide into one of those elevated dwellings whose joined rooftops presented me with a strange sight. It seemed to me that my feet embedded themselves in successive layers of dwellings from different ages. These ghostly constructions uncovered still others in which were exemplified the tastes of each century, and this made me think of archeological forays made into ancient cities, though the difference lay in that these were in full view, living, traversed by millions of beams of patterned light.... At this moment, several young people noisily entered.... I was astonished to see them all clothed in white; but this was only an optical illusion brought about by my strange perspective. To render things more clear, my guide began to describe their costumes, which he painted in vivid colors, making me see them as they actually appeared....

from Aurelia by Gerard de Nerval, translated by Monique DiDonna, Green Integer Press, 2001

I will offer one more example of the confluence between quantum mechanics and consciousness using Bohm's observations as a starting point. On pp. 9-10 he says:

*What is needed in a relativistic theory is to give up altogether the notion that the world is constituted of basic objects or 'building blocks.' Rather, one has to view the world in terms of universal flux of events and processes. Thus,... instead of thinking of a particle, one is to think of a 'world tube.'*

*This world tube represents an infinitely complex process of a structure in movement and development which is centred in a region indicated by the boundaries of the tube. However, even outside the tube, each 'particle' has a field that extends through space and merges with the fields of other particles.*

Let me now rewrite the second paragraph, speaking of human beings rather than atomic particles:

*This human body represents an infinitely complex process of a structure in movement and development which is centred in a region indicated by the boundaries of the body. However, even outside the body, each*

*'ego' has a field that extends through space and merges with the fields of other egos.*

These overlapping fields are not limited to atomic and subatomic particles and emotional sensitivities. I would posit that the very nature of consciousness is represented better by behaviors described by quantum mechanics than by any Euclidean or Newtonian model. Therefore, time also must be understood in a quantum mechanical way, since time is a product of consciousness. While the ego is focused into a present moment, that looks back into a past and forward to a future, human consciousness itself is not so bounded. Events of the past can have a profound effect on present behavior without there being any direct series of causal connections. Consciousness connects past, present, and future into a single interactive continuum with multiple, direct causalities.

Our language is structured to make concrete distinctions between objects, between objects and the actions that connect them, and between moments in time. These distinctions can be a helpful artifice, but they misrepresent the true behavior of objects in motion (events in time), and thought (consciousness). Bohm postulates a more active, fluid, verb-based language, but that is insufficient. MetaEnglish (what I have elsewhere called 'Steevspell' and 'Steevtok') attempts a more comprehensive interleaving of objects, events, and time periods. I would call it a quantum mechanical language, which attempts to represent the more complex, non-Euclidean, interactive causalities operating in the human observation of the mental and physical worlds.

In sum, as we begin to peer into the atomic world, where matter "sublimates" into energy and energy "condenses" into matter, we are also observing the workings of consciousness as it articulates the foundations of space-time. This more accurate observational ability that evolved in the 20th century, shattered our ancient world-views (Aristotelian, Euclidean, Newtonian). Now we are beginning to understand that our further development is inhibited by our language, which also needs to evolve to represent this new, subtler understanding of our world.