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The Symbolosphere, Conceptualiztion, Language and Neo-Dualism

(Draft)

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Abstract: It is shown that Schumann's (2003) notion of the Symbolosphere, the non-physical world of symbolic relationships and Logan's (2000a) Extended Mind model in which the mind is defined as the brain plus language entail a form of dualism. A distinction is made between the symbolosphere, which includes the human mind and all its thoughts and communication processes such as language and the physiosphere which is simply the physical world and includes the human brain. No distinction is made between substance and property dualism, hence the use of the term neo-dualism. The neo-dualistic approach is justified on the basis that at our current understanding of neuroscience is unable to connect the functions of the mind with the actions of the brain and hence it makes sense from a practical point of view to distinguish between these two levels of phenomena. The neo-dualism formulated here is also used to critique strong AI and deconstructionism.

In an attempt to understand the origin and evolution of language the two authors have independently developed similar models of the relationship between language and thought. Schumann's (2003) notion of the Symbolosphere, the non-physical world of symbolic relationships parallels Logan's (2000a) Extended Mind model in which the mind is defined as the brain plus language. In comparing our two approaches we came to the realization that we both had embraced a form of dualism, which in most of today's academic circles is considered passé. Most cognitive scientists are monists who believe there is no need to make a distinction between the mind and the brain. The following excerpt from Merlin Donald's (2001) *A Mind So Rare* illustrates the negative attitude vis-à-vis dualism of a group of psychologists and philosophers (that Donald labels Hardliners) who believe that "consciousness plays no significant role in human cognition".

The error that Hardliners so abominate is implicit Dualism, the complete separation of the domain of the mind from that of matter and natural science. Hardliners proclaim that we must purge, once and for all, the Cartesian Theater assumption that underlies so much experimental work because it leads unwittingly into the clutches of the Dualists.… As long as psychologists continue to use the term 'consciousness' in this Cartesian context, Hardliners argue, they will inevitably fall into Dualism, the very error that entrapped even so eminent a thinker as Rene Descartes. Hardliners have been conceded this point altogether too easily, in my view, because most experimentalists are too busy, too tired, or perhaps too suggestible to resist. Sad to say, there has been a virtual stampede of researchers vying with one another to confess, beg forgiveness, and recant publicly their real or imagined Cartesian beliefs (ibid.).

As we analyzed the implications of the form of dualism that our two mutual approaches entailed we came to the realization that rather than eschew dualism that in fact it strengthens and enriches our respective models. In Section 1 we will first quickly summarize our two respective approaches drawing parallels between them. In Section 2 we provide a brief history of the traditional forms of dualism. In Section 3 we formulate a new form of dualism, neo-dualism, which is compatible with our understanding of the emergence of language. We then show how our respective Symbolosphere and Extended Mind approaches, each incorporates this new form of dualism. We conclude our paper in Section 4 by using our notion of neo-dualism to critique two approaches of contemporary scholarship, namely, strong AI and deconstructionism.

Section 1 – Language, An Emergent Complex Adaptive System

The two authors have recently each developed models for the origin of language in which language is treated as an emergent phenomenon and a complex adaptive system. Schumann's (2003a, 20003b, Lee and Schumann 2003) model introduces the notion of the Symbolosphere, while Logan's (2000b) model makes use of the notion of the Extended Mind. We briefly review the salient points of these two models so as to later show that they each incorporate a form of dualism in which symbolization and conceptualization are considered as basically different than other biological activities or functions.

The Symbolosphere1

The words and grammar of language emerge as a complex adaptive system as a result of the communicative interactions of hominids. Those linguistic structures that emerge from this process are those that best fit the capacity of the hominid brain. The grammatical structures are not pre-adaptations but emerge as a result of the communicative interactions of the hominids. Schumann (2003a) does identify three pre-adaptations for language which are the "capacities for joint attention, for understanding communicative intentions, and for cultural learning" as has been suggested by Tomasello (1999, 2003).

Language as a consequence is a cultural artifact; it “is neither of the brain nor in the brain (Lee and Schumann 2003).” It is not transmitted biologically but rather culturally and “exists as a cultural artifact or technology between and among brains (ibid.).” It is an artifact that is invisible and non-material and hence is not part of the biosphere but rather forms the symbolosphere, which includes all forms of symbolic communication including such things as written language, mathematics, science, music and the arts.

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1 This formulation is informed by and is an extension of previous work by Batali, (1998); Deacon (1997); Hurford (1991); Kirby (1998); Lee & Schumann (2003); Oliphant (1997); and Steels (1998).

Schumann argues that humans live within the symbolosphere, which influences their lives as much as the biosphere and hence introduces a duality between these two spheres of influence on human existence. He suggests that a distinction should be made between the brain and the mind “because there is an implicit recognition that aspects of mental life take place, not only in the physical brain, but also in some nonphysical medium. Could this mind actually be the symbolosphere?” asks Schumann (2003b).

The symbolosphere is embedded within the semiosphere the set of all signs whether they are iconic, indexical or symbolic. The symbolosphere includes all of the phenomena mediated by symbols and hence includes all human thought and communication. Embedded within the symbolosphere one can imagine a memeosphere or culturosphere, the set of all memes or cultural replicators.

The complement to the semiosphere and the symbolosphere is the physiosphere within which is embedded the biosphere. If there is life on other planets and within other star systems then it is possible that there are multiple non-communicating biospheres. The metaphor of the morpheme sphere in the terms biosphere, atmosphere, physiosphere, symbolosphere derives from the fact that our planet is in the form of a sphere from which terms like atmosphere and biosphere are derived which later through metaphorization have given rise to terms like symbolosphere, semiosphere and physiosphere which do not have the geometric form of a sphere.

To get an idea of how the symbolosphere surrounds us and how it constitutes an econiche that requires our adaptation, we might consider the law. The fact that we are governed by the "rule of law" does not mean that we are governed by the rules of which the law is comprised. Rather, in a democracy, it means that we and our leaders submit ourselves to governance by law (Hobbs, 2004). All laws are abstract symbolic constructs that are formulated and agreed-upon in order to control our lives and the lives of the authorities, i.e. those that make the laws and enforce them. Essentially to live by "the rule of law" means that we must adapt

our behaviors to the nonmaterial (but nevertheless written) legal symbolosphere. In order to survive and thrive, we have to adjust the way we live to conform to the rule of law. Here then we are adapting to an aspect of the symbolosphere in the same way we have to adapt to aspects of climate and geography of the biosphere.

A second way to see the symbolosphere as the nonphysical conceptual and symbolic counterpart to the biosphere is to consider religion. Here we must take a religion in which we do not believe. When we do this, we see that much of that religion involves practices and behavior that may be mandatory but which, from a nonbelieving perspective, are simply symbolic. Nevertheless, the symbolic rules and practices are part of the econiche to which the believers in this religion must adapt in order to thrive in this world and to achieve an afterlife. The law and religion are two very powerful aspects of the symbolosphere that one way or another constrain and guide our lives. We should also note that the symbolic constructs of law and religion as well as the symbolic constructs of mathematics, philosophy, history, and literature also provide an intersubjective platform, which we use for thinking. In other words, the symbolosphere is very much the mind that exists not exclusively in the brain, but rather in the symbolic constructs shared between and among brains.

The Extended Mind

A model for the emergence of language, the Extended Mind model (Logan 2000b), was developed based on the Logan's (2000a) previous study of the evolution of notated language based on historic data. The model builds from the notion that language is both a communications medium and an informatics tool and that speech, writing, math, science, computing and the Internet form an evolutionary chain of languages.

It is claimed that the origin of speech and the human mind emerged simultaneously as the bifurcation from percepts to concepts and a response to the chaos associated with the information overload that resulted from the increased complexity in hominid life. As our ancestors developed toolmaking, controlled fire, lived in larger social groups and engaged in large-scale co-ordinated hunting their brains could no longer cope with the richness of life solely on the basis of its perceptual sensorium and as a result a new level of order emerged in the form of conceptualization and speech. This emergent explanation of the origin of verbal language parallels Schumann’s (2003b) emergence of the symbolosphere. Speech arose primarily as a way to control information and then was used as a tool for communication. Rather than regarding thought as silent speech one may just as well regard speech as vocalized thought.

The mechanism that allowed the transition from percept to concept was the emergence of speech. The words of spoken language are the actual medium or mechanism by which concepts are expressed or represented. Words are both

metaphors and strange attractors uniting many closely related perceptual experiences in terms of a single concept. Verbal language and abstract conceptual thinking emerged together at exactly the same point of time as a bifurcation from alingual communication skills and the concrete percept-based thinking of pre-lingual hominids (Logan 2000b).

The transition from percept-based thinking to concept-based thinking is claimed to represent a major discontinuity in human thought that entails three major stages or breakthroughs in hominid cognition:

1. manual praxic articulation (or tool making and use),
2. social organization or the language of social interaction, and
3. preverbal communication, which entails the use of hand signals, mime, gesture and prosodic vocalization (Donald 1991).

These three cognitive breakthroughs it is claimed represent three distinct percept-based preverbal forms of communication. They were the cognitive laboratory in which the skills of generativity, representation and communication developed and, hence, were the source of the cognitive framework for speech. The three percept-based preverbal forms of languages represent more than just the transition to spoken language and abstract conceptual thought. Transformed by spoken language and the abstract thought that followed in their wake, they also served as the prototypes of three fundamental activities of modern humans, namely technology which emerged from toolmaking, commerce which emerged from social organization and the fine arts which emerged from mimetic communications. In this way these activities are linked to those associated with the verbal languages of speech, writing, math, science and computing. Language is the link, which unites all the activities of human enterprise, all of which are embedded in the symbolosphere.

Within the context of the Extended Mind model it is assumed that the mind came into being with the advent of verbal language and, hence, conceptual thought. Before language the brain functioned basically as a percept processing engine operating without the benefit of the abstract concepts, which only words can create and language can process. Language is a tool which extended the brain and made it more effective thus creating the mind, hence the formula: Mind = brain + language. It follows that non-human animals have brains but no minds and that the gap between humans and non-human animals is that only humans possess verbal language and a mind. Logan's hypothesis is similar to that of Schumann's (2003b) in that the mind is considered as distinct from the physical brain because of the conceptual or symbolic nature of language.

"The emergence of verbal language represents three simultaneous bifurcations:

1. the bifurcation from percepts to concepts,
2. the bifurcation from brain to mind,
3. the bifurcation from archaic Homo sapiens to full fledged human beings, Homo sapiens sapiens (Logan 2003b, pp. 75-76)."

Section 2 – Traditional Forms of Dualism

The tradition of dualism in Western philosophy can be traced back to Plato's Phaedo where he distinguishes between the eternal Forms, which are universal and physical bodies, which are ephemeral and are imperfect copies of the eternal Forms. Plato's dualism arose out of his concern with the fact that he lived in an ever-changing corruptible world and he wanted something solid to hang onto in formulating his epistemology. In a certain way he was responding to the challenge of Heraclitus who claimed everything was in flux and constantly changing. "You cannot step twice into the same river; for other waters are continually flowing on."

The modern tradition of dualism begins with Descartes who distinguished between two types of substances or ontological categories res extensa and res cogitans. Res cogitans represents for Descartes all that thinks which for him is the set of human minds and God. Res extensa was all the rest, the material world which has extension and hence physicality. Res cogitans, on the other hand, has no extension or physicality. Like Plato, Descartes' duality arose from epistemological concerns, namely his desire to develop knowledge he could rely upon. For him his base of certain knowledge was the existence of God of which he was sure and his own mental existence, which he expressed as "cogito ergo sum". He combined these two certain non-material forms of knowledge, the existence of God and mind into res cogitans and contrasted them with the material world of res extensa.

Descartes' formulation of duality is known as substance duality in that he posits the existence of two distinct substances res extensa (physical nature) and res cogitans (cognitive and spiritual nature). The opposite view to that of Descartes is the monist position as represented by Spinoza who believes there is only one substance and that physical nature, the human mind and God are all of the same substance. In addition to Descartes substance dualism there emerged another form of dualism known as property dualism which holds that the world is made of the same material substance but that the material substance can have two types of properties, one type of properties is physical with extension corresponding to the property of Descartes' res extensa and the other type of properties is mental, non-material and non-extensive corresponding to the property of Descartes' res cogitans. It is therefore possible that a single substance like the human brain can have two sets of properties, one physical made of flesh and blood and the other mental composed of thoughts and consciousness.

We believe that this philosophical debate between substance and property dualism is not amenable to a scientific resolution. Since we do not understand the relationship between the physical events that take place in the brain and the emergence of thought it is folly to try to speculate as to whether they are the same substance. At our present level of understanding the only practical way to deal with understanding the nature of human mentality is to describe the activities of the brain on the one hand and of human thought and emotions which make up the human mind on the other hand and try where possible to find links between these two levels of phenomena, namely the physical brain and human thought and emotion.

If we adopt a cybernetic point of view by invoking Ashby's Law of Requisite Variety the only way to model the phenomena of cognition, language, brain and mind given our present understanding of neuroscience is to make a distinction between mental properties and physical properties, i.e. to adopt a property dualist position. Any attempt to speculate about the possibility of a monist position, namely that mental and physical events are of a single property or substance enters the realm of theology and is no longer within the domain of science since any propositions of this nature are not falsifiable.

Section 3 – Neo-dualism

It is our position that one way to explore the relationship between the brain and the human mind is by studying the origin and production of language as well as its many subsequent consequences. We believe that language gives rise to concepts, ideas, thoughts, beliefs, values, and consciousness, which in our opinion make up the essential unique features of the human mind. With this in mind we would like to introduce a new dualism, that of res extensa, one of Descartes' original substances and res linguistica. Res extensa is the natural physical and material world, which we will sometimes refer to as the physiospehre and res linguistica is the world of language, symbols, semantics, syntax, metaphors, concepts, thoughts, ideas, consciousness, culture, and the human mind, which Schumann (2003b) refers to as the symbolospehre. There is a certain parallel of our approach with Descartes in that he started with what he saw as two certainties, namely the existence of God and his own existence via the "cogito ergo sum" argument. We on the other hand begin with our belief that the one unique quality that differentiates humans from nonhuman animals is their ability to use non-material language, which in turn gives rise to another uniquely human phenomenon, namely the human mind.

Within the framework of the neo-dualism that we have just formulated we will make no distinction between substance dualism and property dualism. The notion that one describes the world in terms of substances is an out-dated mode of philosophical analysis that does not particularly illuminate our understanding of human language, thought or culture. In other words the term substance when

used in the context of understanding human cognition is without substance (pun intended). Therefore to debate whether there are two types of substances in the universe or one substance with two types of properties is fruitless. It is clear to us that a description of human behavior requires consideration of physical interactions that are understood in terms of physics, biochemistry and biology and cognitive interactions, which we believe are language and symbol based. To talk of language as a property of the brain or as some separate substance does not add in any way to our understanding of the nature of cognition, consciousness or the mind itself. Language is both a property of the brain and at the same time a phenomenon that can be studied independent of understanding the mechanisms of the brain. Thus we are proposing an emergent dualism without a disconnect from the brain.

The neo-dualistic formulation that we are proposing differs from Descartes in that we do not think of res linguistica as a substance but rather a description of human cognition. Our formulation, on the other hand, parallels Descartes dualism. Res extensa remains unchanged. Res cogitans is replaced with res linguistica, which like res cogitans incorporates the human mind and all its thought and communication processes but does not include God. We remain agnostic with respect to the existence of God, but treat the spiritual dimension of human cognition as a cultural artifact or value. The neo-dualistic split that we are championing makes a distinction between the description of physical phenomena and abstract, symbolic mental phenomena. We carefully make a distinction between percepts, the nervous system's response to physical stimuli, which belong to the physiosphere, and concepts, the symbol-based processes of human thought and communication, which are part of the symbolosphere. Res linguistica, the symbolosphere, and conceptualization are exclusively properties of humans and separate them from non-human animals. With respect to acculturated nonhuman primates (and hominids) we believe they might now possess (or might have possessed) some primitive elements of res linguistica but that the creation of the symbolosphere was basically a human creation.

We see parallels to our notion of neo-dualism in the work of others. Dawkin's division of evolutionary replicators into those that are gene-based and those that are meme-based is a form of neo-dualism as is the work of those that talk of biological and cultural evolution. The division of the percept-based operations of the brain from the concept-based mind represents another form of neo-dualism. A case may be made that Negroponte's division of the universe into atoms and bits also represents another form of neo-dualism along the lines of res extensa and res linguistica.

Other dualisms can be identifies in nature such as the one in physics between elementary particle and the forces through which they interact. This dualism is perhaps an example of property dualism in that the particles have material existence and the forces are properties of these particles. This division is somewhat misleading, however, because it can also be argued that the particles are properties or products of the forces. According to the bootstrap view in elementary particle physics the nuclear force creates the elementary particles and the particles in turn generate the very same forces that bring themselves into existence. We will illustrate with the example of the pi and rho mesons.

> In order to grasp the nature of the bootstrap argument from elementary particle physics let us simplifying the argument by considering a universe with only two elementary particles, the pi meson and the rho meson. The rho meson is a resonance of two pi mesons and the force, which creates the resonance of the two pi mesons, arises from the exchange of the rho meson between the two pi mesons. And that rho meson which is exchanged by the two pi mesons is nothing more than two other pi mesons exchanging a rho meson, which is two pi mesons exchanging a rho meson... on so on ad infinitum.
>
> Extending the argument to the bootstrap of language and the mind. Consider the hominid brain before hominids achieved speech or language. The brain was essentially a percept processor. As the hominid began to create concepts in the form of words as strange attractors of the percepts associated with those concepts, it was able to create more words because of its ability for abstract thought and conceptualization, which made it more capable of abstracting more precepts into words or concepts, which increased its conceptualization creating more words... on so on ad finitum until human language and a mind capable of abstract conceptual thought emerged. (Logan 2004)

Within the context of the neo-dualism that we have formulated we will argue that a bootstrap argument can be made to show how language gives rise to thought and thought to language. A similar argument can be made for bootstraps between language and culture. Stuart Kaufmann's notion that the emergence of life occurred as a result of autocatalysis is another form of the bootstrap argument set within the context of the dualism between organic chemicals and

primitive life forms. The notion of a bootstrap and emergence are basically equivalent. Both processes describe how a new level of order emerges from a complex non-linear dynamics.

Section 4 – Neo-dualism, a Critical Tool for Strong AI and Deconstructionism

Our motivation in formulating our notion of neo-dualism was not to enter into philosophical debates with the philosophy community but rather to create two categories that we feel are necessary to describe cognitive phenomena. We believe that neo-dualism also provides a balanced perspective for understanding a diverse set of issues other than the relationship of language to thought. Res extensa or the physiosphere and res linguistica or the symbolosphere provide complementary descriptions of cognitive processes and that unless both are used to analyze or understand phenomena one obtains a distorted picture of reality. We illustrate this point by applying this criticism to two intellectual enterprises that currently receive a great deal of attention, namely strong AI and deconstructionism.

The focus of the deconstruction movement is with text independent of the context in which it is written or in which it is read. The deconstructionist scholar is exclusively concerned with the code and operates totally within the symbolosphere as though the physiosphere did not exist. While this is the prerogative of this school of literary criticism, it provides, in our opinion, a lop-sided picture or analysis of literature.

On the flip side of those that focus exclusively on the symbolosphere are those reductionists who focus exclusively on the physiosphere and believe that the equivalence of human intelligence can be built into a machine simply by replicating the software, which operates the human brain's hardware. These proponents of strong AI fail to realize that human intelligence does not arise exclusively from software that just happens to reside in a carbon-based hardware system, the body, independent of any interactions with that body. They believe that the software can be replicated in a silicon-based hardware system to create human intelligence. Human intelligence is more complex than this. It arises from the interaction between the two domains that constitute the human experience, namely the physiosphere and the symbolosphere. Without the perceptual experience of the body, which takes place within the physiosphere the concepts, which are the strange attractors of those physiosphere-based percepts would never arise nor give birth to the symbolosphere and human cognition. The over simplification that the proponents of strong AI make is that they assume that the hardware and the software do not need to interact to make human intelligence. Their metaphor of the computer is misleading because computer hardware and software do not interact and change each other or co-evolve which is the case

with the human body and the human mind. The body and the mind are not like hardware and software. The interaction of the body and the mind are non-linear whereas the interaction of computer hardware and software is linear.

After writing the first draft of this paper we encountered Donald's (2001) A Mind So Rare from which we quoted above. We also discovered that he also levels a similar criticism respectively to both the postmodern and strong AI schools both of which in their own way deny the existence of human consciousness as the executive agent of the mind. Here is Donald's take on the postmodernist denial of the role of the contribution of the physiosphere to human consciousness:

> Gadamer has argued that all human experience is essentially linguistic. In fact, in most Postmodern scholarship, conscious awareness of reality is often assumed to be entirely a product of language and sometimes, even more radically, of crafted texts. In this view, conscious awareness is something that is fashioned entirely in culture and has no objective reality to use as a referent. Dennet has referred to this aspect of consciousness as a collection of memes. More to the point, consciousness is seen as having no rivals, no equivalent in other beings, and mere sensate organisms do not qualify as having consciousness at all.

Donald (2001, pp. 29-30) is equally critical of the strong AI crowd who also deny the existence of human consciousness so that they can dream of creating human-like intelligence with non-conscious computer routines. The proponents of strong AI criticize Cartesian dualism because of their "belief in the existence of a little-man-in-the-head, or homunculus". But as Donald points out they replace the homunculus with "Dennett's unconscious cognitive demons" or "Minsky's unconscious agents".

> Under the surface of each of them is just a specialized neural machine, as empty as a tomb. They know, remember, think, and so on without being conscious. How can they do this, we may forgiven for asking, if those actions seem by their very nature conscious? Well their real agenda becomes visible at this point. Their answer is: because we know that computers can do these things unconsciously. We know this? Or we assume this? This is dogmatic stuff, the core of classic AI theory. They are slipping one past us.

The Symbolosphere – A Semantic Web

Words have a web of relationships with other words as pointed out by Deacon (1997, 2003) and Schumann (2003b). Some words such as nouns that point to a referent object in the physical world are defined in a straight forward manner but a word like motivation is understood "largely via its relationship to other words, for example, intention, incentive, desire, goal, reward, approach, action, tendency, wanting, emotion, arousal, valence (ibid.)." These words acquire meaning via reference to other words, not by reference to physical/perceptual things in the environment. Therefore the meanings of these words are relativistic and fuzzy.

Tomasello (1999, pp. 8-9), who also regards words or linguistic symbols as cultural artifacts, points out that language allows the child or any language user for that matter to "categorize and construe" the world in different ways. Language allows the same object may be construed in a number of different ways. For example a dog may be regarded also as "an animal, a pet, or a pest."

> As the child masters the linguistic symbols of her culture she thereby acquires the ability to adopt multiple perspective simultaneously on one and the same perceptual situation. As perspectivally based cognitive representations, then, linguistic symbols are based not on the recording of direct sensory or motor experience, as are the cognitive representations of other animal species and human infants, but rather on the way in which individuals choose to construe things out of a number of other ways they might have construed them, as embodied in the other available linguistic symbols that they might have chosen, but did not. Linguistics symbols thus free human cognition from the immediate perceptual situation not simply by enabling reference to things outside this situation but rather by enabling multiple simultaneous representations of each and every, indeed all possible, perceptual situations. (ibid.)

Tomasello's arguments quoted above support the notion that words and symbols are fuzzy, relativistic and hence multiperspectival. If one regards the symbolosphere as a mathematical set of symbols and the relationships among them and if one applies Gödel's Theorem then the set cannot be both complete and logically consistent. In other words one should expect a certain amount of fuzziness from the symbolosphere, which does not in any way compromise its usefulness as a way of describing human cognition and communication.

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