

Neo-Dualism and the Bifurcation of the Symbolosphere into the Mediasphere and the Human Mind

Robert K. Logan
 Department of Physics and McLuhan Programme
 University of Toronto

In a recent paper Logan and Schumann (in press) introduced the notion of neo-dualism in which phenomena are described in terms of two domains: the physiosphere and the symbolosphere. The physiosphere is simply the material world consisting of both living and non-living matter. The symbolosphere, originally introduced by Schumann (2003a & b), consists of the human mind and all its abstract thoughts and symbolic communication processes such as spoken and written language and the other products of the human mind such as music, art, mathematics, science, and technology. In the neo-dualistic approach of Logan and Schumann (in press) the human brain and the mind are seen as distinct entities with the brain belonging to the physiosphere and the mind to the symbolosphere. This model of neo-dualism grew out of Schumann's (2003a & b) notion of the symbolosphere and Logan's notion of the Extended Mind (1997, 2000 & in preparation), which posits that the mind is the product of the human brain plus verbal language.

In this paper we would like to examine the notion that the symbolosphere can be thought of as consisting of two separate sub-domains, the Mind and the mediasphere¹:

symbolosphere = Mind + mediasphere.

The first non-physical sub-domain, Mind, consists of the human mind and its abstract symbolic thoughts, language, culture, concepts and memes. The second sub-domain consists of the products of the human mind instantiated in the physiosphere, which we define as the mediasphere. The mediasphere includes all expressions or products of symbolic thought with the exception of symbolic thought itself. In other words we are making a distinction between the non-physical mind and its abstract thoughts, concepts and memes including language and culture on the one hand and those products of abstract thought that are instantiated or mediated in the physiosphere on the other hand. The mediasphere would include all expressions of spoken and written language, mathematics, science, computing, the Internet and its contents, tools, technology, buildings and

¹ I would like to acknowledge the assistance of John Schumann is developing the notion of the mediasphere described here. I formulated the notion of the mediasphere as the set of all mediated communications but it was Schumann who pointed out that the mediasphere would be almost coextensive with the symbolosphere. The assistance that John provided in developing the ideas here is another example of the role of the mediasphere in developing new ideas. As I am based in Toronto and John Schumann works out of Los Angeles without the Internet and email I might never have benefited from his thoughts and might easily have given up on this project without his important insight.

structures, all forms of visual art, music, dance and any human artifact or physical expression of culture all of which is a product of abstract thought.

Language and culture are part of Mind whereas expressions of language and culture are part of the mediasphere. This might at first seem confusing but what we are doing is making a distinction between language, the artifact that linguists study, and the actual practice or expression of language in day-to-day communication. De Saussure was the first to make this distinction between “langue,” as a system and a cultural institution and “parole,” the practice of a language by an individual. De Saussure considered that “languages were inherently collective and consensual communication systems (cited by Donald 1998, p. 50).” This distinction of language being a shared property of a community as well as the individuals who belong to that community has been an enduring paradigm of the linguistic community.

A similar division can be made between culture as a collective and consensual system of behavior of a society and the expression of that culture in the tools, artifacts and practices of that society. Geertz (1973, p. 8) defines culture as “an historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate and develop their knowledge about and attitudes towards life.” He goes on to add that, “culture is patterns for behavior not patterns of behavior.” There is a certain parallel between “langue” as defined by de Saussure and culture defined by Geertz as “patterns for behavior”, as both are symbolic and inherently consensual and communal. There is also a parallel between “parole” as defines by de Saussure and “patterns of behavior” as defined by Geertz as each entails praxis.

Having introduced the notion of the mediasphere as a separate sub-domain of the symbolosphere distinct from the human mind we are left with the following way of dividing up the world of phenomena. First we distinguish between the physiosphere and the symbolosphere as was done in Logan and Schumann (in press). We then make a distinction between Mind and its thoughts, and the products of the mind and pure thought that are instantiated in the physiosphere and which form the mediasphere. Our world therefore consists of the following domains:

1. the physiosphere, which corresponds to Descartes’ *res extensa*,
2. Mind including the human mind, its abstract thoughts, concepts, language, culture and memes, which corresponds to Descartes’ *res cogitans* (minus the notion of God),
3. the mediasphere which is the set of all the products of symbolic thought and hence all human artifacts and for which there is no corresponding element in Descartes’ duality scheme, and
4. the symbolosphere, which is the sum of Mind and the mediasphere.

If one considers all human artifacts as signs then the mediasphere can be identified with the semiosphere defined as the set of all human signs. Some definitions of the semiosphere include the signs of non-human animals and in this case the mediasphere

would only be the subset of the semiosphere containing human signs. As I am primarily interested in understanding human cognition and its relation to language and media I chose to use the designation of mediasphere rather than semiosphere. Another influence in developing the notion of the mediasphere is without a doubt the concept of cyberspace that was coined to describe the Internet and the World Wide Web. Cyberspace is embedded within the mediasphere and like the mediasphere itself is neither wholly of the mind nor wholly of the physiosphere but is the instantiation of symbolic thought on networked computers and hence is part of the mediasphere. The combination of the World Wide Web and a search engine like Google is the beginning of a map of the mediasphere.

The division of phenomena that we have made in this scheme of things parallels the way the Greeks divided their universe. They separated man and his artifacts from the rest of the world, which they referred to as physis (φύσις) or nature. Our words for physics and physical are derived from the Greek concept of physis or nature. The term physiosphere that is employed here and in Logan and Schumann (in press) also derives from the Greek word physis meaning nature. The term mediasphere corresponds to what the Greek's considered man's artifacts. The way that our formulation differs ever so slightly from the ancient Greek one is that we consider the human body including the brain as part of the physiosphere whereas the Greeks considered both the human body and the human mind as distinct from physis or nature. The correspondence between the Greek taxonomy and the one employed in this paper is as follows: nature = physiosphere; man's artifacts = mediasphere; and man = Mind.

The Interaction of the Spheres

The reader might wonder why we divided the symbolosphere into Mind and the mediasphere. Part of the motivation is to deal with an argument made by the monists to dismiss the dualist position. The monist claim, that if there exist two distinct domains one domain would not be able to affect the other or vice-versa. To their way of thinking these two domains would be non-communicating spheres and hence it is absurd to claim that there is more than one substance in the world. Of course we do not claim that there are literally two different substances but rather two different domains of phenomena that need to be described differently.

But our formulation of the symbolosphere as consisting Mind and the mediasphere helps to resolve this so-called paradox. In the Extended Mind model (Logan 1997, 2000 and in preparation) it is claimed that language, which represents symbolic communication and gave rise to Mind arose as a survival tool to cope with the complexity of hominid existence.

In an earlier study (Logan 1995, 2004b) it was posited that speech, writing, math, science, computing and the Internet form an evolutionary chain of languages with their own unique semantics and syntax. The mechanism for the transition from one language to the next language in the chain was the emergence of a new level of order to deal with the chaos of the information overload that the previous languages created and could not cope

with. In the Extended Mind model (in preparation) a similar mechanism is invoked to explain the emergence of speech.

Before the advent of speech hominid thought processes as inherited from our earliest ancestors were purely perceptual. As hominids acquired new skills, such as tool making, their lives increased in complexity. At first, this complexity could be handled through additional percepts, but at some point the complexity became too great. Perceptions alone did not provide sufficient abstraction to deal with the increased complexity. The hominid mind could no longer cope with the richness of life solely on the basis of its perceptual sensorium. In the information overload and chaos that ensued a new abstract level of order emerged in the form of verbal language and conceptual thinking...

What, we may ask, was the mechanism that allowed this transition to take place? Given that language is both a form of communication and an information processing system I came to the conclusion that the emergence of speech represented the actual transition from percept based thought to concept-based thought. The spoken word, as we shall see, is the actual medium or mechanism by which concepts are expressed or represented. We must be very careful at this juncture to make sure that we do not formulate the relationship of spoken language and conceptual thought as a linear causal one. Language did not give rise to concepts nor did concepts give rise to language, rather human speech and conceptualization emerged at exactly the same point in time creating the conditions for their mutual emergence. Language and conceptual thought are autocatalytic and the dynamically linked parts of a dynamic cognitive system, namely, the extended mind.

We are still left with the question, however, what developments in hominid evolution gave rise to the complexity, the information overload, and, hence, the chaos that led to the bifurcation from perception to conception and the emergence of speech. No single development or breakthrough triggered this event but rather the accumulation of developments which included the use of tools, the control of fire (and the larger social settings it engendered), the coordinated large scale hunting that resulted from the larger living groups and the emergence of non-verbal mimetic communication.

Percepts no longer had the richness with which to represent and model hominid experience once these elements of stone-age hunting and gathering society were in place. It was in this climate that speech emerged and the transition or bifurcation from purely perceptual thinking to conceptual thinking occurred. The initial concepts were, in fact, the very first words of spoken language. These words served as metaphors and strange attractors uniting many perceptual experiences in terms of a single word and, hence, a single concept. All of one's experiences and perceptions of water, for example, were captured with a single word, water, which also represented a simple concept. Spoken language and abstract conceptual thinking emerged at exactly the same time as the bifurcation

from the concrete percept based thinking of pre-lingual hominids to conceptualized based spoken language and thinking. This transition was the defining moment for the emergence of the fully human species *Homo sapiens sapiens*.

This description of the emergence of language is perhaps a just-so story, but it nevertheless suggests a mechanism of how the domain of the physiosphere and the symbolosphere could have interacted with each other. The rise of symbolic language as a survival mechanism, which was used to represent and cybernetically control the physical world, can be understood in terms of Darwinian evolution and hence provides a scientific model and hence a falsifiable hypothesis for explaining the interaction between the two domains of the physiosphere and the symbolosphere.

The explanation of the emergence of the mediasphere is contained within the explanation of the emergence of the symbolosphere. The symbolic language that arose as a survival tool of the human organism was instantiated in the physiosphere. It consisted of sound wave and the human vocal and aural tracts. The mechanism for the emergence of the other elements of the mediasphere such as writing, math, science and technology has been described above as resulting from the chaos of information overloads that gave rise to new forms of media and technology. Necessity in the form of information overloads in the human mind became the mother of invention in the mediasphere.

Interactions of Mind, the Mediasphere and the Physiosphere

We now turn to some examples in different spheres of human activity to demonstrate the role of the three domains of Mind, the mediasphere and the physiosphere and how they interact with each other.

The Mediasphere and Science

Science must be formulated in terms of spoken or written words and hence without the mediasphere the activity of science could not take place. Let us now turn to the scientific method and examine its connection to Mind, mediasphere and physiosphere. The scientific method consists of four steps:

- Step 1. one observes and describes a phenomenon in nature.
- Step 2. one generalizes one's observations and formulates a hypothesis.
- Step 3. one makes predictions based on one's hypothesis.
- Step 4. one devises a test of one's prediction and experimentally or empirically verifies one's predictions as a way to test one's hypothesis.

If one's experimental or empirical test fails to confirm one's prediction then steps 2 through 4 are repeated until one arrives at a hypothesis that can be experimentally verified.

Let us now follow these steps to show how they tie together the three domains of Mind, mediasphere and physiosphere.

In Step 1 the mind of the observer interacts with and observes or measures a phenomenon or phenomena in the physiosphere. The ability of the mind to observe phenomena in the physiosphere was essential to human survival and these skills, which were developed for survival purposes can be applied to scientific activity.

In Step 2 the mind formulates a hypothesis to explain the phenomena observed in the physiosphere but the formulation must be in terms of language and hence represents a transition from Mind to the mediasphere.

In Step 3 the mind articulates the hypothesis formulated in the mediasphere to make a prediction of an event that will take place in the physiosphere and which is formulated in the language of the mediasphere.

In Step 4 the mind interacts with the physiosphere in a similar way that it did in Step 1 to verify or falsify the predictions made in Step 3.

The description of the scientific method above was formulated as though there was only a single mind at work. In fact it is well known that science is a collaborative activity in which the communication between scientists is absolutely essential for the success of the enterprise. The four steps that comprise the scientific method are rarely if ever carried out by a single mind. The mediasphere plays a much greater role in the scientific enterprise than indicated above. Scientists share their observations made in Step 1 through the mediasphere. The hypothesis formulated in Step 2 is often the product of a team of researchers communicating with each other through the mediasphere. A prediction made by a scientist in Step 3 is often tested by another scientist in Step 4 who can only learn about the prediction because it has been formulated and communicated in the mediasphere. In fact until the hypothesis is tested independently by a number of researchers the hypothesis will not be trusted and it will not enter the canon of scientific knowledge. A successful hypothesis communicated through the mediasphere gives rise to new observations and a new cycle of the scientific method.

We can reformulate Kuhn's model of scientific revolutions in terms of our taxonomy. Kuhn categorizes scientific activity into normal and revolutionary science. In normal science a successful hypothesis or theory is articulated and applied to as many phenomena as possible. This process requires the communication through the mediasphere of all successful hypotheses, which is an integral part of scientific activity. The principle medium of the mediasphere is the scientific journal but private oral and written communication, seminars, colloquia and reports at scientific meetings also play an important role. When a heretofore successful hypothesis or theory can no longer explain a new observation a period of revolutionary science begins. The communication of the failure of the old hypothesis or theory is an essential part of this process. It is rare that the first scientist to observe an anomaly is the one who formulates a revolutionary new hypothesis. It was Einstein who explained the Michaelson-Morley experiment and formulated relativity theory. It was also Einstein who explained the photoelectric effect in terms of the quantization of the energy of light or the photon. This process of experimental observations being explained by a different scientist is formalized in physics by the designation of experimentalist and theorist. Without the mediasphere there could not be this division of functions within the scientific community.

The Mediasphere and Mathematics

Mathematics must be formulated in terms of words and symbols for quantities like numerals and mathematical operations like addition (+) or multiplication (x) for example. Mathematics as a mental activity therefore depends on the existence of the mediasphere. Schmandt-Besserat (1984; 1986) showed how early mathematics and mathematical notation developed as a result of the use of tallies such as scratches on a stick or sea shells and accounting tokens in the form of palpable three dimensional clay objects. Both tallies and accounting tokens are elements of the mediasphere.

One of the great breakthroughs in mathematics was the invention of zero and the place number system, which also led to negative numbers, algebra and calculus (Logan 1979 & 2004a). This development, which was a product of Hindu mathematicians, could not have occurred without two elements of the mediasphere, the abacus and alphabetic notation for written language and the notation of numerals. As was the case with many different alphabetic cultures numbers were notated using the letters of the alphabet with the first nine letters of the alphabet being used to notate 1, 2, ... 9 and the next nine being used to notate 10, 20, ... 90. Then one letter was used to notate 100 and another for a thousand. The Hindu mathematicians who used this system arrived at zero in the following manner when they went to write down the result of an abacus calculation in which they obtained a result like 602. Looking at the beads on the abacus it indicated that there were 6 hundreds and 2 ones and instead of writing out 602 using the symbol for 6 followed by the symbol for 100 followed by the symbol for 2 they wrote 6 sunya 2 where sunya means literally "leave a space" in Sanskrit so that 6 sunya 2 was read as 6 hundreds, no tens and two ones. They then notated sunya with a dot and then later with a circle, 0. This notation evolved into the place number system, which greatly simplified arithmetic operations.

By placing the sunya (zero) sign over a number they developed a notation for negative numbers so that -7 was read as 7 below zero. The sunya sign was also used to denote the unknown and was used to develop algebra, i.e. equations involving an unknown. Sunya was also used to talk about infinitesimals and infinity, which was achieved by dividing any numeral by sunya. The idea of sunya and place numbers was transmitted to the Arabs who translated sunya or "leave a space" into their language as sifr. These ideas first arrived in Europe through the Italians who traded with the Arabs and adopted their numerical notation system. This is how we came to regard our number system as Arabic numerals. The term cipher came directly from the Arabic sifr. The term cipher means both zero and a secret code, the latter denotation because the use of Arabic numerals was at first forbidden by the Church but was used by the Italian merchants as a secret code. In order to distinguish between the entire number system, which was called cipher and its unique element, 0, the term zero, short for zepharino (the Latinized form of cipher), came into use to denote 0.

Technology and the Mediasphere

Unlike science and mathematics, technologies or tools are actually physical objects. Their composition, however, is the result of conceptual thought and they are, therefore, totally within the domain of the mediasphere. In fact there is a sense in which a technology is a medium and vice-versa a medium is a technology. The movable type printing press or the computer is both a tool or technology and a medium of communication. The mechanisms that made the movable type printing press or a computer possible are all examples of technology whereas the function of the printing press or the computer is that of a medium of communication. The term technology stems from the ancient Greek word *technologia*, which means a systematic treatment, which itself is derived from *techne* the ancient Greek word meaning art.

Media such as the book, the telephone, radio, and television differ from tools such as the hammer, the bulldozer, the airplane, a building, and the light bulb, but there are also some very important overlaps. The most obvious is that all media function as tools serving our needs and all consist of some form of technology. One can also argue, however, that technologies become media, for example in the case of the light bulb when it is used to spell out advertising slogans. The road, the canal, and the railroad are also technologies that serve as media (grounds) for the automobile, the ship, and the train, respectively. The automobile, the ship, and the train have as their content passengers and freight. The content of a building are the people who inhabit it and use it plus the activities for which it is used. Moreover, the automobile functions as another kind of medium when it becomes a status symbol, a symbol of teenage rebellion, a symbol of a macho man's potency, or a haven for privacy. These meanings or functions of the automobile are often as important as its primary function of mobility.

If tools and technologies are extensions of its users as McLuhan (1964) claims then the mediasphere is also an extension of humans. Our bodies are extended by our tools, our technologies and the mediasphere.

Music and the Mediasphere

Where does a piece of music like a symphony exist — in the score, in its performance, in someone's memory as a meme or on a recording of a performance on a magnetic medium like a CD or a computer hard drive?

Music is physically nothing more than a series of sound waves, but so is speech. And both are more than just sound waves they embody ideas, emotions and spirit but where do they exist. I claim that music is another product of abstract conceptual thought that is instantiated as sound and as such belongs to the mediasphere. Let us see how music relates to the three domains of Mind, mediasphere and physiosphere by following the composition of Allegri's *Misere Mei, Deus* circa 1638 and its subsequent transcription by Mozart.

The Vatican, wanting to preserve its aura of mystery, forbade copies: unfortunately they were not prepared for a special visit in 1769 from a 14-year-old Mozart, who, on a visit to Rome with his father, heard it but twice and

transcribed it faithfully from memory, thus creating the first bootleg copy. In 1771 Mozart's copy was procured and published in England by the famous traveler and music historian Dr. Burney. (Wikipedia article: Gregorio_Allegri)

The original composition by Allegri was a product of this great composer mind, which was performed from a score that he presumably transcribed from the abstract ideas in his mind. That score a part of the mediasphere was translated into two performances in 1769 in the Vatican that Mozart attended and was able to transcribe from memory after one hearing using the second hearing to correct some minor errors in his first transcription. The composition was created in the mind of Allegri from whence it entered the mediasphere. Then through a performance in 1769 it entered into the mind of Mozart and from thence back into the mediasphere through his transcription. It has come down to our times as part of the music literature and sits as a meme in the minds of all those who have heard this composition in live performance or in a recording and were moved by what they heard.

Fine Arts and the Mediasphere

As our final example of objects in the mediasphere we will consider Botticelli's famous composition *The Birth of Venus*. The idea for this composition began in the mind of Botticelli circa 1485 but was realized in the mediasphere as tempera on canvas. The original painting sits today in the Uffizi gallery in Florence Italy. It is more than just the material oils out of which it is fashioned—it can be reproduced or it lives as a meme in the memory of those that were moved by their viewing of it in the Uffizi. It also exists in the mediasphere as a reproduction in countless art books as it is regarded as one of the greatest masterpieces of all times.

Popper's Three Worlds

After developing the concept of the mediasphere with its tripartite division of phenomena as described above I discovered the Tanner lecture delivered by Popper (1978) entitled *Three Worlds* in which he proposed “a view of the universe that recognizes at least three different but interacting sub-universes”. His model parallels ours but differs from it in one essential feature. Popper's three worlds are as follows:

World 1 – “the world that consists of physical bodies: of stones and of stars; of plants and animals; but also of radiation, and other forms of physical energy.”

World 2 – “the mental or psychological world, the world of our feelings of pain and of pleasure, of our thoughts, of our decisions, of our perceptions, and our observations.” It also includes both human and animal consciousness.

World 3 – “the world of the products of the human mind, such as languages; tales and stories and religious myths; scientific conjectures or theories; and mathematical constructions; songs and symphonies; paintings and sculptures. But also aeroplanes and airports and other feats of engineering.”

Popper's World 1 is identical to what we call the physiosphere including like us the human brain, which he also differentiates from the mind. Popper's World 2 is close to what we call Mind but differs in that he also includes the human perceptions and animal consciousness in World 2. Also Popper does not discuss language and culture so we do not know where he would include these phenomena. Popper's World 3 and what we call the mediasphere are more or less identical. All in all our approach resembles Popper's except for the fact that he places both human percepts and concepts in World 2 or Mind along with animal consciousness whereas we believe only concepts belong in Mind and not percepts and animal mentality. Our model differs from Poppers because of the emphasis we place on conceptualization and symbolic thought as opposed to his emphasis on consciousness, which we do not treat in our model.

Lost in the mediasphere

It is ironic that I only discovered Popper's lecture after publish my first paper on this topic and after I had developed the notion of the mediasphere. Susan Blackmore alerted me to Popper's lecture after reading our first paper. This demonstrates the service and disservice of the explosion of knowledge that characterizes our time. We have access to so much information yet there is almost too much information so that things can get lost in the overload. Despite the Internet and search engines, which I made liberal use of in researching this project, I never encountered Popper's lecture until its existence was pointed out to me by Blackmore.

All the elements of the mediasphere can be classified as some form of technology and can be classified in two sub-categories: tools like the hammer, airplanes, and bulldozers and the other actual media that convey symbolic messages. Technological media serve to amplify the mediasphere. Writing, print, books, newspapers, magazines, telegraph, telephone, radio, television, movies, the Internet, e-mail, cell phones, Blackberries -- all these technologies allow more and more semiotic interaction between human minds. This interaction expands mind by spreading conceptual information among more and more people. But it has a downside. The mediasphere is now so vast that things get lost in it (i.e. Popper's lecture) and then these need to be reinvented. It seems to us that the media-amplified symbolosphere produces simultaneously vast literacy and vast illiteracy in the sense that the mediasphere is so extensive that even those of us who are quite literate cannot be acquainted with the whole realms of the mediasphere. The World Wide Web and search engines like Google make it possible to track down items in the mediasphere relevant to one's research or interest but still one will never be able to encompass it all even after the projects to digitize all forms of human information are completed or more accurately partially completed.

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