HALF BRAIN FABLES AND FIGS IN PARADISE

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Half Brain Fables and Figs in Paradise

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The 3-D Mind
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À mes parents qui m'ont appris à penser

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Contents

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Log On: Hyperlinks

What is the mind compared to the brain? What is an idea compared to a word, a picture, a sign? One is "mental" and the other "physical"? One consists in thought and the other is a thing that contains thoughts about things? One is the kernel that hides and the other is the tangible shell or outer covering that does the hiding? But how do we know that thought really exists if it always hides? Has anyone ever seen a thought? Apparently not. Yet many of us have seen images of the brain. We have heard sound images and have seen visual imageries. So why do we hold on to this ghostly entity we call the "mind"? And why speak of the brain as a thing that contains or covers a non-thing? That is, why cast the whole brain in the mould of a "cortex," in the likeness of the bark that covers the inner fibre of human thought?

This book and the two that follow address these intriguing connections between brain, sign, and mind. Tentative answers to the many questions raised by this triad will be found at the intersection of three fields: neuropsychology, semiotics, and philosophy. Studies of how the brain functions from a neuropsychological perspective are examined together with philosophical considerations regarding the workings of language and the sign process. Efforts are also made to show how concepts adapted from neuropsychology and philosophy actually work in concrete symbolic situations. The illustrative material I have chosen for these exercises comes from different sources. In this book, the symbols I explore range from western naming practices to

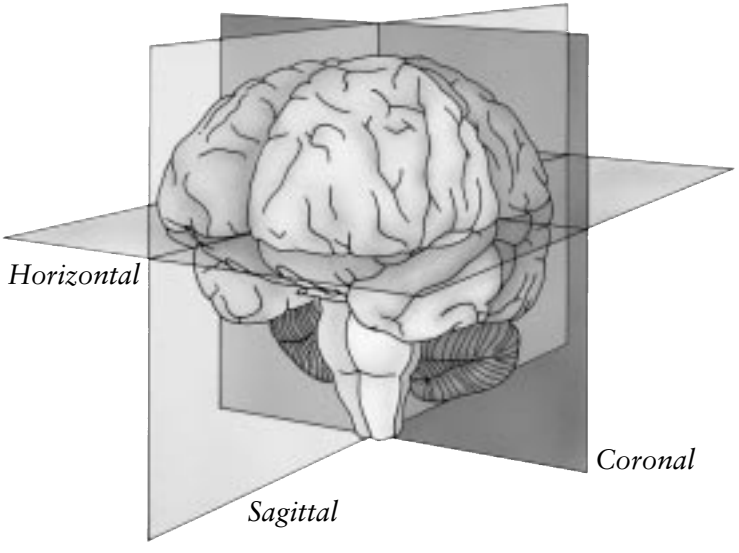
botanical imageries appearing in Genesis (the fig apron motif), English poetry (hemlocks in Longfellow's *Evangeline*), and native Mexican mythology (the Nahua corn myth). Semiotic studies offered in *The 3-D Mind 2* include personal anecdotes, cultural identity rhetoric (debates over Nubaness in Sudan), animal symbolism (frogs and beavers in Canada), body piercing, and foot fetishism (of biblical and pornographic proportions). In *The 3-D Mind 3* connections between brain and sign activities are illustrated through my close reading of a cat drawn by a child, scorpions in Revelation, and ritual prescriptions of heat and cold in Mexican Nahua agriculture.

While apparently eclectic, these analyses have one common goal, which is to shed light on how brain and language interface. Questions raised along the way follow a relatively simple plan reflecting the actual structure of the brain. This book focuses on the lateral aspects, that is, differences and connections between the cognitive functions of right and left hemispheres. This corresponds to the sagittal plane of neuroscience, the plane that dissects brains into right and left halves. The axial plane, which is tackled in *The 3-D Mind 2*, divides the upper and lower parts of brain structures and functions. To this plane corresponds divisions and linkages between the attentions and inhibitions of affect and judgment (normative, instrumental). *The 3-D Mind 3* takes a coronal, frontal, or transverse view of our subject matter. It emphasizes communications between anterior and posterior lobes of the brain and related investments of remembering and planning.

Our journey through *The 3-D Mind* echoes the x, y, z axes of Kinsbourne and Hiscock (1983). That is, "the vertical coordinate (y axis) delineates a progression from the spinal cord to the neocortex, the lateral dimension (x axis) is representative of left-right hemisphere differences in the cerebral cortex, and the z-axis represents an anteroposterior cerebral progression" (see Boliek and Obrzut 1995: 638).

This triad is fundamental to cerebral activity. Accordingly, all fibrous weavings of the brain can fall into one of three categories:

1 commissural neurons linking the two hemispheres;



The 3-D brain (2nd ed., Rosenzweig, Leiman, and Breedlove, *Biological Psychology*, 36)

2 projection fibres linking cortical and subcortical structures; and
3 associative connections between anterior and posterior lobes.

Thus "if one starts by thinking of the cortex as a sheet, it is essential to update this conception to accommodate the data concerning pathways, laminae, maps, and columns. With increasing degrees of accuracy we can think of the cortex as a *stack* of sheets, then as a stack of *sheets with methodical vertical connections*, then as a stack of sheets, *some of which are topographically mapped*, with methodical vertical connections, and finally, *as containing cells with highly specific origins and projections*" (Churchland 1986: 137). These are living fibres that permit movement in thought, language, and space.

Motions of the brain could be mapped on to those of flying. In order to take off and move through the air, birds and flying machines must work on three planes simultaneously. First, movements are generated along the lateral axis, with wings occasionally tipping to the right or the left if necessary. Second, these actions are synchronized with vertical movement obtained

by the action of wings maintaining the bird at a given altitude or propelling the body upward or downward. Third, coordination is required along the longitudinal axis, the plane that regulates variations in speed and direction.

On the whole, the brain follows similar principles. For it to take off and follow a determinate route, it must mix (1) adequate allocations of right and left brain cognitive processing; (2) a contextually specific balance of upper-cortical judgment and lower-subcortical affect; and (3) a correct proportioning of rear-lobe sensori-associative processing and front-lobe sensorimotor planning.

Given that language is a product of brain activity, one can expect sign activity to be cast in the same three-dimensional mould. Signs and meanings can be set in motion provided they evolve along cognitive lines, respond to normative and emotive attentions, and adopt particular forms of narrative direction and speed. The resulting weavings point to reticles of neural communications and meanings in language. The reticulum is the supporting structure of nervous tissue, also known as neuroglia (neuro-, and Gr. *glia*, glue). It consists of a special type of branched cells that binds together and supports the nervous tissue of the central nervous system. More generally, a reticle, from the Latin word *rete*, a net, denotes a network of fine lines. This is precisely what the sign process consists of: the constant spinning of a finely meshed network of lines and interstices, with lines crisscrossing each other in multifarious directions.

The philosophical implications of this overview of brain and sign activity are many. Among other things it means that theories of language and signification that give priority to either logic (structuralism), norm (functionalism), reason (positivism), emotion (psychoanalysis), or narration (hermeneutics) are all useful and incomplete at the same time. Each theoretical position offers a partial view of the complex phenomenon it is supposed to address.

A critical issue that follows directly from this three-dimensional mapping of brain and sign activity revolves around the age-old question of order versus chaos. When looking at weavings of neurons and signs, should we not give priority to chaos over

order – to rhizomes over the orderly branching of axes and disciplines? Is it not the case that the brain is so complex and sign activity so shifting and sliding that no serious generalization can be made as to how they actually operate? Should we not let the rule of relativity reign over phenomena that are utterly fractal? That is, should we not endorse the Heraclitean attitude generally prevailing in poststructural semiotics and postmodern philosophy? To use Heraclitean language, should we not let the primary element of fire reduce all absolutes to ashes, laying all essences and regularities to rest in the graveyard of western metaphysics? Should we not let scientific regularities or appearances thereof yield to the eternal flux and restlessness of all things?

Some will be inclined to reject the Heraclitean attitude and choose instead to give credit to science where credit is due. They will then opt to take advantage of advances in neuropsychology and extend our understanding of brain activity to studies of sign processing. But if they do so, they will be well advised not to trespass on preserves occupied by the humanities and the social sciences. Neuroscientists who attempt to exhaust the subject matter of semiotics will soon be invited to abide by the long-standing principles of modesty and open-mindedness that should prevail in the natural sciences. After all, good scientific practice is never imperialistic. Hard science assumes rather that any phenomenon we look at is part of a complex reality that can never be fully comprehended. This requires disciplinary focusing, as in normal neuroscience, the kind that puts everything in a paradigmatic perspective but does not require philosophical completeness. No theoretical frame worthy of science should ever be so dogmatic and comprehensive as to aim at eliminating other disciplines. Grand efforts to reach a synthesis of brain and sign activity from a neuroscientific perspective are therefore suspect from the start. This warning will meet with even greater approval amongst students of the humanities and the human sciences. More than anyone else, they will be suspicious of neuroscientific temptations to occupy semiotic and philosophical territorialities not under the purview of the natural sciences. When reading neurology into symbolism or

culture, prudence is in order; brain studies gone imperialistic are synonymous with neurobiological reductionism!

These comments bring us back to a difficult choice imposed by current debates pertaining to our subject matter: opting between the human and the natural sciences, between the soft wisdom of field-dependent relativism and the hard findings of nature-grounded realism. In this book and others that follow, I choose not to choose. More positively, I opt for a dialogue between modes of knowledge that have drifted apart over the centuries and continue to ignore one another with bewildering stubbornness. In one corner, we have hard scientific views on brain structures and functions. In the other, we have the contributions of humanities, social sciences, and philosophy to studies of language and culture. In the analyses to follow I give priority to dialogical exchanges between these exclusive contributions to studies of brain and sign activity. To be more accurate, my preference goes to a postdialogical strategy: developing a transdisciplinary perspective that cuts across fields of knowledge and schools of thought, towards a "subject matter" that is neither brain nor mind, strictly speaking, but rather indistinguishably both. The perspective in question starts with the assumption that distinctions between mind and brain no longer make sense. The question is whether or not they ever did.

This postdialogical endeavour is not an easy path to follow. Attempts to build bridges across fields of knowledge require that recognizances into each territory be done with rigour and a good grasp of current states of the art. Accordingly, the exigencies of disciplinary scholarship are reflected in the structure adopted throughout my essays in neurosemiotics. Each book proceeds methodically from neuropsychology to illustrative semiotics and philosophical afterthoughts. This overall plan, however, entails certain costs. For one thing, it shows dependence vis-à-vis the boundaries I wish to overcome, reproducing disciplinary partitions otherwise critiqued. Just as I address neuropsychological issues in their own terms, so too my semiotic analyses and philosophical considerations should stand on their own. Proceeding otherwise would be foolish. Inventing

each field from scratch is neither feasible nor useful. Contributions to their crossbreeding cannot be done at the expense of advances made in each domain.

All the same, this book and the others that follow take up the difficult task of exploring overlaps and hyperlinks between neuroscience, semiotics, and philosophy. While this does not preclude further specialization and conceptual fine-tuning within each field, the basic premise adopted here is that key concepts used in the human sciences are not and need not be qualitatively different from terms used and applied in the natural sciences. Note that the argument goes both ways: there is no self-evident reason that sign production and neural activity should be studied in isolation from one another. More than ever, theoretical modelling permitting fertilization across these fields is possible and long overdue. Thus we shall see that signification and neural communication converge on a middle ground phenomenon consisting of "nervous sign" activity, a mode of processing that is physical and meaningful all at once.

A postdialogical blending of neuroscience and the humanities can be applied to all three levels of brain and sign processing. On the lateral plane (*The 3-D Mind 1*), issues pertaining to right- and left-brain thinking can be linked to semiotic assemblages of similarities and differences. While couched in different languages, those of half-brain talk and theories of the "Code," the two approaches to cognitive activity are treading similar paths. On the vertical plane (*The 3-D Mind 2*), theories of instrumental reason or the unconscious seen from a Habermasian or Freudian perspective stand to benefit from research on prefrontal brain activity and LeDoux's emotional brain, and vice versa. The longitudinal dimension should also be revisited in a transdisciplinary perspective. In *The 3-D Mind 3*, I argue that neuropsychological studies of memory and planning activities can inspire and take inspiration from Derridean considerations about *différance*, Heidegger's conception of being-in-time, and the Ricœurian hermeneutics of narrative movement.

RETICLE 1

Cratylus Returns

This book calls two notions into question: first, the notion that we must attend to either the objective-physical or the subjective-mental aspects of sign activity; and second, the idea that we must choose between universals in nature (e.g., brain mechanisms) and fractals in culture (e.g., the polysemic evocations of metaphor). In hindsight we might say that this twofold dilemma concerning the particular and universal, subjective and objective aspects of language has been with us for a very long time. Actually it goes back to the dialogue pitting Socrates against Cratylus, a philosophical text written by Plato more than 2,300 years ago. In this dialogue Plato portrays Cratylus as a defender of Heraclitean becoming. Cratylus contends that signs of language are fixed through the whims of cultural conventions and arbitrary associations between words, ideas, and things. Socrates takes the opposite view. Word assemblages are grounded in the true nature of things and reflect permanent essences. Signs are *and should be* copies of what they signify.

A close reading of this dialogue sheds light on issues we are still grappling with. Socrates tries to convince Cratylus that names are not given simply by whim, custom, or taste. Rather, they are assigned on the basis of proper connections with reality. For instance, Oreste is "the man of the mountain," a name designed to signify the brutality, fierceness, and wildness of this hero's true nature. The word *soma* is another good example, one that is particularly relevant to our critique of signs and the brain viewed as shells or containers holding ideas, kernels of

truth, or essences of the mind. The word *soma* denotes indeed the body and is a natural match for what it means. In the words of Socrates, "some say that the body is the grave [*sema*] of the soul which may be thought to be buried in our present life; or again the index of the soul, because the soul gives indications to (*semainei*) the body; probably the Orphic poets were the inventors of the name, and they were under the impression that the soul is suffering the punishment of sin, and that the body is an enclosure or prison in which the soul is incarcerated, kept safe [*soma*, *sozetai*], as the name *ooma* implies, until the penalty is paid; according to this view, not even a letter of the word need be changed." But if this word is a natural match for what it means, how is it that the term is not found in all languages? Socrates admits that words other than *soma* can be used to signify the body. But his contention is that while letters, sounds, and syllables may vary, the forms and meanings intended can remain the same. Thus "the etymologist is not put out by the addition or transposition or subtraction of a letter or two, or indeed by the change of all the letters, for this need not interfere with the meaning," says Socrates.

Socrates views naming as an instrument naturally adapted to the work it does, which is to teach us the essences of things. It acts like a shuttle that disengages the warp from the woof. Words demarcate the nature of beings in the same way that a shuttle distinguishes threads in a web. The weaving metaphor is somewhat surprising as it implies an assemblage of threads and lines, as opposed to immutable elements independent from one another. Yet it aptly evokes Socrates's conception of naming, that is, an instrument that imitates through assemblages of original elements. Assemblages of sounds and words in language allow essences to be properly understood through combinations of relevant origins and component meanings. The true nature of a thing can thus be understood by delving into connections between words and their origins and also between component parts forming sentences.

But there is a problem, says Socrates. Origins have origins of their own that may be lost, and component parts such as words

in a sentence may be further unpacked into syllables and sounds. So where does the search for true meaning stop? Whence did the phonetic *s-o-m-a* assemblage come to mean the body or grave in the first place? Socrates's answer to this question lies in primary elements that cannot be further decomposed. Letters and syllables fulfil this function. They are like the notes and colours that musicians and painters use to imitate whatever it is that music and painting are designed to copy. For instance, the sound *r* is obtained through an agitation of the tongue and becomes an excellent instrument for the expression of motion and rapidity (as in roe, trembling, striking, etc.).

There is another problem, a riddle that concerns the moral aspects of Socratic epistemology. Is the teaching function of naming something that "essentially is" or something that is ethically desirable? Is Socrates reflecting on what *must be* in the sense of *what is*, or are his "teachings" to be understood in the sense of what *should be*? Is naming descriptive or prescriptive? The answer lies somewhere in between. In Cratylus, the question as to what names actually do is inseparable from considerations about what they should be doing. In order to do the teaching it is meant to, an instrument that weaves names to things must be designed correctly (by the legislator) and must be used properly (by the dialectician). But errors in naming can be made, and the instrument can go wrong. Some names may not fit designated things. For instance, names given to heroes or humans can be deceptive. Some are simply inherited from ancestors. Others may be exercises in wishful thinking (e.g., Eutychides, the son of good fortune).

But how do we know that a naming error has been made? Socrates finds the solution to this puzzle in the knowledge of things acquired through means other than names. Knowledge obtained through naming is subject to errors that can be assessed through independent means. Things and their nature can be known independently of words used to signify them and cannot be altered by names. In the final analysis direct knowledge of essences and things studied in themselves is the nobler and clearer path to truth. Knowing beyond words (and thinking

before speaking) is the only standard by which the rightness or wrongness of verbal assemblages and imitations can be assessed in the first place.

According to Socrates, a telling example of wrongful naming can be found in all names that rely on principles of motion and flux to capture the permanent essence of a particular virtue or divinity. Chronos and Rhea are two good examples of this. The word for "name" (*onoma*) is another instance of a word misrepresenting the true nature of a thing. If properly chosen, the word *onoma* should capture the essence of the noun or naming instrument itself, which is to teach things by means of words made in the natural likeness of things to be named and taught. But the word for "name" fails to do that. Instead of designating that which clearly captures the essence of a thing, it connotes the action of seeking, "signifying *on ou zetema* (being for which there is a search); as is still more obvious in *onomaston* (notable), which states in so many words that real existence is that for which there is a seeking (*on ou masma*); *aletheia* is also an agglomeration of *theia ale* (divine wandering), implying the divine motion of existence." A word denoting the fluid nature of things in motion is wrongfully applied to a stable tool essentially meant to capture fixed essences. The name-givers responsible for this confusion fall into the Heraclitean trap of imposing unhealthy notions of "natural restlessness" on to the nature of language. In doing so they deny and undermine the foundations of true knowledge. They lead others to believe "that all things leak like a pot, or imagine that the world is a man who has a running at the nose."

Socrates mentions *pseudos* as another naming instrument that misrepresents the true nature of things. Since it stands for falsehood, the term should evoke motion and instability. Instead, *pseudos* means stability and evokes signs of sleep-like stagnation and forced inaction. According to this name, things deemed to be false are things that do not move. The word is a derogatory misrepresentation of the permanent, the stable, and the universal. It confounds falsehood with immutability, the source of all truth.