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9 Animus inscriptus

An out-of-body embodiment?

Abstract: As a means of storing speech deemed to contain valuable thoughts, writing became associated with a retentive mind, which itself was likened to a writing surface, such as a papyrus scroll. Having first set forth various idiomatic iterations of the “mind-as-writing” analogy as found in Greco-Roman texts, I examine this analogy from the perspectives of cognitive linguistics, language evolution, phenomenology, and neuroscience. Then, applying criteria first formulated by Lakoff & Johnson ([1980] 2011), I address the question of whether “mind-as-writing” is indeed a metaphor and, if so, what implications this may hold for cognitive embodiment theory.

Keywords: authorial present, evolution, instrumentality, literacy, metaphor, metonymy, mirror neurons, phenomenology, similarity, simulation

9.1 The textual evidence

In principle, embodied cognition is a very ancient idea. On the testimony of Homer, archaic Greeks believed that thoughts, emotions, and memory were situated in the thoracic and abdominal organs, while the head, as the site of hearing and vision, served rather as a lookout tower than as a center of consciousness. Mental operations were carried on somewhere within the chest by two conscious entities, the *thumós* and the *phrên*. In moments of perplexity, these could advise the outwardly perceiving self, manifested in the face. In *Iliad* 1.188–194, Achilles is first aware of his external conflict with Agamemnon, then of an internal conflict in which his *khólos*, the spleen as organ of anger, threatens to float upward from his abdomen toward his *thumós*, the conscious center naturally primed to respond to threats with self-assertive indignation. Having now to decide whether to run Agamemnon through with his sword or to ‘stop his *khólos* and keep his *thumós* in check’, he turns his attention from the outer debate to the inner debate already in progress ‘down in his *phrénes* and *thumós*’. Then, as though situated in his head, he looks down, not only at the sword that his hand is about to wrench from its scabbard, but also at his “shaggy chest” within which this debate is taking place. It is at this point that Athena intervenes. Invisible to the assembled army, she steps behind him, grabs him by his hair, and

pulls him back, a sudden lifting of the head that ancient Greeks understood as “No”, a gesture equivalent to our side-to-side shaking of the head.⁴⁹

Besides the irascible *thumós*, there was that other organ of consciousness, the *phrên* (pl. *phrénes*). Identified with the diaphragm and lungs, this was associated with breathing and therefore with speech, not only the production of speech, but also its reception and retention. As Sullivan (1997: 29) interpreted it, “*phrénes* act as the seat of memory: if events are placed within in a ‘deep’ and ‘calm’ way, they are able to affect future action positively . . . [I]n Homer, we find the *phrénes* acting often as a location where topics are ‘placed’ or ‘held’ for consideration”. Circe tells Odysseus that in the land of the dead only the blind prophet, Tiresias, has been granted *phrénes* that are unimpaired (*empedoi*) and a mind (*nous*) able to draw breath (*pepnusthai*) (*Od.* 10.490–495). The latter verb apparently implied prudent speech, which in this context derives from the inner resources of the *phrénes*, specifically its intelligent aspect, the *nous*.⁵⁰

The introduction of the Phoenician alphabetic script toward the end of the Greek “Dark Ages” (ca. 700 BCE) provided a means of storing spoken discourse for future use. The contents of mind (*nous*), embodied in the *phrên* could now be offloaded into text. On the basis of functional similarity, it seemed appropriate to consider the *phrên* as a kind of writing surface, either a wax tablet (*déltos*) or a papyrus scroll (*bíblion*). The *phrên*, after all, had always been believed responsible for preserving whatever knowledge one had acquired from experience and from the teaching of others. Now closely identified with writing, it became the internal registry of internalized wisdom. Thus, ‘to write on the *phrên*’, i.e., to memorize another’s words verbatim, meant converting outer speech into inner text, a practice that might appropriately be termed *phrenography*.

By the fifth century, the retentive mind is regularly represented as a written surface. As Svenbro (1976: 200) observed, choral and dramatic poets were especially inclined to use this analogy. Since their texts had to be learnt verbatim by hired performers, “the interior of the actor [became] a space for writing”. Pindar, as early

49 Later, Zeus seems to perform the opposite gesture, the nod, suggesting assent (or resignation): Hom. *Il.* 17.442, *kinêsas de karê proti hon muthêsato thumon*, ‘He moved his head and spoke toward his *thumós*’. In seven other instances besides *Iliad* 1, Homeric heroes enter into, or refer to, dialogues with their *thumós* – in the *Iliad*: Odysseus (11.401–410), Menelaus (17. 89–105), Agenor (21.553–70), Hector (22.91–130), and Achilles (22.385); in the *Odyssey*: Odysseus (9. 299–302 and 20.9–24). When a hero heeds the voice of his *thumós*, he acts according to deeply held, socially coded impulses (cf. Plato’s designation of the warlike, spirited soul, the *thumoeidês* in *Republic* 4.435e, 439e).

50 Even before he is given the blood to taste, Tiresias demonstrates his speech capacity when he advises Odysseus on how to use that blood to revive the speech of the otherwise strengthless heads (*amenêna karêna*) of the shades. As in life, the blind Theban prophet, who was said to have understood the speech of birds, continued in the House of Hades to perceive the truth. See also Sullivan, 1988: 51–53.

as 474 BCE, had declared: “Read (*anágnote*) the name of the Olympic victor where it is written (*gégraptai*) in my *phrên*” (*Olymp.* 10.1–3). Aeschylus seemed especially fond of this analogy. In *The Suppliants* King Danaus tells his daughters to preserve his advice to them well “entabletted (*deltoumenas*)” (178–179). Consider Elektra’s words to Orestes in the *Choephoroi*: “Listen and write this in your *phrênes*” (450), “precisely what a dramatist might have said to an actor in the rehearsal” (Svenbro, 1976: 201). In his *Eumenides* (273–275) “Hades’ *phrên* is a careful transcriber (*deltógraphos*) of the accounts of human lives” and in *Prometheus Bound* (788–789), the tormented Titan commiserates with the Zeus-betrayed Io: “I will tell you, Io, the wanderings of your turbulent course: inscribe them on the mindful tablets (*mnêmosin deltois*) of your *phrênes*”.

Plato regarded the relation of mental processes to writing as problematic. For him, writing was at best a means of making memoranda and at worst a fad detrimental to the arts of memory and spontaneous philosophizing. In the *Theaetetus*, shortly after Socrates declares that thought is a dialogue of the soul with itself (190a), and a few pages before his aviary metaphor, he presents the image of a square of wax within the soul, a gift of Mnemosyne, mother of the Muses. “Whenever we wish to remember anything we see, hear, or think, we subject this wax to sensations and thoughts and imprint them on it just as we form impressions from signet rings” (191c9–191d8). If thought is a dialogue of the soul with itself, and what Plato is referring to is rationally controlled inner *speech*, not inner *writing*, then the wax impression represents the intensity of the perceptual input, not its meaning.⁵¹ As Plato’s Socrates saw it, a text presents speech in the absence of a speaker and, like a poor bastard child, it cannot explain or defend itself without the active intervention of its father (*Phaedrus* 275a–e).

When importing their psychological concepts from Greek philosophy and medicine, the Romans modeled their vital principle, *anima*, upon the Greek *psuché* and their conscious principle, *animus*, upon both *phrên* and *thumós*. Consequently, *animus* comprised such a wide range of cognitive activities that it is usually translated in English by the comprehensive term “mind”. Onians ([1951] 2011) drew up a representative list that was as broadly inclusive as Sullivan’s (1997: 169) listing for the *phrên*:

Consciousness with all the variations of emotion and thought is a matter of *animus*. To contemplate some action is “to have it in one’s *animus*;” to turn one’s attention to something, an idea within or an object in space, is “to turn the *animus* toward it;” courage, despair, etc., are matters of *animus*; to feel faint, to be on the way to losing consciousness, was in the Plautine phrase . .

⁵¹ When later, adding pun to metaphor, Socrates says that the wax (*kêros*) of memory is located in the heart (*kêr*) of the soul (194c6–10), he does seem to acknowledge, albeit fancifully, the traditional belief that auditory memories of speech somehow lodge in the chest. We still speak of rote learning as learning by heart. The Latin verb *recordari* ‘to remember’ meant to retrieve something from one’s heart.

. “it goes ill with one’s *animus*,” when a man loses consciousness his “*animus* leaves him;” to collect one’s faculties and spirits is “to collect one’s *animus*” – and so we might continue.

Located in the chest like its Greek counterparts, the *animus* was regarded as an inner writing surface. We find idiomatic usage of this concept as early as 166 BCE when, in his *Andria*, Terence has a character ask: “Should I be mindful (*memor essem*)?” then answer: “Those words . . . that were told to me were written on my *animus* (*scripta illa dicta sunt in animo*)” (282–283). Cicero repeats this trope in *De oratore* when he advises attorneys to develop a verbatim memory for opponents’ public statements, which should not simply be poured into one’s ears but inscribed on one’s *animus* [*non infundere in aures tuas orationem, sed in animo videantur inscribere* (2.355)].

The reading of an inscribed *animus* is specifically associated with the manipulation of papyrus scrolls rather than waxed tablets. In order to visualize the *animus* as a writable and readable text, we should therefore consider the nature and use of the scroll, or bookroll, the dominant textual medium until the last centuries of the Roman Empire when the spine-bound codex became the new standard. Schubart (1921: 110) summarized the ways in which reliefs and statues depict the reader:

[He] sits and holds with both hands the open scroll, which lies on his knees. He does not have the scroll extended to its entire length: instead, the beginning and the end are each rolled up, the latter securely grasped by the right hand, the former by the left. In the middle, between these two rolled portions, lies one small open surface, the portion of immediate reading, that is, one column of script or, if they are narrow, as many as four. In this way a scroll of several meters’ length could be held as a small object no bigger than a [modern] book. As one proceeds to read a scroll, one’s left hand draws the read column and rolls it up, while the right hand loosens its grip on the cylinder it holds and lets a new column slide toward the left.

Reading a scroll always implied *rolling* it, hence the noun *volumen* (volume), from the verb *volvere* ‘to roll’. So, when Cicero suggests that ‘Cato’s books ought to be read’, he actually says that his books ought to be rolled – *volvendi . . . sunt libri . . . Catonis* (*Brutus* 298). When a scroll is rolled forward, the text passing toward the left, the proper verb is *evolvere* ‘to unroll’. That is, the rows of letters were optically read from left to right, but the rectangular blocks of text, the *paginae*, were manually propelled from right to left – which, by the way, is exactly how the modern spine-bound book is read. When it is rolled backwards (the read text passing to the right), the verb is *revolvere*, an action necessary for a rereading of an earlier passage or completely rewinding the papyrus onto its rod. Since the *animus* includes verbal memory as one of its functions and since this memory is likened to a scroll, the recollection of verbally mediated information is represented as an act of manipulating that scroll.

So, 'to read in the *animus*' is not expressed as *legere in animo*, but rather in terms of the hands moving a scroll in the manner described by Schubart.⁵²

As a trope of mind, this scroll turning is not tense- or time-constrained. One can scroll not only through one's personally inscribed experiences but also one's cultural memory, as when Statius speaks of a person who 'rolls the admonitions [*volvitur monitus*] that the sage of Gargettus (sc. Epicurus) gives' (*Silv.* 2.2) or when Silius portrays Hannibal recalling his noble lineage by 'rolling the ancient chronicles of his ancestors (*volvens veterum memorata antiqua parentum*)' (*Pun.* 13.35). Nor is it confined to records of the past: it may also represent expectation or planning, as when Tacitus describes a person as *futura volvens*, implying the act of reading ahead in the scroll (*Ann.* 1.64).

The actual perusal of one's scroll-like *animus* is, however, a temporal process. Hence the verb *volvere*, when it refers to mental rehearsal, is often presented in its durative aspect, i.e., the present participle (*volvens*) and the imperfect tense, e.g., *olvebat*, and in its frequentative aspect (*volutare*). An early example of the latter, from Plautus' *The Captives*, vividly conveys the obsessive effects of anxiety: 'The more I keep rolling this business in my chest, the more my distress builds up in my mind' (*quanto in pectore hanc rem meo magis voluto/ tanto mi aegritudo auctior est in animo*) (781–782). In a similarly conversational context, Vergil's *Ninth Eclogue*, Lycidas asks his friend Moeris to sing a particular song for him. Moeris agrees, saying: 'Right now, Lycidas, I am silently rolling it over and over within myself to see if I can remember it' (*id quidem ago et tacitus, Lycida, mecum ipse voluto/ si valeam meminisse*) (37–38). That shepherds, presumably non-literate, would use this expression strongly suggests that it now functions as a conventional expression. The adjective *tacitus* may also be significant. When, for example, Livy tells us that he has often wondered how the Roman state would have fared in a war with Alexander of Macedon, he phrases it this way: 'During these periods of thought, I often kept silently rolling my mind' (*tacitus volutavi animum*) (*AUC.* 9.17.2). Here his knowledge of history, inscribed on his *animus*, may be accessed and read silently, i.e., subvocally.⁵³

So far, I have explored this figurative idiom as it appears in the Latin verbs for 'roll', derived from the **volv-* root, as in *volvere*, *evolvere*, *revolvere*, and *volutare*. There is yet another verb associated with scroll reading. As rolling is what the reader's hands do to a scroll, turning is how they do it. For this, the verb *vertere* is used, often in the frequentative (*versare*, or *vorsare*) to signify a rapid, repetitive turning. Plautus has one of his characters declare, 'I keep turning at once many items of business in

⁵² When a person is represented in a text as thinking and the verb *volvere* is used, it is customarily translated in English as 'to ponder' and, when paired with *animus*, as 'to turn over in the mind'. These English translations, while acceptable, cancel out the analogical implications of this idiom.

⁵³ Silently reading one's mind, as Vergil and Livy indicate, may have bearing on the question of silent reading in antiquity. For a review of this debate, see Collins, 2016, 181–187.

my heart' (*multas res simitu in meo corde vorso*) (*Trin.* 223). When Horace in *The Art of Poetry* advises those two aspiring playwrights, the Piso brothers, to read and reread the Greek classics, he tells them 'to keep turning them by nightly and daily hand' (*vos exemplaria graeca/ nocturna manu, versate diurna*) (*Ars* 268–269). In so doing, he re-literalizes this figurative idiom.

A passage from his contemporary, Livy, however, suggests that this expression may have already begun to lose its connection with scroll-manipulation. When the historian refers to the public viewing in 451 BCE of the first ten of the Twelve Tables engraved in bronze and erected in the Forum, he recounts how the citizens were asked to 'go and read (*legere*) the proposed laws' and were then to 'turn about in their minds within themselves each particular item' (*versarent in animis secum unamquemque*) (*AUC.* 3.34). When it was asked that they think over – *versarent* – these laws, this could not by any means be imagined as repeatedly turning a scroll, since these laws were engraved in bronze. Livy's verb choice suggests that *versare* (*in animo* or *animis*) had already become a conventional idiom decoupled from any embodied simulation of physical action.

9.2 Internal embodiment

Metaphor has two separate principles, similarity and simulation – similarity appears when one recognizes that entity A resembles entity B, simulation when one associates entity A with experience B. In Aristotle's lexicon, *mimēsis* would encompass both similarity and simulation, but for *literary* metaphor, as distinct from dramatic enactment, similarity was for millennia accepted as its one underlying principle, a tradition reinforced in the 20th century by structural linguists, such as Jakobson (1960). With the advent of cognitive linguistics and poetics, however, metaphor theory underwent a radical revision and, thanks to the efforts of George Lakoff and his colleagues, beginning in the late 1970s, the simulation principle gained ascendancy. Accordingly, metaphor, i.e., conceptual metaphor, was said to associate 1) a *target* concept, typically an abstract entity to which language assigns a name, a placeholder for an otherwise elusive set of connotations, with 2) a *source* domain embodied in one or more sensorimotor simulations on or below the threshold of consciousness. While maintaining as its central insight the dependence of conscious thought on sensorimotor traces, the theory of cognitive embodiment responded to and incorporated other lines of cognitive research. Over the past four decades it has evolved considerably, reconstructing its scaffolding while strengthening its foundations.

Such talk of "scaffolding" and "foundations" illustrates the 'THEORIES ARE BUILDINGS' metaphor that was the introductory focus of Joseph Grady's *Foundations of Meaning: Primary Metaphors and Primary Scenes*, his 1997 dissertation directed by George Lakoff. As Grady claimed, this conceptual metaphor cannot be interpreted as

embodied without decomposing this complex source concept, “buildings”, into what he termed “primary metaphors”. These atomistic elements, he argued, represent the early childhood association of subjective states, e.g., affection with the sensation of bodily warmth and knowing with the sense of seeing and with the motor program of grasping. The conceptual/conventional metaphors that form the basis of adult speech thus reproduces a child’s conflation of general concepts with sensorimotor episodes, or “primary scenes”. As for ‘THEORIES ARE BUILDINGS’, this, Grady (1997: 66) argues, may be reducible to the primary metaphor ‘VIABILITY IS ERECTNESS’, grounded in the experience that standing upright signifies physical health. Two years later, Lakoff & Johnson (1999) updated their original theory (1980) and, in a meta-analysis of what had become a widely collaborative enterprise, endorsed Grady’s findings.

Though phrases such as ‘write this on your *phrên*’ or ‘I roll this in my *animus*’ strongly imply sensorimotor simulation, their underlying analogy, “mind-as-writing” or any approximation thereof fails to appear in any list of conceptual metaphors compiled by George Lakoff and his associates over the decades. I must therefore hesitate to identify this phrase as metaphor, choosing for now to refer to it as an idiomatic analogy or a trope. There are several reasons for suspecting that any metaphoricality it may possess is atypical:

1. “Mind” (*phrên*, *animus*), as a subjective abstraction would make it an ideal candidate for metaphor, yet the wide variety of cognitive actions and states this word encompasses make it a target that no single source term can be adequately mapped onto.
2. Writing, as its source domain, presupposes two distinct actions: writing and reading, which, when imagined as mental activities, correspond to the initial reception and storage of verbal information and its subsequent retrieval as re-hearing or re-saying. While the context in which this analogy appears usually makes clear whether writing or reading is the focus, each action is a correlative of the other: writing *on* the mind is meaningless unless the “text” is also readable and reading *from* the mind is impossible unless one has already “inscribed” something there.
3. Just as the conscious activity of thought is verbally mediated, so also, needless to say, are the activities of writing and reading. This means that the activity of ‘mind’ and of ‘writing’, both rooted in language, are not sufficiently distinct semantic domains to trigger that sudden conceptual epiphany we associate with metaphor.
4. Due to their categorial similarity, the two terms can be reversed: the formula “writing-as-mind”, in the sense that a text constitutes a piece of mental discourse, is as meaningful as “mind-as-writing”, thus violating the principle of directionality (Lakoff & Johnson, 1980; Grady, 1999)
5. For “mind-as-writing” to qualify as metaphor according to Grady-revised embodiment theory, the source concept, WRITING, i.e., the inscribing and reading of words, would need to be reducible to the sort of primary-scene elements a one-to-three-year-old child could link to the concept MIND’. But a child of that age

would not yet have had the experience of writing or reading words, much less formed an abstract notion of mind.

This fourth objection is especially telling, because the hand-eye control of a writing instrument on a flat writing surface and the coordinated movements involved in reading it presuppose a perceptuomotor system extendable into an external object – an instrument. According to Grady (1997: 249–250), “The notion of Instrumentality . . . does not fit the characterization of primary scenes in that it is not immediately and directly apprehensible [as are] pushing, squeezing, shaking, etc. . . . Instrumentality relates to purposes and larger frames than the action itself, and therefore by definition, cannot be an element of a single primary scene”.

This exclusion of instruments, or tools, from the catalog of source domains seems odd, however, since the (meta)metaphorical phrase “metaphor is a tool [or an instrument]” appears throughout the theoretical literature, e.g., “Metaphor is a tool so ordinary that we use it unconsciously and automatically, with so little effort that we hardly notice it” (Lakoff & Turner, [1989] 2009: xi) “[C]onceptual metaphor is one of our central intellectual tools. It is the principal instrument of abstract reason” (Lakoff & Johnson, 1999: 155).⁵⁴ One plausible explanation is that, like ‘METAPHOR IS A TOOL’ and ‘THEORIES ARE BUILDINGS’, ‘MIND IS WRITING’ is a composite metaphor, but, if it is, it cannot be composed of any primary elements, since tools are external “things”. That is, writing and reading are activities not completed wholly within the sensorimotor systems of the brain, but require external appurtenances.

At a level even more basic than ‘METAPHOR IS A TOOL’ is ‘LANGUAGE IS A TOOL’, an expression so ubiquitous now as to seem a categorical statement, not a metaphor.⁵⁵ Cliché or not, there is some truth to it: language is a means by which humans accomplish something, viz. information sharing. As a tool, spontaneous spoken language lacks palpable materiality, yet it exists outside the individual user as a social utility (Borghi et al., 2013). Moreover, like any skillfully deployed tool, its users learn to operate it largely below the level of conscious intention: we sense an impulse to utter a thought or express a feeling and nanoseconds later hear our words and sentences filling the space between ourselves and others.

⁵⁴ This metaphor, though a favorite of Lakovian linguists, is not restricted to this school. Using the phrases ‘metaphors are tools’, ‘a metaphor is a tool’, ‘tools are instruments’ and ‘a metaphor is an instrument’ a Google search, as of August, 2017, yielded close to a quarter million results.

⁵⁵ As of August 2017, a Google search returned 8,560,000 mentions of ‘language is a tool’ and 397,000 for ‘language is an instrument’.

9.3 External embodiment

If the phrase, ‘mind is writing’, cannot be resolved into primary metaphors that simulate internal experiences, perhaps it represents another kind of embodiment. In order to explore the possibility that those Greeks and Romans who used this analogy understood it as tool use, i.e., as *external* embodiment, I will now consider instrumentality from three perspectives: 1) human evolution, 2) phenomenology, and 3) contemporary neuroscience.

Compared with that of other genera, the evolution of genus *Homo* has been remarkably rapid. Following the anatomical readjustment of bipedalism over an estimated period of from 6 to 4 million years ago, the adaptation that most accounts for its successful survival was no doubt tool making (circa 2.5 million years ago), a skill that seems to have co-evolved with gestural communication. In captivity, chimps and bonobos show a capacity to use fingers and hands to point to objects of interest, but there is little evidence that they do so in the wild. Pointing as a means of directing attention, which human infants exhibit almost from birth, mimics a reaching out to touch and grasp an object. This action becomes spatially extended by means of hand-held objects, e.g., stones, spears, and other projectiles that the eyes aim, the arm swings, and the hands release, an external embodiment implied in the (meta) metaphor of source and target (Rizzolatti & Arbib, 1998; Soylu et al., 2014).

As their tool use improved, humans came to rely more on the right hand for accuracy, an asymmetry that in the brain corresponds to left-hemispheric dominance and correlates with the evolution of language (Arbib, 2009; 2011; Calvin, 1993; Corballis, 2002). The adoption of arbitrary sounds and rule-governed grammar, perhaps as early as 150 thousand years ago, led to the naming and sharing of general concepts, such as introspected feelings, and notions of social responsibility. Once language fully emerged, the mechanisms of biological evolution became increasingly fine-tuned by cultural evolution. Natural selection had provided rich internal sensorimotor resources, but our *external* resources had to be invented, practiced, and taught to others.

All of us have the natural aptitude to acquire language, but we do not achieve that skill without the help of others. Once we do master it, though, we can say almost anything. This impromptu outpouring of meanings is possible because words, phrases, and grammar seem always available, a fact that makes spontaneously uttered verbal elements correspond to found tools, such as a stick one might pick up to steady one’s steps, a stone to crack nuts, or leaves to cup water. Like a landscape strewn with *bricolage*, our brains and social environment are stocked with an inexhaustible supply of usable verbal items. But unlike the found tools that nonhuman species (higher apes and some birds) can also employ, uniquely human tools are *made*, i.e., modified to perform particular tasks or to fashion other objects and tools, for which purposes they are preserved, reused, copied, and redesigned. The linguistic tools that specifically correspond to made tools are verbal artifacts, complex structures of

words one saves to resay either to oneself or to others or rethink in the form of inner, subvocal speech (Collins, 2013).

As a customized tool, a verbal artifact is grasped, as it were, by the language centers and sensorimotor networks of the brain. This inward embodiment allows us to perform yet another function: to simulate perceptions and actions identifiable with the narrator and/or particular characters, extend *outward* into those thereby empathetically imagined others, and assume their perspectives within their imagined worlds (Collins, 2016). In an oral culture such verbal artifacts are preserved in memory and transmitted to others through conversational exchange, storytelling, and performance, but whenever and wherever literacy is introduced, these artifacts become standalone tools, no longer modifiable by memory lapses or improvising performers.

As a systematic inquiry into our experience of ourselves-in-the-world, phenomenology posits that first-person consciousness is ever linked to concrete or abstract objects, be they sensed in the present, recollected from the past, projected into the future, or merely imagined. Subjective awareness thus comprises a range of cognitive activities as varied as those attributed to the *phrên* and the *animus*. Whatever the mind at any moment directs its attention toward, i.e., ‘intends’, constitutes that mind and, insofar as language signifies our being-in-the-world, it signifies intentionality.

This merging of inner and outer seems to have drawn phenomenologists to analyze the function of tools and instrumentality generally. As Heidegger ([1927] 1962) wrote, tools are sometimes simply “present-to-hand”, e.g., a hammer in a toolbox. But “the less we just stare at the *hammer-Thing*, and the more we seize hold of it and use it, the more primordial does our relationship to it become, and the more unveiledly is it encountered as that which it is – as equipment. The hammering itself uncovers the specific ‘manipulability’ [Handlichkeit] of the hammer. The kind of Being which equipment possesses – in which it manifests itself in its own right – we call ‘readiness-to-hand’ [Zuhandenheit]. . . . [When] we deal with [tools] by using them and manipulating them, this activity is not a blind one; it has its own kind of sight” (I. 3. 69, p. 98).

Merleau-Ponty ([1945] 1962: 143) picked up on this suggestive passage with his own example of the blind man and his cane: “The blind man’s stick has ceased to be an *object* for him, and is no longer perceived for itself; its point has become an area of sensitivity, extending the scope and active radius of touch . . . To get used to a hat, a car or a stick is to be transplanted into them, or conversely to incorporate them into the bulk of our own body. Habit expresses our power of dilating our being in the world, or changing our existence by appropriating fresh instruments”.

Merleau-Ponty’s reference to a car as a tool brings to mind some of the instances of Lakoff & Johnson’s ([1980] 2011) metaphor ‘LOVE IS A JOURNEY’. But as a philosopher of technology, Leroi-Gourhan (1993), made a useful distinction between direct and indirect tool-augmented motor functions. In a direct function, the hand (occasionally

some other part of the body) moves and exerts force on a tool, causing it to move in the same direction as the hand, but now with enhanced speed, force, accuracy, etc. The motor schemas that hand and arm combine into an action program, are reproduced in the movements of the tool, e.g., a hammer, a pair of pliers, a rake – or a pen. An indirect motor function, such as driving a car, is one in which the motion of the body and the tool are *not* aligned.⁵⁶

In the process of assessing the unconscious substrate of the waking brain as “tacit knowledge”, Polanyi (1958: 55–56) alluded to Merleau-Ponty’s example: “Think how a blind man feels his way by the use of a stick, which involves transposing the shocks transmitted to his hand and the muscles holding the stick into an awareness of the things touched at the point of the stick”. Then, returning to Heidegger’s hammer, he proposed another useful distinction:

When we use a hammer to drive in a nail, we attend to both nail and hammer, *but in a different way*. We *watch* the effect of our strokes on the nail and try to wield the hammer so as to hit the nail most effectively. When we bring down the hammer we do not feel that its handle has struck our palm but that its head has struck the nail. Yet in a sense we are certainly alert to the feelings in our palm and the fingers that hold the hammer. They guide us in handling it effectively, and the degree of attention that we give to the nail is given to the same extent but in a different way to these feelings. The difference may be stated by saying that the latter are not, like the nail, *objects* of our attention, but *instruments* of it [my italics]. They are not watched in themselves; we watch something else while keeping intensely aware of them. I have a *subsidiary awareness* of the feeling in the palm of my hand which is merged into my *focal awareness* of my driving in the nail. (Polanyi, 1958: 57)

In other words, internally embodied sensorimotor feedback guides our tool, which as a prosthetic device permits us now to achieve *external* embodiment.

My third perspective on the “mind-as-writing” analogy is that of neuroscience, specifically those studies that have shown how language is embodied on two levels, the semantic and the physiological. On the semantic level, language conveys information through lexical and syntactical signs that trigger simulations – of perceptions, predominantly visual, in response to most nouns and of sensorimotor effects in response to action verbs, directional prepositions, and many adverbs. On the physiological level, both heard speech and spontaneous thought, mediated by speech, activate perceptual simulations in auditory cortex and in the sensorimotor networks responsible for articulation (Oppenheim & Dell, 2010; Sokolov, 1972; Vygotsky, [1934] 1986).

⁵⁶ Driving a car may involve over-learned motor routines and turning the wheel may indeed reproduce the arm and shoulder swing used in turning the body while walking, but a car is a hand (and foot)-activated machine that requires indirect control and an energy source independent of the driver’s body.

Silently recalling from memory a *non*-spontaneous (pre-composed) discourse, e.g., a traditional oral narrative, a joke, a proverb, or text, requires the same embodiment as inner speech. Rehearsing to oneself any verbal artifact, oral or literate, therefore activates the same areas of the brain responsible for controlling the articulatory muscles of the diaphragm, chest, larynx, jaw, and tongue as well as the auditory system associated with phonemic recognition. Moreover, since reading also enlists the visual system to recognize graphemes and the motor networks to control discrete eye movements, opening a book and perusing its words initiates a complexly coordinated interaction of motor, auditory, and visual systems (Mellmann, 2015).

The direct linkage of visual and auditory input with motor output is a well-researched feature of vertebrate biology that psychologists have long sought to study in the human animal. One of its more recent breakthroughs came in the 1980s when a team of neuroscientists at the University of Parma under the leadership of Giacomo Rizzolatti reported that in monkey brains certain premotor neurons, associated with reaching and grasping, fire as soon as an animal observes an experimenter's reaching and grasping hand movements. (Subsequent research has indicated that sounds associated with such actions evoke similar neural activation). This cortical response by what they named "mirror neurons" demonstrates embodied simulation externally prompted.

Later brain imaging experiments have supported the hypothesis that mirror neurons fire in our human brain as well, not only when we observe objects of interest, but also when we think about them using inner speech. Moreover, if we observe a hand tool, e.g., a hammer or pliers, or subvocally "say" its name, our corresponding motor areas light up (Gallese & Lakoff, 2005; Grafton et al., 1997). Nonhuman primates, unless they are laboratory-trained to use a simple tool, show no neural response when they observe an experimenter using that tool to manipulate an object, suggesting that our primate cousins are locked into minds restricted to a primary-scene repertoire of responses. As Grady (1997: 28) stated, the target concepts that embodied sensorimotor-based sources simulate, "reflect the operation of extremely basic cognitive mechanisms – many of which we share with 'lower' animals". If this is true of target concepts, it is equally true that the source domains of primary metaphors also reflect the pre-tool, pre-linguistic stage of our own hominin evolution.

9.4 Discussion

Having surveyed internal and external embodiment from various perspectives, we need now to examine more closely that classical analogy, "mind-as-writing", to determine whether or not it may be classified as metaphor and reframed as 'MIND IS WRITING'.

The claim that conceptual (i.e., correlation) metaphors are cognitive universals seems true of their source domains, but not necessarily true of their target concepts.

LOVE, FREEDOM, JUSTICE, HAPPINESS, and similarly abstract concepts are targets that change meaning across time and cultures. Inherent instability such as theirs is precisely why metaphor was invented. But, though it must be continually re-grounded in nature, culture has always adhered to metaphor – to targets and sometimes also to sources. Greek and Latin, like all other natural languages, are filled with nouns and verbs grounded in internally embodied experiences, but the explicit metaphors most often found in Homer and later classical texts tend to represent culturally defined external entities. When Aristotle, borrowing from Homer, chose ‘ACHILLES IS A LION’ (*Rhetoric* 3.4.1) to exemplify this trope, he must have understood that his readers were far less likely to have experienced a lion (or a Cyclops or a three-headed dog or a demigod) in a face-to-face encounter than in a culturally transmitted narrative.⁵⁷

Viewed as metaphor, ‘MIND IS WRITING’ appears anomalous in that both target and source are culturally grounded, which is to say, both are unstably grounded. As I pointed out earlier, the classical target, *phrên* or *animus*, encompasses a wide array of cognitive processes and its source domain, writing, does not depend on “primary scenes” for its content. Writing instead presupposes the practiced experience of manually controlling and visually monitoring culturally specific objects and actions – productive implements (pen, stylus, wax tablet, papyrus scroll, etc.) and receptive conventions (performance, scroll manipulation, recitation, silent reading, etc.).

Instrumentality raises yet another issue: since writing and reading tools, when in use, are physically connected to writer and reader, the “principle of contiguity” (Jakobson, 1960) suggests that ‘MIND IS WRITING’ may not be metaphor at all, but metonymy, or that at least it lies on the border between the two tropes. If it were traditional metonymy, literally “name transfer”, the tool would simply substitute for its user, as in “the pen is mightier than the sword”. If metonymy is more broadly defined to include synecdoche, a writer’s pen and paper or a reader’s scroll, as extensions of each user, become parts of a composite whole, a temporary bodily augmentation like a blind man’s stick or a carpenter’s hammer.

There is indeed something metonymic about this metaphor-like analogy, but a stronger argument still remains for classifying it as metaphor. As it turns out, Lakovian theory has reserved one category that may fit ‘MIND IS WRITING’. This would be “image metaphor” or, more recently styled, “resemblance metaphor” (Grady, 1999), the Aristotelian model that Jakobson (1960) had rechristened as the “similarity principle”. In its classical exemplar, ‘ACHILLES IS A LION’, “Achilles” shares some of the features of “lion”. Were we to illustrate this resemblance metaphor by a Venn diagram, target and source would be represented by two ovals that partially overlap

⁵⁷ Cultural factors in metaphor have emerged in recent decades as indicated by publications with titles such as “Taking Metaphor Out of Our Heads and Into the Cultural World”, see Gibbs, 1999; “Culture Regained: Situated and Compound Image Schemas”, see Kimmel, 2005; and *Metaphor in Culture: Universality and Variation*, see Kövecses, 2007.

in a space, the *tertium comparationis*, containing such shared properties as strength, bravery, and bloodthirsty intent. ‘MIND IS WRITING’ also asserts resemblance and does so in such simile-like comparisons as ‘MIND IS [LIKE] TEXT’, ‘LEARNING IS [LIKE] INSCRIPTION’, and ‘THOUGHT IS [LIKE] REREADING A TEXT’. As for its overlapping area, this is verbally mediated thought as represented in both inner speech and outer text.

It is also worth noting how metaphor reproduces the asymmetrical structure of the simple sentence. When processing a sentence, our primary attention is focused on the subject, since it represents the topic of the ongoing discourse, whereas the predicate supplements or clarifies that subject. Similarly, a typical metaphor first introduces its target, then the source chosen to momentarily illuminate that target before fading away. The subject–predicate asymmetry correlates with that of figure/ground perception in Gestalt theory, the focalized figure corresponding to the target and the peripheral ground that situates it corresponding to the source.

Unlike conceptual metaphor, resemblance metaphor is readily reversed, for if A shares certain properties with B, B shares identical properties with A. Thus if ‘MIND IS WRITING’, then ‘WRITING IS MIND’, since their shared properties are the same language-mediated states and activities. My mind can store another’s words as though they were a written text *and*, by reversing the process, I can access through another’s text that other’s mind, a transformation as magical as the figure-ground reversal of the Rubin vase and the Necker cube.

To experience text-as-mind is to enter a quasi-oral discourse space, the same mental trick we perform whenever we read a personal letter. This sense of epistolary presence is the probable origin of “authorial present”, the convention that non-epistolary writers adopted when citing other authors. Thus, when Plato refers to writings of Pindar or Heraclitus, he uses the idiom ‘says’ (*legei*) (*Meno* 81b; *Cratylus* 402a). Latin antiquarians such as Valerius Maximus and Gellius, were especially fond of the *dicit*, as were commentators, such as Servius and Macrobius, and Christian theologians who regularly introduced proof-texts with *ut Scriptura dicit*. This sense of presence may also explain the use of an author’s name for that author’s book(s), which appears increasingly in Latin texts from the 4th to the 9th centuries. Though now commonly designated metonymy, there is a significant difference between “We’ve a lot of Vergil in our collection” and “I’ve read a lot of Vergil”. The former represents the book as product, but the latter represents its writer as person and, like the *legei* and *dicit* idioms, is consistent with the ‘WRITING IS MIND’ formula.

9.5 Conclusions

Theories of mind, when not dualistic, supernatural, or otherwise disembodied, have been modeled on whatever technology seemed at the time the most innovative. In the early eighteenth century, electricity seemed key to the brain’s functioning and in the late twentieth it was computer circuitry. Greek and Roman philosophers of mind were

intrigued by mathematical and geometric models, but the broad prestige of rhetoric favored a linguistic model, viz., alphabetic script. Though writing was never viewed (except perhaps by Plato) as radically opposed to orality, its relation to mind seemed particularly meaningful to professional writers, the literate class to whom we owe virtually all our knowledge of the past.

‘MIND IS WRITING’ apparently began as a novel metaphor before becoming a conventional one associated with the physical acts of writing and reading a papyrus scroll. By the time that spine-bound codices became the state-of-the-art medium, it had already become a dead metaphor. Yet, thanks to its power to reverse itself into ‘WRITING IS MIND’, it could survive and guarantee the makers of verbal artifacts the kind of afterlife that empowers them to “speak” within the minds of readers in a perpetual present.

‘MIND IS WRITING’, like ‘WRITING IS MIND’, is difficult to categorize. It asserts resemblance, but is not a one-shot resemblance metaphor in which two items are momentarily linked by a novel act of imagination, e.g., “Juliet is the sun”. Though it shares with embodied metaphor the capacity to generate a variety of metaphorical expressions and conventional idioms, its embodiment is outwardly projected into the instruments of writing and reading. Though its contiguity of user and instrument implies metonymy, it does not link mind *to* tool, but mind *through* tool to text.

To conclude: ‘MIND IS WRITING’ began as the conversion of outer speech to inner text. Its mirror image, ‘WRITING IS MIND’ was, and continues to function as, the conversion of outer text to inner speech. At this point, the only satisfactory conclusion I can offer is that this reversible metaphor-like analogy, deeply embedded as it is in literate culture, is wholly unique and *sui generis*.

Bibliography

- Arbib, M. (2009). Evolving the Language-Ready Brain and the Social Mechanisms that Support Language. *Journal of Communication Disorders*, 42, 263–271.
- Arbib, M. (2011). From Mirror Neurons to Complex Imitation in the Evolution of Language and Tool Use. *Annual Review of Anthropology*, 40 (1), 257– 273.
- Borghi A. M., Scorolli C., Caligiore D., Baldassarre G. & Tummolini L. (2013). The embodied mind extended: Using words as social tools. *Frontiers in Psychology*, 4, 145–154.
- Calvin, W. (1993). The Unitary Hypothesis: A Common Neural Circuitry for Novel Manipulations, Language, Plan-Ahead, and Throwing. In K. R. Gibson & T. Ingold (Eds), *Tools, Language, and Cognition in Human Evolution* (pp. 230–250). Cambridge: Cambridge University Press.
- Collins, C. (2013). *Paleopoetics: The Evolution of the Preliterate Imagination*. New York: Columbia University Press.
- Collins, C. (2016). *Neopoetics: The Evolution of the Literate Imagination*. New York: Columbia University Press.
- Corballis, M. C. (2002). *From Hand to Mouth: The Origins of Language*. Princeton, NJ: Princeton University Press.

- Gallese, V. & Lakoff, G. (2005). The brain's concepts: The role of the sensory-motor system in conceptual knowledge. *Cognitive Neuropsychology*, 22, 455–479.
- Gibbs, R. (1999). Taking metaphor out of our heads and into the cultural world. In R. Gibbs & Steen (Eds), *Metaphor in Cognitive Linguistics* (pp. 146–166). Amsterdam: John Benjamins.
- Grady, J. (1997). *Foundations of Meaning: Primary Metaphors and Primary Stress*. UC Berkeley: Department of Linguistics. Retrieved from eScholarship, University of California. <http://www.escholarship.org/uc/item/3g9427m2>.
- Grady, J. (1999). A Typology of Motivation for Conceptual Metaphor: Correlation vs. Resemblance. In R. W. Gibbs & G. J. Steen (Eds), *Metaphor in Cognitive Linguistics* (79–100). Amsterdam: John Benjamins.
- Grafton, S., Fadiga, L., Arbib, M. A. & Rizzolatti, G. (1997). Premotor cortex activation during observation and naming of familiar tools. *NeuroImage*, 6 (4), 231–236.
- Heidegger, M. ([1927] 1962). *Being and Time*. J. Macquarrie & E. Robinson (trans). New York, NY: Harper & Row.
- Jakobson, R. (1960). Closing Statement: Linguistics and Poetics. In T. A. Sebeok (Ed), *Style in Language* (pp. 350–377). New York: Wiley.
- Kimmel, M. (2005). Culture regained: Situated and compound image schemas. In B. Hampe & J. Grady (Eds), *From perception to meaning: Image schemas in cognitive linguistics* (pp. 285–331). Berlin: De Gruyter.
- Kövecses, Z. (2007). *Metaphor in Culture: Universality and Variation*. Cambridge: Cambridge University Press.
- Lakoff, G. & Johnson, M. (1999). *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*. New York: Basic Books.
- Lakoff, G. & Johnson M. ([1980] 2011). *Metaphors We Live By*. Chicago, Ill.: University of Chicago Press.
- Lakoff, G. & Turner, M. ([1989] 2009). *More Than Cool Reason: A Field Guide to Poetic Metaphor*. Chicago, Ill: The University of Chicago Press.
- Leroi-Gourhan, A. (1993). *Gesture and Speech*. Translated by R. White. Cambridge, MA: MIT Press.
- Mellmann, K. (2015). Das Innere Ohr: Zum Phänomen der Subvokalisierung in Stiller Lektüre. In B. Herrmann (Ed), *Dichtung für die Ohren: Literatur als tonale Kunst in der Moderne* (pp. 35–48). Berlin: Vorwerk 8.
- Merleau-Ponty, M. ([1945] 1962). *The Phenomenology of Perception*. Translated by C. Smith. London: Routledge & Kegan Paul.
- Onians, R. B. ([1951] 2011). *The Origins of European Thought*. Cambridge: Cambridge University Press.
- Oppenheim, G. M. & Dell, G. S. (2010). Motor Movement Matters: The Flexible Abstractness of Inner Speech. *Memory & Cognition*, 38 (8), 1147–1160.
- Polanyi, M. (1958). *Personal Knowledge: Toward a Post-Critical Philosophy*. Chicago: University of Chicago Press.
- Rizzolatti, G. & Arbib, M. (1998). Language within our grasp. *Trends in Neuro-sciences*, 21(5), 188–194.
- Sokolov, A. N. (1972). *Inner Speech and Thought*. Trans. G. T. Onischenko. New York: Plenum.
- Soylu, F., Brady, C., Holbert, N. & Wilensky, U. (2014). The thinking hand: Embodiment of tool use, social cognition and metaphorical thinking and implications for learning design. Paper presented at the AERA Annual Meeting (SIG: Brain, Neurosciences, and Education), Philadelphia, PA: April, 2014
- Schubart, W. (1921). *Das Buch bei den Griechen und Römern*. 2nd ed. Berlin: Walter de Gruyter.
- Sullivan, S. D. (1988). *Psychological Activity in Homer: A Study of Phren*. Ottawa: Carleton University Press.

- Sullivan, S. D. (1997). *Aeschylus' Use of Psychological Terminology, Traditional and New*. Montreal: McGill-Queen's University Press.
- Svenbro, J. (1976). *La Parole et le Marbre: Aux Origines de la Poétique Grecque*. Lund: Studentlitteratur.
- Vygotsky, L. S. ([1934] 1986). *Thought and Language*. Ed. A. Kozulin. Cambridge, Mass.: MIT Press.