

The notion of secondary literacy can best be approached by pointing to the fact that although alphabetic rational reasoning is dominant in scientific and even everyday thinking, communications technology is capable of mediating experiences as if they were direct, i.e. without verbal mediation. (I am using the term “secondary literacy” in a sense different from that introduced by, on the one hand, Walter J. Ong and, on the other, Wolfgang Coy.¹) The pressure to formulate experiences verbally is decreasing; the birth of a new rationality is imminent. In the age of literacy, where alphabetical writing is the dominant medium (for expressing and preserving knowledge and ideas), there is, due to the special character of language and that of writing itself, a certain detectable convergence of methodologies and the thought processes which are tailored in accordance with the ruling principles of mathematics and logic. However, this convergence is accompanied by opposing traditions and unsolvable paradoxes. In the age of secondary literacy, traditionally opposed schools of philosophy, as well as new claims implied by recent scientific and philosophical inquiry, have at some points been converging. New mobile devices that condense all the previous inventions of communication technology play an important role in this process because they are capable of becoming the primary mediator of experience. This capability opens a path towards developing a common conceptual background that can help theories converge. In the present paper, I will first outline the main characteristics of the literate mind; then I will attempt to display some converging tendencies, focusing on philosophy and certain

¹ With regard to W. J. Ong see “Schmandt-Besserat on Writing and Consciousness – Ong Sessions at MLA 2006 and CCCC 2007. Ong on Secondary Orality and Secondary Literacy”, <http://ongnotes.slu.edu/?p=190>; and “Secondary Orality and Secondary Visualism”, <http://libraries.slu.edu/sc/ong/digital/texts/lectures/lecture1.pdf>. As to Wolfgang Coy, see his “Text and Voice – The Changing Role of Computing in Communication”, in Kristóf Nyíri (ed.), *Mobile Communication: Essays on Cognition and Community*, Vienna: Passagen Verlag, 2003, pp. 93 f.

recent scientific self-analyses. Finally, before concluding my argument, I will, briefly, draw attention to some new issues pertaining to the importance of perceptual experience with regard to abstract reasoning.

Converging Methodologies

The emergence of language in the course of our phylogenesis has far-reaching effects both from a cognitive and a social point of view. In accordance with the *social brain* hypothesis,² language as a new representational system was able to create a cohesive background that furnishes the main rules for everyday activity, and criteria for group identity. This was possible because, via language, thoughts become objectified: sharing and handling these thoughts is made much more effective with the help of fixed symbols, specifically with the help of words. Also, since words tag categories, in a way the processing of perceptions becomes quicker. Being able to represent experiences or thoughts via language means, at the same time, being able to reconstruct them in accordance with the limits of verbal expression. This implies that experiences/thoughts must be linearly ordered, just as words are sequentially arranged. The other decisive feature of language is that it mediates the demands of the speaker. In accordance with the social brain hypothesis, we talk to others primarily in order to cooperate/coexist with them, and thus to influence their actions according to our demands. Turning to ontogenesis, the verbal perspective is strictly bound to the given situation: learning how to use words in accordance with our purposes, and understanding the words of others, is possible through a practice which is embedded into the given situation.

Alphabetical writing, which is a highly effective and successful *external symbolic storage system*,³ makes the above-mentioned characteristics of language more radical, since written words are necessarily divested of much of their original context. The significant details of the situation have to be verbalized and the linear structure is even stricter because there is no possibility of referring to previous or coming details with the help of gestures or facial expressions. Moreover, since written texts are created to preserve knowledge, they must remain unambiguous across radically different circumstances.

After the invention of alphabetical writing, in the early stages of its use, some momentous ideas emerged in which reflections on the advan-

² See Robin Dunbar, "Are There Cognitive Constraints on an E-World?," in Kristóf Nyíri (ed.), *Mobile Communication*, p. 58.

³ See Merlin Donald, *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition*, Cambridge, MA: Harvard University Press, 1991, pp. 308–325.

tages and limits of writing were implicit. Heraclitus complained about the perceived inability to express timeless and general truths. Let us point out that Heraclitus' problem had to do with a lack of appropriate concepts. In the form of logos, he presupposes a higher and eternal intelligence with whom we are theoretically capable to cooperate. Plato talks about the thing-like character of writing, which fallaciously suggests that knowledge is possible outside the human soul. These early deliberations reveal some important characteristics of the literate mind. Heraclitus' demand for highly abstract concepts, the presupposition of a higher intelligence which can be mediated exclusively via abstract concepts, as well as Plato's claim that knowledge is bound to the soul and is opposed to thing-like entities, create the basic presuppositions of western metaphysics. There gradually evolved a rather complex and abstract framework of concepts, and systematic methodological principles emerged to serve the recording and interpretation of verbalized thoughts. This systematic analyzing attitude and the expectation of clear-cut categorization complemented by the ruling principles of logic and mathematics create a special one-sidedness in philosophical thinking. Reason was comprehended as being separate from practice or any engagement with the external world. This separation of practice and reasoning, and that of the body and mind, leads to paradoxes and, of course, diverging attempts to solve them. (Consider, for example, the tradition of empiricism vs. rationalism, or the later tradition of the logical positivist criticism of metaphysics.)

The philosophical analysis of language implies permanent *mental discomfort*⁴ because of the lack of a satisfactorily transparent and clear-cut way of expression. Wittgenstein's effort to grasp how language works reveals the need for a shift which embeds language into everyday practice. Consequently, several important features of language come to light.

Reflecting upon how language works, and the characteristics of language giving rise to specific philosophical difficulties, Wittgenstein concludes that, misled by grammar, we are often inclined to use substantives

⁴ This was a phrase used by Wittgenstein: "The problem may seem simple, but its extreme difficulty is due to the fascination which the analogy between two similar structures in our language can exert on us" (Ludwig Wittgenstein, *The Blue and Brown Books*, Oxford: Basil Blackwell, 1958, p. 26). See also: "we find that there is puzzlement and mental discomfort, not only when our curiosity about certain facts is not satisfied or when we can't find a law of nature fitting in with all our experience, but also when a notation dissatisfies us – perhaps because of various associations which it calls up" (*ibid.*, p. 59).

as if they denoted things.⁵ Just as in the case of the “mind”,

[t]here are the sounds of the words, and all sorts of bodily sensations connected with gesture and intonation. Where we are liable to go wrong is in supposing that sensations connected with words are somehow “in the mind”. The phrase “in the mind” has caused more confusion than almost any other in philosophy.⁶

The other key characteristic of language is closely related to its usage. As Wittgenstein puts it, “our language is tempting us to draw some misleading analogy. This should remind us of the case when the popular scientist appeared to have shown us that the floor which we stand on is not really solid because it is made up of electrons.”⁷ There are different language games, and the necessity of switching between them is not always recognized. This observation might suggest that being able to communicate multimodally, i.e. not only via language, would make these switches much easier to handle. Multimodality makes the interpretation of a given perception less ambiguous. Consider Wittgenstein’s example: observing the floor and observing the elementary particles making up the same (with the help of previous experiences and some knowledge of physics) renders the difference between the two kinds of solidity obvious, i.e. it clearly shows the misleading nature of analogies engendered by language.

Towards a New Rationality

Secondary literacy as the age of a heightened rationality of the literate mind complemented by multimodality strengthens the tendencies that were emerging since the late 19th and early 20th centuries. The birth of photography and, later, that of film, the invention of the telegraph, the telephone, and the gramophone, just to mention a few new devices of the time, had considerable impact on what were, until then, apparently immutable concepts and accustomed dualisms.

Being able to record not only propositions, but images and situations (thanks to photography), and being able to mediate live voices (due to sound recording and transmitting technology), enables us to return to

⁵ “One of the chief troubles is that we take a substantive to correspond to a thing. Ordinary grammar does not forbid our using a substantive as though it stood for a physical body.” (*Wittgenstein’s Lectures, Cambridge, 1932–1935*, ed. by Alice Ambrose, Oxford: Basil Blackwell, 1979, pp. 31 f.)

⁶ *Wittgenstein’s Lectures*, p. 114.

⁷ Ludwig Wittgenstein, *The Blue and Brown Books*, p. 48.

the vivid mundane world of everyday activity as opposed to the mute and distancing world of texts. Casting a glance upon the history of philosophy, we can now better understand what it means when the emerging philosophy of pragmatism suggests taking into consideration the practical issues of life as opposed to mere theoretical reasoning. Dewey formulated the demand for a new theory of knowledge “which sees in knowledge the method by which one experience is made available in giving direction and meaning to another”.⁸ Dewey notes that traditional dualisms imply a certain one-sidedness in practice, e.g. the traditional opposition of mind and body in practice means a focus on only one of the pair at a time.⁹ The importance of the environment and its close relation with the human mind is another crucial insight of the time. Think of Henri Bergson’s effort to resolve the above-mentioned dualism by calling attention to the role of perception and action, which places human beings within the framework of everyday activity rather than within that of reasoning.

Decades later, this notion of embeddedness played a central role in Heidegger’s philosophy. Being-in-the-world means: we are engaged in a certain activity and are committed to this acting upon the world. The emphasis on *thrownness* into the world furnishes the basis for a criticism of mainstream artificial intelligence research with roots in logical positivism. AI research is based on the conviction that human reasoning is a symbol-manipulating process: each element of a thought process can be formalized in accordance with the rules of logic. The first steps were based on an attempt to define the nature of knowledge with the same formal rigour that was then popular in the world of mathematics. This conviction is possible because the focus is on theoretical knowledge that takes form in a logical order of propositions. Terry Winograd and Fernando Flores stress the importance of

the shift from an individual-centered conception of understanding to one that is socially based. Knowledge and understanding (in both the cognitive and linguistic senses) do not result from formal operations on mental representations of an objectively existing world. Rather they arise from the individual’s committed participation in mutually oriented patterns of behavior that are embedded in a socially shared background of concerns, actions and beliefs. This shift from an individual to a social per-

⁸ John Dewey, *Democracy and Education* (1916). *The Middle Works of John Dewey, 1899–1924*, vol. 9, Carbondale and Edwardsville: Southern Illinois University Press, 1985, pp. 354 f.

⁹ *Ibid.*, p. 346.

spective – from mental representation to patterned interaction – permits language and cognition to merge.¹⁰

That is, the authors try to assimilate some of the main concerns of Heidegger, a prominent figure representing the alternative conviction.

Considering the different views on perception in, for example, the field of epistemology, a kind of convergence emerges. On the basis of the traditional mind–body dualism and with the dominance of theoretical knowledge, diverging solutions and solid anomalies characterize this field (consider sense-data theory and the problem of mind-independent objects, or direct realism and/or disjunctivism and the burden of skepticism). Convergence emerges due to the change of focus effected by the representational theory of the visual mind (RTVM), according to which there are two kinds of visual representations:

visual percepts and visuomotor representations. The former serves as input to higher human cognitive processes, including memory, categorization, conceptual thought and reasoning. The latter is at the service of human action. From the standpoint of our version of the “two visual systems” hypothesis, vision serves two masters: thinking about, and acting upon, the world.¹¹

The change of focus means the inclusion of action:

We like RTVM precisely because we think that it avoids the pitfalls of both sense-datum theory and disjunctivism. RTVM is often called “intentionalism” because it makes the basic claim that the content of a visual experience crucially depends upon the “intentional” properties that the experience represents objects as having. According to the teleosemantic version of visual intentionalism ... the human visual system has been selected by evolution for carrying information about (or for processing) a particular class of properties instantiated in the environment of early humans. According to visual intentionalism, what matters to a visual experience – what makes it the experience that it is – are the properties that are represented in the experience, not the particular objects that happen

¹⁰ Terry Winograd – Fernando Flores, *Understanding Computers and Cognition: A New Foundation for Design*, New York: Addison-Wesley Publishing Company, Inc., 1986, p. 78. See also my review of this book: Zsuzsanna Kondor, “Dasein és design”, *Világosság*, 1989/11, pp. 879–880.

¹¹ Pierre Jacob – Marc Jeannerod, *Ways of Seeing: The Scope and Limits of Visual Cognition*, New York: Oxford University Press, 2003, rev. ed. 2004, p. 45.

to exemplify the properties.¹²

Directing attention to primordial functions sheds light on the misleading character of the traditional framework. The role of environment is obvious if we consider that acting upon the world is primary compared to abstract reasoning. And the same attention reveals that it is not separate objects with solid contours, but the situation and certain details that have importance.¹³

Converging Experiences

Higher cognitive functions, such as reasoning, need categories, sometimes highly abstract categories. According to conceptual metaphor theory, categories, even highly abstract ones, are related to mundane everyday experiences and activities. As Lakoff put it, “conceptual structure is meaningful because it is embodied, that is, it arises from, and is tied to, our preconceptual bodily experiences. In short, conceptual structure exists and is understood because preconceptual structures exist and are understood.”¹⁴

According to Lakoff, the preconceptual level is determined by kinesthetic image-schematic structures¹⁵ and basic-level categories. The latter do not overload memory capacity and are closely bound to motor activity. (Consider, for example, the basic-level category of “chair”. It has many subordinate categories, i.e. there are a great many kinds of chairs, which might imply a considerable load on memory. And to its superordinate category, “furniture”, there is no chance of attaching one special motor action.¹⁶) In Lakoff’s account, image schemas are crucially impor-

¹² *Ibid.*, p. 16.

¹³ Compare Lakoff’s concept of categorization. He suggests that categories are not comprehensible as sets. Rather there are “fuzzy boundaries”, prototypes, different degrees of membership, contrasting elements, close relations to the experiential world, exceptions, etc. See George Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*, Chicago: The University of Chicago Press, 1987.

¹⁴ *Ibid.*, p. 267.

¹⁵ Kinesthetic image schemas originate from everyday bodily experiences and refer to certain relatively simple spatial relations such as: containers, paths (movement in space with a starting and ending point including direction), links (pertaining to emotional security and its sources), forces, balance, different kinds of orientation (up-down, front-back, part-whole, center-periphery, etc.). For more details, see *ibid.*, pp. 271–278.

¹⁶ For a short introductory summary of basic-level categories, see Lakoff, *Women, Fire, and Dangerous Things*, p. 46.

tant since they play “two roles: They are concepts that have directly understood structures of their own, and they are used metaphorically to structure other complex concepts.”¹⁷

As we can see, perception plays a crucial role both in acting upon and in gathering information for thinking about the world. Issues related to perception are also vitally important in the development of science.¹⁸ The potential of perception to persuade or convince is considerable, both with regard to the science/folk-theory relation and the horizon/limit of perceptible phenomena. That is, the extension of perception can open up new perspectives. Of course, specialization means that different kinds of methods and technical accessories emerge, but converging questions arise due to possibly common perceptual experience.

Think of the question of reality in the mobile age. Is there any reason to distinguish virtual and real in the case of a location-sensitive and at the same time location-independent device? What should be considered real: the given circumstances and the concomitant tasks, or those engendered by the mediated-from-afar via mobile devices? Is there any relevance to the distinction between real and virtual when considering function and effect?

Not only the social sciences and the humanities face these questions. A similar question emerges in the field of quantum physics. The intuitive idea of so-called *local realism* (an idea of course very much bound up with Einstein’s discoveries) suggests “that a particle cannot be instantly influenced by a distant event, and that its properties exist independently of any measurements”.¹⁹ Although the implications of quantum physics²⁰ suggest that “[t]he world could not be local and real”, there arises the question of whether it is either local or real. The various experiments supporting quantum theory led to the conviction that it is possible that “there is nothing inherently real about the properties of an object that

¹⁷ *Ibid.*, p. 283.

¹⁸ “The whole underlying problem, ultimately, is that we lack experimental observations in the region where quantum and gravitational effects both matter” – says physicist David Deutsch (quoted by Michael Brooks, “Reality Check”, in *New Scientist*, 23 June 2007, p. 33). That is, even in the highly mathematized realm of physics, there is a need for perceptual support.

¹⁹ *Ibid.*, p. 31.

²⁰ “In our experience, objects have definite location in space and a limited range of influence. According to quantum theory, however, a pair of particles would be able to share information about each other’s quantum states – and sometimes influence them – even where the distance and timing involved meant that no signal could have passed between them” (*ibid.*, p. 31).

we measure. In other words, measuring those properties is what brings them into existence. ... So does the universe exist independently of measurements?"²¹

We can see that similar difficulties emerge in the field of epistemology with regard to perceptions and higher cognitive functions. This shift in the focus of philosophy overwrites some crucial notions, and a similar demand has been formulated by Caslav Brukner with regard to physics: "We need to rethink and radically revise our basic physical concepts before we make the next big breakthrough in physics."²² And this seems to be obvious if we think of the conceptual framework in which we try to grasp the consequences of quantum physics. The concepts of this framework are tailored according to physical experiences which are interpreted in accordance with the literate mind that is striving for clear-cut categories.²³

Conclusion

When everyday experience can involve confusion as to reality and locality, while there is also a tension between locality and reality in the field of physics, our traditional conceptual framework itself can be queried. The philosophical rediscovery of the importance of perception and action, and their relation to abstract reasoning, suggests a reconfiguration of some crucial concepts. Mobile technology catalyzes this process, since in the broad scope of everyday experiences perceptions suggest that some familiar constellations have been changing. Communication complemented with multimodal accessories utilizes the obvious power of visually-gained information (although we are often unaware of this), and accordingly makes it easy to mediate experiences non-verbally. Finally, since mobile devices are capable of supplanting most previous communication-technology inventions, they can furnish a common framework of experience.

²¹ *Ibid.*, pp. 32 f.

²² *Ibid.*, p. 32.

²³ See the classical categorization recapitulated by Lakoff, *Women, Fire, and Dangerous Things*, p. 152.