

## Do We Have a Visual Mind?

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### 1. *Towards a Sensorimotor Turn*

Casting a glance at philosophical inquiries of the last decades, with regard to human cognition (in a broad sense), we are witnesses to *turns* one after the other. These turns were based on the change of scope and perspective of investigations. The so-called *linguistic turn* refers to “the view that philosophical problems are problems which may be solved (or dissolved) either by reforming language, or by understanding more about the language we presently use”<sup>1</sup>. In the 90s, W. J. T. Mitchell coined the phrase *pictorial turn*<sup>2</sup>, calling attention to the fact that “pictures form a point of peculiar friction and discomfort across a broad range of intellectual inquiry”.<sup>3</sup> In order to eliminate this intellectual discomfort, Mitchell considers exploratory and explicatory approaches which focus on non-linguistic symbol systems and do not consider language as the only source of a significant paradigm regarding meaning.

Given the fact that the so-called imagery debate, the debate between descriptionalist and depictionalist approaches, has been ceaseless and continues even now, at the beginning of the 21st century,<sup>4</sup> we may find ourselves sympathetic to Mitchell and his desire for a paradigmatic view of images, and still more so if we take into consideration that the depictionalist view “includes the assumption that images are generated from propositional descriptions”.<sup>5</sup> Although Allan Paivio’s *Imagery and Verbal Processes* appeared in 1971 and suggested a *dual coding* approach, (i.e., he proposed that both imagery and verbal process play an important role with regard to memory, learning, and other cognitive tasks), the one-sided view on the dominance of verbal processes was also vivid among psychologists.

Recently, there has been a shift of emphasis regarding the basis of cognitive skills. This may be the next turn, a *sensorimotor* or *activist* one. Although this turn has massive roots in the past, and there is some controversy regarding whether it is fully reconcilable with various findings of cognitive neurology, this view seems to be capable of providing a framework within which the verbalist approach can cease to be the dominant view. Furthermore, taking motor activity into account holds the promise of resolving certain long-standing puzzles.

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<sup>1</sup> Richard Rorty (ed.), *The Linguistic Turn: Recent Essays in Philosophical Method*, Chicago, London: Univ. of Chicago Press, [1967] 1992, p. 3.

<sup>2</sup> In the same year, Gottfried Boehm introduced the expression of *ikonische Wendung*. Gottfried Boehm, “Die Wiederkehr der Bilder”, in G. Boehm (ed.), *Was ist ein Bild*, München: Fink, 1994, pp. 11-38.

<sup>3</sup> W.T.J. Mitchell, *Picture Theory. Essays on Verbal and Visual Representation*, London, Chicago: Chicago University Press, [1994] 1995, p. 13.

<sup>4</sup> For detail see Stephen M. Kosslyn, Giorgio Ganis and William L. Thompson, “Mental imagery: against the nihilistic hypothesis”, in *Trends in Cognitive Sciences* Vol.7 No.3 2003, pp. 109-111; Pylyshyn, Z. W. “Explaining mental imagery: now you see it, now you don’t - Reply to Kosslyn et al.”, in *ibid*, pp. 111-112; and Z. W. Pylyshyn, “Return of the mental image: are there really pictures in the brain?” in *ibid*. pp. 113-118.

<sup>5</sup> Allan Paivio, *Mental Representations. A Dual Coding Approach*, New York: Oxford University Press, 1990, p. 51.

## 2. Embodied Cognition

The idea of *embodiment* had already emerged in Merleau-Ponty's 1945 book, *Phénoménologie de la perception*. As he put it, "far from my body's being for me no more than a fragment of space, there would be no space at all for me if I had no body. If bodily space and external space form a practical system, the first being the background against which the object as the goal of our action may stand out or the void in front of which it may *come to light*, it is clearly in action that the spatiality of our body is brought into being, and an analysis of one's own movement should enable us to arrive at a better understanding of it."<sup>6</sup> Merleau-Ponty underscored the deep physical and cultural embeddedness of the human body and consciousness.<sup>7</sup> His ideas found new life in Rudolf Arnheim's comprehensive conception of depiction, later in conceptual metaphor theory, and more recently with the "new sciences of mind".<sup>8</sup> The core idea suggests "that cognition depends upon the kinds of experience that come from having a body with sensorimotor capacities, and ...that these individual sensorimotor capacities are themselves embedded in a more encompassing biological, psychological, and cultural context."<sup>9</sup> It has many branches and modifications, depending on how they relate to computationalism, representations, and to what extent they consider its effect/validity. For now, I will not go into detail regarding the differentiation of the notion of embodiment, rather, I will focus on different cognitive functions which turned out to be rooted in or inseparably related to bodily skills. In conclusion, I will resolve some old puzzles regarding conscious experience with the help of the *sensorimotor approach* as Kevin O'Regan conceived it.

As Merleau-Ponty highlights the relation between bodily experiences and the conceptual setting of space,<sup>10</sup> so does recent research on embodied cognition emphasize the importance of bodily movements as they provide the ground for the sense of agency, the difference between the self and non-self, and importantly, the ego-centric perspective that is indispensable for acting upon the ambient world. The case of Ian Waterman, who had lost his sense of touch and proprioception below his neck at the age of 19, provides a good illustration for the above-mentioned phenomena. All of them are quite obvious in normal functioning, but when even one integrated part of the whole system ceases to operate, strange impressions can spring forth. The loss of proprioception<sup>11</sup> destroys the *body schema* and therefore

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<sup>6</sup> Maurice Merleau-Ponty, *Phenomenology of Perception*, Trans. Colin Smith, London: Routledge, 2005, p. 89.

<sup>7</sup> About the reciprocal relation of the human body and its environment: "Through its 'sensory fields' and its whole organization the body is, so to speak, predestined to model itself on the natural aspects of the world. But as an active body capable of gestures, of expression, and finally of language, it turns back on the world to signify it." (M. Merleau-Ponty, *The Primacy of Perception*, Edie, J. M. (Ed.), Evanston: Northwestern University Press 1964, p.7)

<sup>8</sup> F. J. Varela, E. Thompson, and E. Rosch, *The Embodied Mind. Cognitive Science and Human Experience*, Cambridge, London: MIT [1991] 1993, p. xv.

<sup>9</sup> *Ibid.*, p. 172f.

<sup>10</sup> "[I]f the words 'enclose' and 'between' have a meaning for us, it is because they derive it from our experience as embodied subjects. In space itself independently of the presence of a psycho-physical subject, there is no direction, no inside and outside. A space is 'enclosed' between the sides of a cube as we are enclosed between the walls of our room." (Merleau-Ponty, *Phenomenology of Perception*, *op. cit.*, p. 182)

<sup>11</sup> "The term proprioception is used to describe the sensory information that contributes to the sense of position of self and movement." (*Encyclopedia of Rehabilitation at* <http://cirrie.buffalo.edu/encyclopedia/en/article/337/> ) Thanks to the sensors at joints and limbs and the vestibular system, proprioception plays an important role in motor control and motor planning.

makes organized movement impossible. Body schema “is a system of sensory-motor capacities that function without awareness or the necessity of perceptual monitoring... [It] involves certain motor capacities, abilities, and habits that both enable and constrain movement and maintenance of posture”.<sup>12</sup> In contrast, “*body image* consists of a system of perceptions, attitudes, and beliefs pertaining to one’s own body.”<sup>13</sup> Body schema works unnoticed in normal cases, almost in an automatic way but not quite as a reflex. Its work inseparably relates to the intentions of the subject. My “body moves smoothly and in a coordinated fashion not because I have an image (a perception) of my own bodily movement, but because the coordinated functioning of a body schema. In such movements a body schema contributes to and supports intentional action.”<sup>14</sup> When proprioception fades, as motor control fails to work in its ordinary manner, the sense of agency also melts into the air. Ian Waterman relearned how to move relying on body image and with the help of visual control. “As he gained more precise control of movement ... his sense of agency was gradually re-established.”<sup>15</sup> But conscious and attentive control, beyond its tiring character, lacks a holistically integrated movement organization because conscious attention can focus on one thing at a time, and moreover, visual feedback is delayed compared with motor control and planning. Additionally, an experiment by Haffenden and Goodale showed that in case of the Ebbinghaus/Titchener illusion, the performance of a motor task was not deceived by the visual illusion.<sup>16</sup>

Beyond the coordination and organization of movement, recent research in developmental psychology provides evidence for the primordial importance of sensorimotor activity. Experiments with infants ranging in age from a couple of hours to a couple of days prove their ability to imitate facial expression. It suggests that body schema is innate in the sense that it exists prior to birth. That is, young infants know that they can do certain things thanks to the earlier practices of the foetus. “[S]elf-organizing movement plays an important role in stimulating and promoting normal growth. ... The actual development of embryonic neural tissue depends, in part, of fetal movement, and on components that are important for the attainment of postural balance.”<sup>17</sup>

Sensorimotor capabilities provide two routes concluding at our social brain. One is an approach that is based on the discovery of *mirror neurons*, and the other is the study of gestures. Though there remains some question as to whether mirror neurons are a definite set of neurons or rather a reference to a function, many important cognitive capabilities and inabilities are considered to be related to mirror neurons, including self-awareness, the language faculty, empathy, autism, learning, and imitating – just to mention a few. “Mirror neurons respond *both* when a subject *performs* a particular ... action involving arm, hand, or mouth *and* when the subject observes such actions being done by another subject. This class of neurons thus constitute an intermodal link between the visual perception of action or dynamic expression, and the *intrasubjective*, proprioceptive sense of one’s own capabilities.”<sup>18</sup>

*Gesture*, another controversial topic in the scientific literature, is considered by some researchers as the origin of language. Experiments with Ian Waterman

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<sup>12</sup> Shaun Gallagher, *How the Body Shapes the Mind*, Oxford: Oxford University Press, 2005, p. 24.

<sup>13</sup> *Ibid.*

<sup>14</sup> Shaun Gallagher, *How the Body Shapes the Mind*, *op-cit.* p. 26f.

<sup>15</sup> *Ibid.*, p. 56.

<sup>16</sup> For detail see Pierre Jacob, and Marc Jeannerod, *Ways of Seeing: The Scope and Limits of Visual Cognition*. Oxford: Oxford University Press, 2004, pp.118-120.

<sup>17</sup> Gallagher, *op cit.*, pp. 94f.

<sup>18</sup> *Ibid.*, p. 77.

provided evidence that gestures “are not automatic movements, but neither are they movements of which we are fully aware”.<sup>19</sup> Beyond the anatomical closeness of language centres and the motor area, there are numerous experiments with blind and deaf children which suggest gestures are for communication and closely related to language. Merlin Donald’s cognitive evolution theory also proposes that gesture (mimetic culture) created a bridge between the episodic and mythic mind/culture.<sup>20</sup>

As Merleau-Ponty already suggested in 1945, “speech, in the speaker, does not translate ready-made thought, but accomplishes it”<sup>21</sup>, and, he seems to propose, gestures may have a similar function.<sup>22</sup> More recent research suggests that gestures definitely have an accomplishing function. “As such, the gestures that accompany speech have the potential to display thoughts that are not conveyed in speech. These speech-accompanying gestures serve two, not mutually exclusive functions. Gesture provides speakers with another representational format in addition to speech, one that can reduce cognitive effort and serve as a tool for thinking. Gesture also provides listeners with a second representational format, one that allows access to the unspoken thoughts of the speaker and thus enriches communication.”<sup>23</sup>

### 3. *Some old Puzzles and the Sensorimotor Approach*

As we can see, motor activity plays a crucial role in cognitive development from the very early ontogenetic stages on, and is connected to a wide range of cognitive capacities such as sense modalities and speech. It is more effective in control and less prone to deception than perception, and regarding higher order cognitive capabilities, movement can accomplish thought. Beyond these functions, taking into consideration the motor component in the field of perception and conscious experience, some old and recently reformulated puzzles can be eliminated. Here are a few such puzzles: How can we relate the phenomenal and the physical? Where does cognition happen? Where is consciousness located? Why do experiences have the specific qualities that they have? How it is possible to distinguish between seeing and imagining/memory of something?

The *Sensorimotor approach* as Kevin O’Regan construed it suggests that having a sensory experience is not a passive state, but rather “[f]eel is something we do”. That is, “the quality of sensory feel, the impression we have, is the quality of our way of interacting with the environment”.<sup>24</sup> According to his account of consciousness, a “feel is conscious when we as agents with selves, know that we are able to make use ... of the fact that the feel is occurring”.<sup>25</sup> In order to explicate what this statement suggests, we need to know the elements of a hierarchy towards consciousness, namely, raw feel, cognitive access, and conscious access. Having

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<sup>19</sup> *Ibid.*, p. 110.

<sup>20</sup> For more detail see Merlin Donald, *Origins of the Modern Mind. Three Stages in the Evolution of Culture and Cognition*, Cambridge: Harvard University Press 1991.

<sup>21</sup> Merleau-Ponty, *Phenomenology of Perception*, *op. cit.* p.160.

<sup>22</sup> “Thought and expression, then, are simultaneously constituted, when our cultural store is put at the service of this unknown law, as our body suddenly lends itself to some new gesture in the formation of habit. The spoken word is a genuine gesture, and it contains its meaning in the same way as the gesture contains its.” *Ibid.* p. 164.

<sup>23</sup> Susan Goldin-Meadow, “The role of gesture in communication and thinking”, in *Trends in Cognitive Sciences*, Vol. 3, No. 11, 1999, p. 428.

<sup>24</sup> Kevin O’Regan, *Why Red Doesn’t Sound like a Bell. Understanding the Feel of Consciousness*. Oxford: Oxford University Press, 2011, p. 68 and p. 181.

<sup>25</sup> *Ibid.*, p. 182. Regarding the question of the self see *ibid.*, pp. 76-88.

*cognitive access* to something means we are prepared “to make use of the thing in our rational actions... or communicative behavior”. *Conscious access* requires an additional step: “*The agent must have cognitive access to the fact that it has cognitive access to that something.*”<sup>26</sup> *Conscious access* makes it possible to manage a wider context for the agent compared with *cognitive access*, and it enables the reference to a socially defined self. *Raw feel*, which is “the root of the feel”,<sup>27</sup> is based on public evidence since people think there are grounds upon which we can distinguish different feels. Accordingly, *raw feel* must be a feel that is bereft of “add-ons” such as mental associations, linguistic utterances, habituated bodily reactions, and psychological stances.

Because *feel* is considered to be the result of different kinds of activities, it becomes possible to eliminate the so-called *mysteries* of the *raw feel*. These include: (1) *raw feel* feels like something, (2) it has different qualities, (3) there is a structure in the differences, and (4) *raw feel* is ineffable. Regarding (1), interaction with the world as compared with thinking, remembering, and automatic functioning has four special characteristics which provides the feeling of presence or phenomenality, *viz.*, *richness* of the sensory input; *bodiliness*, *i.e.*, “the fact that voluntary bodily changes provoke systematic variations in sensory input”; partial *insubordinateness* because “our sensory input is not only determined by these bodily motions” but also by external stimuli; and *grabbiness*, *i.e.*, we are “wired up with an alerting mechanism that can imperatively grab our cognitive processing on the occurrence of sudden outside events”.<sup>28</sup> When focusing on interaction with the world, different qualities (2) emerge from the fact that feels are constituted “by different modes of interaction”. Accordingly, structural differences (3) are rooted in the difference of activities, *i.e.*, the differences between the laws that applied. The last mystery (4) ensues from the fact that “[w]e do not have cognitive access to every single detail of the interactions” with the environment.<sup>29</sup>

As we can see, some puzzling questions can be answered if sensory and motor components are considered as being inseparable regarding interactions with the environment. The special character and location of a *conscious feel* is determined by the applied sensorimotor law which is learnt by practice, and the act of applying yields the ground for phenomenality. Additionally, *consciousness* is bereft of its gaseous character because it is defined in a framework within which interacting with the world can occur at two levels: one where we know which sensorimotor law can be applied for a given purpose, and the other where we can gain a wider, and in particular *social*, context for our actions, such that we know that we have different possibilities. Therefore, in light of the above considerations, I would suggest that on a basic level, and also with regard to some concerns of philosophy, we have not so much a visual, but rather a *motoric* mind.

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<sup>26</sup> *Ibid.*, pp. 90f. Practically, it is the equivalent of access consciousness as Ned Block defined it.

<sup>27</sup> *Ibid.*, p. 95. *Raw feel* can be related to ‘qualia’ which can be considered as the elementary quality of ‘what it is like’ experience. But, as we will see, O’Regan provides a tangible explication of the term.

<sup>28</sup> *Ibid.*, p. 112 and for the last quote p. 31. Proprioception and the vestibular system do not provide the same sensory presence or phenomenality as the basic sense modalities (visual, auditory, olfactory, gustatory, and tactile) because some of the four criteria do not play a role.

<sup>29</sup> *Ibid.*, p. 113 and p. 182.