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Analytic Philosophy and Cognitive Science: Uneasy Bedfellows or Comrades in Arms?

I. Analytic philosophy and cognitive science from a historical point of view

In the present talk I would like to demonstrate that although cognitive science sprang from analytic philosophy, the latter's main presuppositions can hardly, if at all, harmonize with recent findings in cognitive research. The central endeavour to reach a better "understanding of understanding and thought in general" (using Brandom's phrase)¹ is a decisive characteristic of analytic philosophy, irrespective of its branches or schools. Although cognitive science, which is "really more of a loose affiliation of disciplines than a discipline of its own"², shares this aim, at the same time each research discipline provides scientific evidence against the image of man that seems to be held by analytic philosophy.

Since analytic philosophy has grown out of a desire for clarity and unambiguousness, the analysis of language seemed to be a proper means to avoid ambiguities and grandiose, empty truisms. The preferred field of analysis was obviously language, since the dominant and accustomed means of expressing ideas/thoughts was language. To recall the obvious, within analytic philosophy there are at least two main approaches to achieving/seeking this clarity: the formalist approach, and ordinary-language philosophy. Roughly speaking, the former equates thinking with mathematical calculations, while the latter tries to find alternatives by emphasizing phenomenological characteristics of language, be it either in usage (Austin, Wittgenstein) or intention (Chisholm).

Frege, who many consider the father of analytic philosophy, prepared a framework for the sake of conceptual distinctiveness and thus opened the door wide to the investigation of concepts and the use of concepts.³ Hints of phenomenology in the analytic tradition have widened the horizon of investigation, emphasizing our directedness towards the world. The notion of "intention" can be considered an endeavour to connect the mental with the physical. Both branches of ordinary-language philosophy show hints of the venture to find a way to the things of the world; i.e. to take into account extra-lingual factors. Both language-game and intentionality presuppose, albeit in a restricted sense, the inter-relatedness of mental acts and the world.

Although the endeavour of a phenomenological orientation was a promising start, it requires considerable time to overcome the Cartesian dualism that operates in the background. The inheritance of the Cartesian ego brought about several anomalies, while the triumph of an alternative image of man/cognition is still before us, or at the very least, it is under construction. These anomalies include the problem of communication between the two spheres, the ontological status of the instances which are supposed to mediate between them, and some key concerns, such as representation and mental states, the ontological status of which is questionable and might be contrary to Occam's razor, just to mention a few.

¹ <http://www.pitt.edu/~brandom/index.html>

² F. J. Valera, E. Thompson, and E. Rosch, *The Embodied Mind. Cognitive Science and Human Experience*, Cambridge: The MIT Press, 1993, p. 4 See also Brandom, *ibid.*

³ See Brandom at <http://www.pitt.edu/~brandom/index.html>

Cognitive science emerges on the scene against the background of analytic philosophy and grows from the conviction that “the study of mind is worthy of scientific pursuit”.⁴ As Dupuy puts it, “[w]hat gives coherence to the many different research programs that go under the name ‘cognitive science’ today is the philosophical work being done in connection with them. Without ‘cognitive’ philosophy there would be work in psychology, in linguistics, in neurobiology, in artificial intelligence – but no science of cognition”.⁵ Accordingly, cognitive science is hardly, if at all, a single well-defined discipline. It is rather a collective term for a variety of research interests and disciplines.

The first ventures in cognitive science took shape within the realm of artificial intelligence. As Valera et. al. emphasized, “an important pole is occupied by artificial intelligence – thus the computer model of the mind is a dominant aspect of the nature of the field”.⁶ Cognitivism, a decisive branch of cognitive research, has its roots in cybernetics. This fact is well represented by the importance of symbols and symbol manipulation in the cognitivist tradition. As Valera et. al. put it, “the cognitivist claim that the only way we can account for intelligence and intentionality is to hypothesize that cognition consist of acting on the basis of representations that are physically realized in the form of symbolic code in the brain or a machine”.⁷ It is important to note that “in addition to the levels of physics and neurobiology, cognitivism postulates a distinct, irreducible symbolic level in the explanation of cognition. Furthermore, since symbols are semantic items, cognitivists also postulate a third distinctly semantic or representational level”.⁸ Connectionism offers an alternative view. As Valera et. al put it:

In the connectionist approach, however, meaning is not located in particular symbols; it is a function of the global state of the system and is linked to the overall performance in some domain, such as recognition and learning. Since this global state emerges from a network of units that are more fine grained than symbols, some researchers [e.g. Smolensky] refer to connectionism as the ‘subsymbolic paradigm’. They argue that the formal principles of cognition lie in the subsymbolic domain, a domain above but closer to the biological than to the symbolic level of cognitivism.⁹

As we can see, the shadow of the computational approach is present. Another key target of criticism is the strongly limited domain of connectionist models, i.e. the question of choice regarding the necessary input remains rather artificial, since connectionist models can best work within the framework of restricted, well-designed micro-worlds.

The main concern of the so-called linguistic turn, as Rorty summarized it, “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”¹⁰, was followed “by a cognitive turn”.¹¹ There is widespread agreement that cognitive science at its birth was under the effect of cybernetics. And cybernetics suggests a “spontaneous rhythmic activity”¹².

⁴ Valera et. al., *The Embodied Mind*, p. 4.

⁵ Jean-Pierre Dupuy, “Philosophy and Cognition: Historical Roots”, in J. Petitot, F. J. Valera, B. Pachoud, and J-M. Roy (eds.), *Naturalizing Phenomenology. Issues in Contemporary Phenomenology and Cognitive Science*, Stanford: Stanford Univ. Press, 1999, p. 539. The distinction of philosophy and sciences is debated even in analytic circles: see the difference between Russel and Wittgenstein (Seffler, pp. 20f.).

⁶ Valera et. al., *The Embodied Mind*, p. 4.

⁷ *Ibid.*, p. 40.

⁸ *Ibid.*, p. 41. Cf. Occam’s razor.

⁹ *Ibid.*, p. 100.

¹⁰ Richard M. Rorty, “Introduction. Metaphilosophical Difficulties of Linguistic Philosophy”, in R. M. Rorty (ed.), *The Linguistic Turn. Essays in Philosophical Method*, Chicago: The Univ. of Chicago Press, 19xx, p. 3.

¹¹ Dupuy, *op. cit.*, p. 540.

¹² *Ibid.*, p.558.

[T]hese spontaneous oscillation generators, [Marc Jeannerod] says, “allow the functioning of the nervous system to be reduced to that of a machine which ‘works by itself’ once it is started up, or which can almost be said even to start itself up. Such a physiology of spontaneity remains, however, a singularly limited explanation of behavior. While it accounts well enough for the automatic aspects of [the] behavior [of the nervous system], it cannot be generalized to account for its other aspects without turning it into *behavior without a subject*”.¹³

“Behaviour without a subject” is only one side of the coin. The other is its deep interconnectedness with its environment.

As we can see, Cartesian dualism still occupies a decisive position on the scene: the approach which considers cognition as symbol manipulation and the notion of the individual mind as detached from its environment are still dominant.

II. Efforts at unification

As Lakoff and Johnson extensively describe the tradition which they call the “objectivist” one, I will refer here only those characteristics which are closely connected to Cartesian dualism. Let me quote Johnson’s summary at length.

The Cartesian picture of mind, body, and knowledge creates two fundamental gaps or splits in human experience, one ontological, the other epistemological. First, on a Cartesian account, the body does not play a crucial role in human reasoning – rationality is essentially disembodied. ... The ontological problem, then, is to find some way to bridge this gap, to connect mind and body.

Second, there is an epistemological commitment that has established a problem for all succeeding discussion of knowledge. For Descartes, what the mind knows are its own representations, or ideas. Knowledge consists in grasping clearly what those ideas involve and how they related to each other. ... But this view of knowledge raises serious difficulty: if what we know are our own ideas, than how can we ever be sure that they do indeed accurately represent what exists in external reality? This is the problem of skepticism, and it is based, in the Cartesian tradition, on the gap between ideas and aspects of external reality they are about.¹⁴

I will try to summarize attempts to overcome this at least twofold dualism, then show that stepping outside the Cartesian mind can lead to a better understanding of language and understanding, and re-draw the image of man.

I will first delineate some attempts to solve certain anomalies. Though these attempts are embedded in distinct frameworks, they all emphasize the necessity of taking into account the world outside of the individual mind.

Wilfrid Sellars clearly sees both the ontological and epistemological difficulties arising from Cartesian dualism; he attempts to dissolve the anomalies, but seeks to supplement rather than destroy Cartesian dualism. The difficulty of handling sensation and conceptual thinking, or “matter and consciousness”¹⁵, within the same frame of reference clearly emerges in the attempt to harmonize the scientific and the manifest image of man. The scientific image of man can be manifold, because different disciplines can shed light on even the same topic from

¹³ Marc Jeannerod, *Le Cerveau machine: physiologie de la volonté*, Paris:Fayard, 1983, p. 156 quoted in Dupuy, *op. cit.*, p.558.

¹⁴ Mark Johnson, *The Body in the Mind. The Bodily Basis of Meaning, Imagination, and Reason*, Chicago: The Univ. of Chicago Press, 1987 (1990), pp. xxvi f.

¹⁵ Wilfrid Sellars, “Philosophy and the Scientific Image of Man” in W. Sellars, *Science, Perception and Reality*, London: Routledge & Kegan Paul, 1963, p. 36.

different points of view. Against the background of manifold and diverging scientific knowledge, the manifest image of man is still coherent and well-functioning. As Sellars puts the main difficulty, “dualism is an unsatisfactory solution, because *ex hypothesi* sensations are essential to the explanation of how we come to construct the ‘appearance’ which is the manifest world”.¹⁶ As far as I know, Sellars offers no ultimate solution to this problem, but he does attempt to bridge the gap between the two universes. In order to see the pillars of this bridge, I refer to his solution with regard to moral instances such as norms. We might ask, along with K. Nyíri, “What does it mean, and how is it possible, to follow norms in a world where norms and rules *do not really exist*”?¹⁷ And this question reaches beyond the field of ethics, or practical philosophy, it touches upon questions of theoretical philosophy as well. I would like to suggest that Sellars’ solution leads us to his next central notion, that of a theoretical entity. Theoretical entities also presuppose a community which serves as the basis of certain patterns to be followed. As Sellars wrote, “I wish to stress ... that the concept of *looking green*, the ability to recognize that something *looks green*, presupposes the concept of *being green*, and the latter concept involves the ability to tell what colours objects have by looking at them”.¹⁸ That is, beyond the analysis of language, Sellars stresses the practice of community which provides the framework for certain behavioural patterns due to which we are able to learn and identify concepts, norms, and theoretical constructs.¹⁹

Ludwig Wittgenstein, in his *Tractatus*, does not tire to tell us that “[m]ost of the propositions and questions of philosophers arise from the failure to understand the logic of our language”.²⁰ Thanks to his investigations, whose scope of course reached beyond the field of logic, some peculiar characteristics of language come to the fore. Language might “bewitch” us because analogies emerge quite often, and because sometimes context, or the language game, shifts, yet is not considered. An example of the latter can be found in “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”.²¹ There are different language games, and the necessity of switching between them is not always recognized. Of course, analogy has its role in this case as well. But in another of Wittgenstein’s examples, even the context might not help: “There 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’”.²² It is as if Wittgenstein believed that we are inclined to emphasize the thing-like/substantive and static character of a given phenomenon, whereas the active component of the state of affairs is concealed. He claims that “[o]ne 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.”²³

¹⁶ *Ibid.*

¹⁷ J. C. Nyíri, “Kant and the New Way of Words”, in *Inquiry*, vol. 13, 1970, p. 324.

¹⁸ Wilfrid Sellars, “Empiricism and the Philosophy of Mind”, in W. Sellars, *Science, Perception and Reality*, p. 146.

¹⁹ “[T]he conceptual framework of persons is the framework in which we think of one another as sharing the community intentions which provide the ambience of principles and standards (above all, those which make meaningful discourse and rationality itself possible) within which we live our individual lives.” (Sellars, p. 40)

Cf. Johnson’s considerations: “image schemata can have a public, objective character (in a suitably defined sense of ‘objective’), because they are recurring structures of embodied human understanding. They are part of the structure of our network of interrelated meanings, and they give rise to inferential structures in abstract reasoning. They are thus quite public and communicable in the required sense – they play an indispensable role in our sharing of a common world that we have knowledge of” (M. Johnson, *The Body in the Mind*, p. 196).

²⁰ *Tractatus* 4.003 See also in *Philosophical Investigations* 119.

²¹ Ludwig Wittgenstein, *The Blue and Brown Books*, Oxford: Basil Blackwell, 1958, p. 48.

²² Ludwig Wittgenstein, *Wittgenstein’s Lectures. Cambridge, 1932-1935*, Oxford: Basil Blackwell, 1979, p. 114.

²³ *Ibid.*, pp. 31 f.

Accordingly, it is easy to mix up the rules we use, i.e. we are inclined to forget that not all substantives are things.

Interestingly, cognitive/conceptual metaphor theory relies exactly on analogies when it suggests that we extend our conceptual capacity via cross-domain mapping. That is, bodily experiences provide the background for the capability of creating concepts and thus, for conceptual processing. Embodiment has a crucial role in this process. As Johnson summarizes it,

we have conceptual systems that are grounded in two ways – in basic-level and image-schematic understanding – and are extended imaginatively by category formation and by metaphorical and metonymic projections. There is no aspect of our understanding that is independent of the nature of human organism. And that is why this book is devoted to an exploration of the way meaning and rationality are grounded in recurring structures of embodied human understanding. *Understanding is an event* – it is not merely a body of beliefs (though it includes our beliefs). It is the means by which we have a *shared, relatively intelligible world*. The basic epistemological finding of this “experientialist” (cognitive semantics) approach is that knowledge must be understood in terms of structures of embodied human understanding, as an interaction of a human organism with its environment (which includes its language, cultural traditions, values, institutions, and the history of its social community).²⁴

As we can see, in each case the issue of language and understanding emerged against a wider background. Bringing community and body into the framework of investigation seems to enhance our understanding of language and promises a solid base for the solution of the Cartesian split. Valera et. al. venture to establish, what they call enactive cognitive science. They rely considerably on the findings of the Lakoffian-Johnsonian non-objectivist notion of understanding when they stress that “cognition is no longer seen as problem solving on the basis of representations; instead, cognition in its most encompassing sense consists in the enactment or bringing forth of a world by a viable history of structural coupling”.²⁵ Structural coupling refers to intentionality, but in a modified sense. “[T]he intentionality of cognition as embodied action consists primarily in the directedness of action. Here two-sidedness of intentionality [in the sense of Searle]²⁶ corresponds to what the system takes its possibilities for action to be and how the resulting situations fulfill or fail to fulfill these possibilities”.²⁷

Stepping back in time, we can find very similar concerns clearly formulated by Henri Bergson. He found that the “mistake of ordinary dualism is that it starts from the spatial point of view: it puts, on the one hand, matter with its modifications, in space; on the other hand, it places unextended sensations in consciousness”.²⁸ Bergson’s solution rests upon the close interrelatedness of the external and internal via perception, motor activity, and memory. As he writes, “[t]he reality of matter consists in the totality of its elements and their actions of every kind. Our representation of matter is the measure of our possible action upon bodies.”²⁹

²⁴ M. Johnson, *The Body in the Mind*, p. 209.

²⁵ Valera et. al., *The Embodied Mind*, p. 205.

²⁶ “[I]n general, intentionality has two sides: first, intentionality includes how the system construes the world to be (specified in terms of the semantic content of intentional states); second, intentionality includes how the world satisfies or fails to satisfy this construal (specified in terms of condition of satisfaction of intentional states).” Valera refers to Searle, *Intentionality: An Essay in the Philosophy of Mind*, Cambridge: Cambridge Univ. Press, 1983. Valera et. al. call attention to the similarities of their approach to intentionality and that of Heidegger when they recall his notion of “transcendence”.

²⁷ *Ibid.*, p. 206.

²⁸ Henri Bergson, *Matter and Memory*, New York: Zone Books (first published in French, (1896), 1991. pp. 220 f.

²⁹ *Ibid.*, p. 38.

Bergson emphasizes the material character both of the things of the external world and the human body. At the same time, he stresses the mutual interrelatedness of material entities and the special character of the human body “which acts like other images, receiving and giving back movement, with, perhaps, this difference only, that [my] body appears to choose, within certain limits, the manner in which it shall restore what it receives”.³⁰

This early, and in recent converging cognitive research emerging, vision of man as immersed and committed to their environment yields an alternative to the dualistic/objectivist approach. I will try to illustrate the hindering effect of the view that considers reasoning within the framework of the objectivist model as against the background of scientific research.

III. Imagery, or blindness illustrated

The view that imagery is not an integrated part of reasoning is still widely held in the field of the philosophy of mind. I will focus on an article by Markus Knauff and P. N. Johnson-Laird, who claim to prove that, as the title nicely suggests, “Visual imagery can impede reasoning”.³¹ Fortunately, the main hypothesis is less radical, or more trivial, stating that “*Relations that elicit visual images containing details that are irrelevant to an inference should impede the process of reasoning*”.³² Moreover, the authors restrict their hypothesis to the realm of deductive reasoning.³³ Their experiments apply syllogisms with relational terms and conditionals. Without going into details, I would like to emphasize, on the one hand, that syllogisms are tailored in accordance with propositional structures: the elements are building blocks, and they can be combined in accordance with certain rules. Accordingly, the experiments are one-sided: they measure only the processing of propositional structures and there is no counter-experiment which would measure the processing time and the right-wrong matches in case of pictorial statements where there is no need for the structure of a syllogism. (I have in mind, for example, three figures that have different heights. There is no need to show separated pairs, since which is taller or smaller is visible at a glance, and thus the “conclusion” is clearly visible. Accordingly, I think, the processing time is much shorter and the rate of right-wrong matches would be much better compared to the investigated propositional settings.) On the other hand, it seems to me that setting the limits of the research area so narrowly might impede the integration into a general image of cognition.

I refer here to Allan Paivio, whose “dual coding approach” suggests that we use both verbal and visual capacities in accordance with the task, i.e. in certain cases abstract concepts are more useful than imagery, and in certain cases it is the inverse that holds. As he wrote,

verbal descriptions of concrete situations and events from memory and verbal expressions of the manipulation of spatial concepts are likely to be mediated efficiently by non-verbal imagery, whereas abstract discourse and verbal expressions of abstract reasoning are more likely to be mediated entirely by the verbal system. A second (less obvious) implication is that the verbal behavior mediated by imagery is likely to be more flexible and creative than that mediated by the verbal symbolic system. This follows from the theoretical assumption that the spatially and operationally parallel image system is not characterized by logical sequential constraints to the same degree as the verbal symbolic system.³⁴

³⁰ *Ibid.*, p. 19.

³¹ In *Memory & Cognition* 2002, 30 (3), pp. 363-371.

³² *Ibid.*, p. 364.

³³ *Ibid.*, p. 363.

³⁴ Allan Paivio, *Imagery and Verbal Processes* (1971), Hillsdale NJ: Lawrence Erlbaum

I feel it is important to add that according to conceptual metaphor theory and in harmony with the enactive approach, imagery has a considerable role not only in verbal processing, but even in motor coordination as well. As we can see, Johnson and Lakoff also consider imagery to be crucial with regard to our conceptual system. That is, beside basic-level categories, kinesthetic image schemas³⁵ provide the background of higher-level categories, and imagery is considered as having a crucial role in the creation of these categories.

We might recognize a certain continuum and close interrelatedness as regards motor control, visual perception, and verbal processing. As Shaun Gallagher believes, “visual perception is less direct, more attentive, and involves something closer to propositional attitudes that can be integrated into conceptual or belief systems”.³⁶ However, and it is important to add, visuality might play an important role in motor control (not only as a provider of information about spatial relations).³⁷ The distinction of visuomotor representation and visual percept by Jacob and Jaennerod³⁸ shows this twofold directedness of visual perception. This anatomic and functional bifurcation enables the use of sight for pragmatic actions and as information for conceptual processing. Paivio notes that “images and words are coordinated to concreteness-abstractness in the sense that images designate concrete objects in terms of their perceptual and figural properties, whereas words can signify concepts – relations, classes, numbers”.³⁹ That is, images are closer to perception than words but, at the same time, they yield to conceptual processing.⁴⁰ Verbal processing presupposes a conceptual framework that is built on basic-level categories and image schemas. The concepts we use have either close or pretty loose connections with bodily experiences and are arranged in accordance with the so-called propositional models. Of course, this highly elaborate conceptual background might have its impact on motor response and in the processing of perceptual information.⁴¹ But “[p]ropositional models have an objectivist flavour, since they contain entities, with their properties and the relations holding among them. ...they are cognitive models, not slices of reality. ... It seems to me” says Lakoff, “that when we understand our experience by projecting propositional models onto it, we are imposing an objectivist structure on it.”⁴²

I hope these fragmentary and rough summaries of ideas are able to delineate a certain divergence of presuppositions and recent findings in cognitive research. Thanks to scientific experiments and the recollection of a continental inheritance of philosophy (I have in mind Bergson, Heidegger, and Merleau-Ponty), the new results can be integrated into a coherent new frame of reference. I believe that Wittgenstein’s and Lakoff’s illuminating ideas about

Associates, Publishers, 1979, pp. 434 f.

³⁵ “[W]hat I am calling ‘image-schemata’ have a certain kinesthetic character – they are not tied to any single perceptual modality. Though our visual schemata seem to predominate” (M. Johnson, *The Body in the Mind*, p. 25).

³⁶ Shaun Gallagher, *How the Body Shapes the Mind*, Oxford: Clarendon Press, 2005, p. 60.

³⁷ Gallagher argues for the role of visuality in creating “body image”.

³⁸ Pierre Jacob and Marc Jeannerod, *Ways of Seeing: The Scope and Limits of Visual Cognition*, Oxford University Press, 2003, rev. ed. 2004.

³⁹ Allan Paivio’s *Imagery and Verbal Processes*, New York: Holt, Rinehart and Winston, 1971, p. 21.

⁴⁰ See the representational theory of the visual mind by Jacob and Jeannerod. (Jacob and Jeannerod, *op. cit.*)

⁴¹ Moreover, “a motor component (implicit or explicit) appears to be generally characteristic of images of movement, and of the transformations involved in the generation of an integrated figural image or the solution of more complex problems requiring visual thinking. The motor component somehow facilitates the transition from one substantive part of the stream of thought to another.” (Allan Paivio’s *Imagery and Verbal Processes*, New York: Holt, Rinehart and Winston, 1971, p. 30)

⁴² Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*, Chicago and London: The University of Chicago Press, (1987) 1990, p. 285.

language and propositional structure might explain the reason for the observed delay in elaborating the abovementioned framework.