



Can New Perception-Related Models Help to Solve A Philosophical Conundrum? Perception and Visual Representation

Franco Viviani*

University of Padua, Italy.

Abstract

A visit in a karst area, rich in wall representations, stimulated the present work. Physical activity performed in harsh but delightful environments can provide, by serendipity, useful ideas. During the observation of a depicted babirusa (or a pig-deer, *Babirousa celebensis*) in a Sulawesi cave, Indonesia, a philosophical conundrum, till now unresolved, came in mind: how is possible that some signs on a wall can exactly represent that particular animal? Thanks to the use of the predictive model of perception and the mechanism of predictive coding, recently proposed in perception studies, the perspective can be widened. These models, in fact, challenge the classic vision (bottom-up model), suggesting that vision is the simultaneously result of a bottom-up and a top-down processing. Therefore, sensory information is a sort of feed-back on our expectations that could be constantly corrected and refined. Using this frame, it is possible that the first rock paintings became vivid only when, by trials and errors, the painters' predictions about the real mammalian dovetailed enough with the conjectures that was possible to infer from the painting in the wall. The conundrum is not solved, of course, but if the predictive processing will be completely ascertained, it will offer a key to deepen it.

Keywords

Visual representations; rock art; Sulawesi; theoretical problems

Rock paintings in Sulawesi

I recently visited in Sulawesi (Maros Karst area, Indonesia) a cave whose details were reported by an anthropo-speleological team decades ago [1-3]. This area is becoming extremely important due to the discovery of the ancient wall representations, some of them showing hunting scenes in prehistory [4]. Observing the details of those painted caves [Figures 1 and 2]; a philosophical conundrum was constantly acting in my mind: if a babirusa (*Babirousa celebensis*) or a deer-pig belonging to the swine family is represented on a wall, how is it possible that the painting of that animal could depict exactly that pig-like mammalian? To reach this goal it is in fact required that the space showing that animal is signed in a specific way, something probably outside the painter's awareness. In other words: what is the correct way to let that a drawing would be interpreted as being a babirusa by the majority of the observers once completed? In that wall, in fact, we do not see it as if it was in its environment and, more intriguing, it's not even true that looking that picture, it is as if we were looking a babirusa, because what we are seeing is a mixture of traits in a surface. What is, in short, that makes *special* the experience of seeing an animal in a painting? If representation is a modality that man has contrived to use signs that are replacing something else, the signs should be arranged in space in a peculiar way, to express relations permitting a semantic construction. That is, of course, strictly related to the social and cultural background of the creator [5,6]. Representation is an extremely flexible concept, mainly studied by aestheticists and semioticians but, in its crude essence, it is connected to the way in which sensory information records how a physical object is described in a medium. Therefore, to deepen the conundrum, cues could be inferred by novelties found in perception studies: for example, the so-called *predictive models of perception*, a conceptual computational model proposing that perception is able to predict what is coming from our sensory inputs in order to reduce the prediction errors [7]. Till not long ago, in fact, the classic vision suggested that perception was an open door to the external reality because our sense organs' receptors, sending signals from the body to the brain, showed us the world as it is (*bottom-up* model). The role of the incoming signals was to put in a context what was perceived. Modern theories assume that perception is the result of the predictions that our brain can make on the basis of the arriving sensorial inputs. In a nutshell, there is not only a flux of signal from the body to the brain, but also one from the brain to the body (*top-down* processing): perception is not passive. This because our brain, basing on its previous experiences, makes predictions on the incoming signals. In the visual hierarchy there are different layers and predictions are made about the layer below. The gap between the actual and the predicted inputs are sent up to the

Article Information

DOI:	10.31021/jps.20201103
Article Type:	Review Article
Journal Type:	Open Access
Volume:	1 Issue: 1
Manuscript ID:	JPS-1-103
Publisher:	Boffin Access Limited
Received Date:	05 March 2020
Accepted Date:	13 March 2020
Published Date:	16 March 2020

*Corresponding author:

Franco Viviani
Department of Biomedicine
University of Padua, Italy
E- mail: franco.viviani@unipd.it

Citation: Viviani F. Can Can New Perception-Related Models Help to Solve A Philosophical Conundrum? Perception and Visual Representation.] psychiatric Stud. 2020 Mar;1(1):103.

Copyright: © 2020 Viviani F. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 international License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



Figure 1: A babyrousa and hand stencils, performed by spraying ochre with the mouth on the hands.

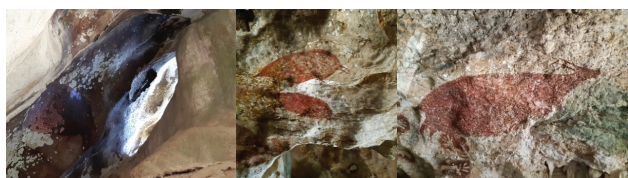


Figure 2: Various are the depictions in the area and sometimes difficult to recognize. There are represented babyrousa, an animal similar to a wild boar and an Anoa, a local wild bovid. The oldest representations are hand stencils.

visual hierarchy thanks to a mechanism called *predictive coding*, with the aim to reduce the future prediction errors. Clearly, using this theoretical frame, sensory information is a sort of feedback on our expectations, that could be constantly corrected and refined. The balance between expectations due to our past learning and what is currently sensed is extremely delicate. For some theorists, perception becomes a “controlled hallucination” [8-11]. This because our brains are constantly modifying their internal models of the world surrounding us to let that the external environment is in accordance to the predictions that we concocted about it. So, not only perception is involved, but also action and general cognition. At this point, it is not difficult to image that a Sulawesi Palaeolithic “artist” was a person who, based on the importance that a babyrousa assumed for

the group s/he belonged to, was able to hatch a plan to imagine the right signals ending in a represented pig-deer, probably for trials and error at the beginning, to let that the animal came in line with her or his predictions. Little by little, thanks to feedbacks with peers, when the drawing was refined enough to be recognised and accepted by the majority of her or his community members as a babyrousa without hesitation, the painting was fixed in the cavern wall. This because the predictions about the real mammalian detailed enough with the conjectures that was possible to infer from the painting in the wall. Ofcourse, the present Pindaric flight does not solve the conundrum, it is just a reflection based upon predictive processing, a modality that must be completely ascertained and more accurately verified. But if perception, action and cognition belong to computations in the brain due to bottom-up and top down processing, it could become plausible.

References

1. De Vivo A, Campion N, Menin A, Viviani F. Viviani F. Vecchie storie indonesiane. *Speleologia*. 1992;27:32-41.
2. Menin A, De Vivo A, Viviani F. Dall'Indonesia interessanti prospettive per l'esplorazione e la ricerca speleologica l'isola di Sulawesi e le sue aree carsiche. *Notiziario CAI Padova*. 1985;(3):15-16.
3. Viviani F. *Sentimental Anthropology*. Turin: Carta e Penna, 2019.
4. Aubert M, Lebe R, Oktaviana AA, Tang M, Burhan B, et al. Earliest hunting scene in prehistoric art. *Nature*. 2019 Dec;576(7787):442-445.
5. Mitchell W. Representation. In: F. Lentricchia & T.M. McLaughlin (eds). *Critical Terms for Literary Study*. Chicago: University of Chicago Press, 1995.
6. Hall S. *Cultural Representations and Signifying Practice*. London: Open University Press, London, 1997.
7. Seth AK, Tsakiris M. Being a Best Machine: The Somatic Basis of Selfhood. *Trends Cogn Sci*. 2018 Nov;22(11):969-981.
8. Blanke O. & Metzinger T. Full-body illusions and minimal phenomenal selfhood. *Trends Cogn Sci*. 2019 Jan;13(1):7-13.
9. Clark A. Whatever next? Predictive brains, situated agents, and the future of cognitive science. *Behav Brain Sci*. 2013 Jun;36(3):181-204.
10. Open MIND Project. 2015.
11. Seth AK, Tsakiris M. Being a Best Machine: The Somatic Basis of Selfhood. *Trends Cogn Sci*. 2018 Nov;22(11):969-981.