The Representational Penumbra

An examination of borderline cases of representation



MAY 25-26, 2023 University of Valencia

SCHEDULE

THURSDAY 25

15:00 - 16:15

NEURAL REPRESENTATIONS UNOBSERVED

Marco Facchin (IUSS Pavia)

16:15 - 17:30

REPRESENTATION AND COMPUTATION IN DEEP NEURAL NETWORKS

Nicholas Shea (Institute of Philosophy, University of London)

Cofee Break

17:45 - 19:00

THE OPTIMIZATIONS-FOR APPROACH TO COGNITIVE ONTOLOG

Manolo Martínez (BIAP, University of Barcelona)

FRIDAY 26

9:15 - 10:30

BEOND THE SURFACE: THE INFLUENCE OF SELF-ATTITUDES IN MIRROR SELF-REPRESENTATION

Antonella Tramacere (University of Bologna)

10:30 – 11:45

WHERE MIND BEGINS: RADICAL GRADUALISM ABOUT REPRESENTATION

Peter Schulte (University of Zürich)

Cofee Break

12:00 - 13:15

DECEPTION AND PLANT COGNITION

Marc Artiga (University of Valencia)

Cofee Break

15:15 - 16:30

EMOTIONAL ARATIONAL ACTIONS

David Pineda (University of Girona)

16:45 - 18:00

COGNITIVE INJUSTICE

Gloria Andrada (NOVA University Lisbon) & Richard Menary (Macquire University)

ABSTRACTS THURSDAY 25

15:00 - 16:15

Marco Facchin (IUSS Pavia)

NEURAL REPRESENTATIONS UNOBSERVED

From single-cell recordings to multivariate pattern analysis, the experimental techniques of cognitive neuroscience have shown us the neural basis of several representational phenomena. As a consequence, neural representations are no longer theoretical entities whose existence can, in principle, be questioned. They have been experimentally detected and manipulated, and so they are as real as representations can get. Or so, at least, many believe.

Yet, this belief is unjustified - or so I will claim. To do so, I will rely on an extremely widespread functional characterization of representations, and show that, to the best of our current neuroscientific knowledge, the neural structures investigated by cognitive neuroscience do not in fact fit that characterization. Hence, I will conclude that representations, usually understood, have neither been observed nor manipulated in current cognitive neuroscience. This state of affairs, I will further argue, puts the so-called "cognitive neuroscience revolution" under heavy pressure.

16:15 - 17:30

Nicholas Shea (Institute of Philosophy, University of London)

REPRESENTATION AND COMPUTATION IN DEEP NEURAL NETWORKS

Deep neural networks process representations in their intermediate layers in the service of performing the tasks on which they are trained. End-to-end training encourages a network to learn representational transitions between layers that are content-specific. However, large language models can now approximate, and maybe even perform, logical inferences at output. The capacity for broadly logical reasoning may perhaps also arise in internal processing. This paper shows why, when the aim is to produce a general intelligence that draws on information from a wide range of domains, it may be particularly important whether DNNs manage to achieve, or can be engineered to achieve, the capacity for broadly logical reasoning.

17:45 - 19:00

Manolo Martínez (BIAP, University of Barcelona)

THE OPTIMIZATIONS-FOR APPROACH TO COGNITIVE ONTOLOG

It would be nice, at least for "representational penumbra"-related reasons, if we had graded notions of representation, vehicle, or computation. It would perhaps be even nicer if we had a relatively systematic approach of arriving at such notions. In this talk I outline one such way: first, it is essential to most interesting cognitive kinds, such as the three enumerated above, that they aim at solving certain concrete problems that arise in many cognitive systems. Second, optimal solutions to these problems often rely on concrete, problem-specific strategies. Finally, something counts as an instance of cognitive kind X the more it approaches those optimal solutions to X-proprietary problems. I illustrate the idea by sketching optimization-for approaches to representation, vehicle and computation.

ABSTRACTS FRIDAY 26

9:15 - 10:30

Antonella Tramecere (University of Bologna)

BEYOND THE SURFACE: THE INFLUENCE OF SELF-ATTITUDES IN MIRROR SELF-REPRESENTATION

Is our mirror image affected by self-related attitudes? In other words, do non-perceptual factors, such as feelings and beliefs about oneself, influence self-representation?

Despite the potential impact of our attitudes on the way we perceive and represent ourselves, this question has hardly been explored in the philosophical literature.

Drawing on behavioral and neuroscience research, I will show that firstly, when we look at ourselves in the mirror, we activate brain mechanisms that we also employ while perceiving others; secondly, because responses to others are affected by our attitudes toward them, self-related attitudes very likely affect our mirror image.

I will conclude by specifying the nature of the interaction between attitude and mirror self-representation, and potential implications for a concept of representation.

10:30 – 11:45

Peter Schulte (University of Zürich)

WHERE MIND BEGINS: RADICAL GRADUALISM ABOUT REPRESENTATION

In my presentation, I will discuss the demarcation question – the question concerning the boundary between organisms that possess representational states and those that do not. First, I will propose that the debate about this question is a substantive one, provided that we accept the "explanatory constraint" for theories of representation. This constraint requires that a theory should only attribute representational states to an organism if such ascriptions can play a role in genuine representational explanations of the organism's behaviour. Secondly, I will argue, on the basis of the explanatory constraint, that all prominent answers to the demarcation question encounter a fundamental problem, the "problem of adjacent cases". Finally, I will introduce an alternative solution to the demarcation problem, a view that I call "robust radical gradualism". I will explain how this solution sidesteps the problem of adjacent cases and show that it can be successfully defended against potential objections.

12:00 - 13:15

Marc Artiga (University of Valencia)

DECEPTION AND PLANT COGNITION

Plants lie at the representational penumbra. A growing body of evidence suggests that plants exhibit some abilities typically associated with cognition, but should they be considered genuine cognitive agents? The goal of this paper is to provide an argument for an affirmative answer. More precisely, I will discuss communication and deception and I will defend two claims, a negative and a positive one. First, in contrast to some of the views expressed in the literature, the existence of communication or deception by themselves fail to provide evidence for plant mentality. Second, on the positive side, I will argue that there is a specific combination of these elements that does provide powerful support for plant's cognitive life. In particular, certain ways in which plants can be decieved *via* communicative signals suggest that plants possess at least a minimal form of cognition.

15:15 - 16:30

David Pineda (University of Girona)

EMOTIONAL ARATIONAL ACTIONS

Some emotional actions—like jumping up and down out of joy, banging a desk out of anger, or damaging a photo out of jealousy—are philosophically puzzling because, in spite of being actions and not just mere happenings, they appear purposeless. After surveying the recent philosophical discussion on these actions, I will lay out my own view. I will argue that in the most puzzling cases the action is the result of an stimulus-driven process, where an action tendency is activated without the intermediation of any representation of a goal.

In this sense, these actions can be truly regarded as goalless.

16-45 - 18:00

Gloria Andrada (NOVA University Lisbon)
& Richard Menary (Macquire University)

COGNITIVE INJUSTICE

Enculturation is the process by which human cognitive abilities are altered and extended by cultural learning. Human minds are highly plastic and depend upon cultural learning and high-fidelity transmission to acquire knowledge, abilities, and develop and refine cognitive capacities. The extent to which enculturation happens is still a contested issue but in the literature we find reference to different cognitive abilities that are deeply enculturated. However, we inhabit an unjust world, a world with social injustice that results from the unfair exercise of material and social power. As a consequence, the process of enculturation is permeated by unjust power dynamics. In this work, we focus on the effect on human cognition that unjust enculturating processes have. In particular, we examine how the enculturation of cognition can be bad for us as cognitive agents. To do so, we introduce the notion of cognitive injustice, and propose a way in which social injustice and cognitive enculturation can negatively affect the development of human cognitive abilities.



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