

The invention of consciousness

Nicholas Humphrey
humphrey@me.com

In English we use the word “invention” in two ways: 1. A new device or process developed by experimentation, and designed to fulfill a practical goal. 2. A mental fabrication, especially a falsehood, developed by art, and designed to please or persuade. In this talk I’ll argue that human consciousness is an invention in both respects. 1. It is a cognitive faculty, evolved by natural selection, that improves our practical ability to understand the world we live in. 2. It is a fantasy, evolved by something more like sexual selection, that motivates us to live more fulfilling lives.

Whose body matters?

Frederique de Vignemont
fvignemont@gmail.com

Which body do I feel as my own? The body in which I feel sensations? But I can feel sensations in a hand that feels as alien. The body I can directly control? But more and more evidence shows that tools can be motorically embodied, and yet I do not feel tools as parts of my body, while most versions of the Rubber Hand Illusion are purely perceptual with no agentic component. Or the body that matters for self-preservation, and thus that has a special affective significance for me? According to a classic conception in social psychology, one does not feel patriotic when one is merely aware of the boundaries of one’s country; one feels patriotic when one is aware that these boundaries can be in danger. I propose here that something similar applies to the sense of bodily ownership.

Social cognition: mirrors and perspectives (joint lecture)

Giacomo Rizzolatti & Josef Perner
giacomo.rizzolatti@unipr.it
josef.perner@sbg.ac.at

Part 1: **Mirrors** – Giacomo Rizzolatti

Action understanding has received an enormous interest in the fields of cognitive neuroscience over last two decades. In particular, the presence of motor activation during the observation of actions done by others when these are part of the motor repertoire of the observer, aroused a lot of discussion. In my talk I will show that the mirror mechanism is a general mechanism that include emotions and vitality forms. The proposal is that the perception of actions, emotions and vitality forms is determined by the activation of the motor programs responsible for that action. There is no need of independent centers for perception of action. Additional mechanisms, however, are required when the observed action is not encoded by the observer’s motor system.

Part 2: **Perspectives** – Josef Perner

We have an intuitive understanding of perspective from visual perspectives. I provide criteria for a more general notion of perspective applicable to language and cognition at large. Tracking differences of perspective plays a central role in human cognition and may be uniquely human. Developmental evidence shows that perspective tasks are all mastered at around 4 years of age and specific brain regions may be concerned with tracking perspectives (e.g., left inferior parietal lobe and precuneus). I propose that coreferential mental files are the way perspectives are being represented in the brain.

How to develop artificial empathy? An affective and cognitive developmental robotics approach

Minoru Asada
asada@ams.eng.osaka-u.ac.jp

We have been advocating cognitive developmental robotics (hereafter, CDR) to obtain new insight into the development of human cognitive functions by utilizing synthetic and constructive approaches. Among the different emotional functions, empathy is difficult to model, but essential for robots to be social agents in our society. Several attempts have been made for specific situations. However, such attempts have provided several limitations; thus, diminishing authenticity. In this talk, I introduce “affective developmental robotics (hereafter, ADR),” which provides more authentic artificial empathy based on the concept of CDR. First, the evolution and development of empathy as revealed in neuroscience and biobehavioral studies are reviewed, moving from emotional contagion to envy and schadenfreude. These terms are then reconsidered from the ADR/CDR viewpoint, particularly along the developmental trajectory of self-other cognition. Next, a conceptual model of artificial empathy is proposed based on an ADR/CDR viewpoint and discussed with respect to several existing studies. Finally, a general discussion and proposals for addressing future issues are given.