

Summary – Station 2 Space Brain Laboratory

Institut d'Art Contemporain, Villeurbanne / Rhône-Alpes



The participants in the Space Brain Laboratory's Station 2 symposium on 21 January 2010, invited by Ann Veronica Janssens, Nathalie Ergino and Elisa Brune, were Jean-Pierre Luminet, Axel Cleeremans, Denis Cercllet, Arnauld Pierre, Pascal Pique and Jean-Louis Poitevin.

This summary, like any other, is reductive, and oriented to a common purpose. We might note, however, that the contributions were highly productive, and that the debates went beyond the initial positions, establishing a basis for a shared programme. The arts and the sciences tend to function as discrete universes, but adaptation and attentiveness are prerequisites to interdisciplinary, if not transdisciplinary, research, along with the construction of a common space for the transformation of each member. The initial objective was to provide artists with concepts that were free of philosophy and aesthetics, with a view to achieving a better understanding of what is signified by a form of art based on a connection to the environment, drawing on research carried out in different disciplines, and with the relation to space and the environment as one of the domains of exploration.



The discussions were marked by the question of divergences between worlds, and possibilities of reducing such divergences. There was a focus on translation, transduction and transposition (or invention, enaction, relation and desubstantialisation) as ways of transcending this opposition, or indeed as modes of oppositional thinking.

Axel Cleeremans discussed the differences that exist between space and its cognitive processing. The human mind does not have access to all physical magnitudes, or a total perception of space. There are frequencies that are not available to us – sounds we cannot hear, colours we cannot see. And our perception of space is distorted by cultural conditionings that are not analysable through introspection, but only, in some instances, through illusions.

The subject of Cleeremans' research is consciousness. The neurosciences now have a good understanding of cerebral activity;



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and neuroimagery has made considerable progress in the study of many cerebral mechanisms. But the passage from cerebral activity to phenomenology, and from mechanisms of perception to states of consciousness, remains mysterious. Does the emergence of an «I» result from relations to other people? Such relations lead «me», subjectively, to attribute mental states to others as a way of reassuring «myself» that «my» actions are taking place normally. And in the developmental process, according to the theory, this contributes to the emergence of consciousness. In the brain, perception is processed in one of two ways, depending on whether it is orientated towards object recognition or action. Vision has been the subject of numerous studies on how actions take place. In these studies, the relation to space is understood, like touch, as an active exploration rather than a passive perception. It is not space that comes to the individual, but rather the individual who constructs a particular relation through the programming of an action, as enactive theories show. Since the 1980s, mental representations have been seen in terms of space, not symbols. The brain is dynamic, and representations are like neural networks. Yet human thought is symbolic. How then are space and symbols to be reconciled?

Jean-Pierre Luminet works on black holes and the general properties of space, and in particular the modes of representation of these mathematical constructs. Equations constitute the only objective representations of space, though researchers use other forms of representation in their thinking processes, in discussions with colleagues, and in publishing their results. Luminet, however, referring to the work of the neurophysiologist Alain Berthoz, put his finger on a fundamental contradiction: «Our perception of space creates a sort of Euclidean mental space. But space does not seem to be Euclidean.» This discrepancy between perceived and real space must be resolved if science is to avoid becoming isolated. Confrontations with counter-intuitive spaces may have an effect on the plasticity of the brain, and, over the long term, transform our perceptions. There remains, however, the problem of making black holes perceptible if they are beyond the range of telescopes. How can the ways in which they deform their surroundings be represented? What kind of account can be given of the mirages and illusions they produce? This requires translation and transposition from one world to another. How

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are we to represent a space that is curved, finite, without edges – without an exterior – and also multiconnected, when in cognitive terms we spontaneously locate objects in a Euclidean mental space? This limits them, imposes boundaries on them, and sets them apart from a background. Luminet aims to construct representations of complex or «crumpled» spaces that may account for the general topological properties of the universe as a folded space that multiplies the paths of light rays.

In Denis Cercllet's view, desubstantialisation has been characteristic of scientific and artistic work for some decades now. Substance is what ensures that bodies remain the same, and gives them identities. Desubstantialisation leads us to think about movement, change and the porousness of boundaries, or indeed the absence of limits. Everything is continuously being recomposed. As Nietzsche put it: «Something absolutely new is endlessly coming into being.» Desubstantialisation affects society, which can be seen, in dynamic mode, as being comprised of relations and associations between individuals. It also affects the subject, which constantly realises itself in the course of its experiences, to the point where the idea of the self as the basis of personality ends up looking like a mere artefact. And the same goes for memory, which now tends to be presented as an invention, or a creation associated with the carrying out of actions. In biology, Humbert Maturana and Francisco Varela described living systems as «autopoietic», in other words networks of processes, continuously regenerating. In the neurosciences, thinking corresponds to an internalisation of movement, following Wittgenstein, who correlated mental states with behaviours. There is no action without thought, and vice versa. And some physicists talk about «dynamic space-time», the idea being that space-time is evolutionary, permanently creating «now». Without wishing to revive the disagreement between Bergson and Einstein, might one thus go so far as to say that the mind is active in the transition from the fine-grained quantum world to the coarse-grained classical world?

There are many in the arts who have contributed to «the death of the author» and the birth of an interest in the phenomenology of the spectator (or the «spect-actor»). Our relation to art does not differ greatly from our relation to our environment, except that art allows us to experience worlds which do not yet exist.

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At this point, Jean-Pierre Luminet added a reminder that in the 20th century matter was atomised by physics, and suggested that space-time might now be undergoing the same fate. The loop approach to quantum theory (Carlo Rovelli) sees space as discontinuous, composed of grains – atoms of space and atoms of time. One of the precursors of these models was Roger Penrose (cf. *The Emperor's New Mind: Concerning Computers, Minds and The Laws of Physics*, Oxford, OUP, 1989), who has now moved over to the cognitive sciences.

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Pascal Pique studies the relation between art and science. He headed a project on Francisco Varela's work, and for the last four years has been organising "Art et Cognition" seminars in the Département Art Contemporain at the Musée des Abattoirs in Toulouse, with the participation of the Institut de Recherche en Informatique (CNRS, UPS) and the Service Culture at Université Paul-Sabatier. What interests him is the way in which Varela (particularly in *Autopoiesis and Cognition: The Realization of the Living*, Dordrecht, Reidel, 1980) countered the analogy between the brain and the computer with the concept of autopoiesis, which characterises organised systems as networks of processes that produce their own components. He also argued that the opposition between the subject and the world had to be reformulated in terms of enaction and co-emergence. The world and the self emerge from a structural coupling between living systems and their environment; which is what is denoted by "co-emergence". Pique advocates this viewpoint as a way of thinking about art without getting embroiled in aesthetics. He is also interested in the work of the philosopher Alva Noë, "a child of Dennett and Varela" for whom art, by making us aware of ourselves as perceivers, can give us access to a certain area of self-knowledge. This perspective on experience naturally leads us to think about the space around us, which may be understood as a set of facts and states of affairs, or as a field of active exploration. In this sense, proprioception allows individuals to complete their visual experience.

Arnauld Pierre presented his recent research on physical reactions to art that do not reduce to vision alone. In the types of research carried out by artists, science can undeniably be a source of inspiration. But optical and kinetic art, whose names suggest a "hypostasis of perception", actually eschew any "opticalist"

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programme. They question the primacy of visual perception, and play on the reactions of the spectator's body. As Pierre notes, some artists use the findings of psychologists to undermine relations to space in works that have to do with the environment, or the construction of environments. Their aim is to decorrelate visual and proprioceptive information.

Other artists look to cybernetics, or analogies between the computer and the brain, in the management of situations as complex as a city, which may make it possible to track the activity of the brain in question, and perhaps the behaviour of the city itself.

For post-impressionism, art nouveau and early abstraction, the "muscular sense", or "sense of movement", was very important. The body was seen as a site of synaesthesia, the articulation of different senses, so that the spectator's relation to the work was not purely visual, but could also involve forms of empathy or hypnosis. Pierre has identified signs of a continuing physical, "carnal" relation to the work. This is the "Stendhal syndrome", in the sense of a "physical surge that results from a confrontation with a work of art". How is "a transmutation of visual values into sensory motor values, muscular sensations" to be carried out? In other words, how is a work of art to be experienced? Pierre is also interested in the cosmos, and the signification of artistic and scientific representations. Many images denote "an organic, matricial conception of the cosmos" as a place of primeval presence – an expression of "universal relatedness", perhaps?

Jean-Louis Poitevin encourages us to think of the crisis as a difference between perceptions of reality and knowledge, and, in the light of a rediscovered bicamerality, to look at the function of art in a new accommodation between reality and its perception. He bases this view on three works. Vilém Flusser, in his *Essais sur la nature et la culture* (Belval, Editions Circé, 2005), maintains that there is a growing disparity between the world that gives us language and the one that gives us images, and that we are entering a new phase of our civilisation, marked by the use of electronics. In other words we have gone from a representation of reality to a direct vision that makes concepts coincide with reality, thereby resolving the crisis of representation triggered by mathematical science. The second work is Gilbert Simondon's *Imagination et invention* (Chatou, Editions de la Transparence,

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2008), which posits a state of tension between the real and the imaginary. The image itself is not subjective; it comes between the subject and the object, and must correspond to both. But the work of imagination on the image is empiricist. It is based on perceptions, and develops within the individual's body. The image may not correspond to the object. Invention, in that case, results in works that shrink the contradiction between the real and the imaginary. The third work is Julian Jaynes' *The Origin of Consciousness in the Breakdown of the Bicameral Mind* (New York, Houghton Mifflin, 1976). For Jaynes, subjectivity and consciousness have taken over from bicamerality, i.e. the division of the mind into two "hemispheres", with the right hemisphere "speaking" and "giving advice" to the left hemisphere. Poitevin suggests that "artists may be more bicameral than others, and unwilling to settle for the psychological reassurance that consists of retreating from the 'more or less known' to the 'already known' in order to explain the unknown, while accepting the resulting state of stress, and providing a response to it through their art."

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The symposium reflected a unanimous desire to go beyond entrenched oppositions between body and mind, the subject and the world, the spectator and the work of art. Materiality cannot be reduced to objectivity, even when placed before our eyes. During their four hours of debate, the participants emphasised the links – including those of translation and transposition – that exist between living beings and their space, their environment, both close and distant. Questions of phenomenology and states of conscience were central, as were those of representation and fiction, which were seen as subjects of ongoing invention.

Denis Cerclet
Centre de Recherches et d'Etudes Anthropologiques
Université Lumière – Lyon 2

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