



Introduction

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John Kevin O'Regan is currently the director of the Laboratoire Psychologie de la Perception, CNRS at Université Paris Descartes. The laboratory specializes in human visual and auditory perception in both infants and adults. O'Regan's research has been of particular interest to embodied and enactive theories of mind which will be the main topic of this short introduction. We will start with a brief discussion of [1] O'Regan's past research interests and [2] the sensorimotor contingency theory as developed in collaboration with philosophers Alva Noë¹ and Erik Myin.

1. Past research. Change blindness & the world as outside memory

Our guest finished his first degree (BSc in Mathematical Physics) at University of Sussex, UK in 1968. After doing part of his research towards a PhD (with B.D. Josephson, 1973 Noble Prize laureate) at Cavendish Laboratory, University of Cambridge, O'Regan changed the subject of his PhD thesis to eye movement in reading, and moved to Paris. In his PhD (entitled *Constraints on Eye Movement in Reading*, title awarded in 1975) he showed the existence of the optimal position for the eye to fixate in words (so-called *optimal viewing position*, see: O'Regan & Jacobs, 1992). The research demonstrated that the recognition is fastest at a particular position (and drops off to either of sides), which facilitates the eye in fixating for efficient reading. O'Regan developed what he dubbed *strategy - tactics theory* aimed to explain why the eye goes where it does while reading. The idea is that the eye adopts a general strategy of moving a little to the left of the middle of the next longish word, and then, if necessary, makes correction tactics as a function of ongoing processing. His interest in the problem of the perceived stability of

¹ Alva Noë was the guest of the previous issues of *Avant* (1/2011), available on our website.

visual world led him to later challenge the consensus on the nature of visual perception. For example, O'Regan (along with collaborators Ron Rensink and Jim Clark) helped discover the often-discussed phenomenon of *change blindness* (not to be mistaken with inattentional blindness).

What is change blindness? It describes how a person can look at a picture of a scene but fail to see enormous changes that occur in that scene when those changes are accompanied by a brief interruption (like a cinema cut, a blank or even small distracters like mud splashed on a car windscreen) (see: O'Regan, Rensink & Clark, 1999; O'Regan (in press) or O'Regan, Deubel, Clark & Rensink, 2000). Demonstrations of this widely discussed phenomenon can be seen at our guest's website. Change blindness is not to be confused with inattentional blindness. The former depends on the occurrence of a brief transitory event in the visual field that distracts your attention whereas the latter depends on the fact that one is consciously attending to something else in the visual field.

Our interview also touches the idea of *the world as an outside memory* (O'Regan, 1992), an idea that is influenced by research on change blindness. One can find various analogies between the work of our guest and the research of Dana H. Ballard (see: Triesch et al. 2003; Ballard, 1991), explored in brief in the interview below. According to O'Regan, the outside world can be considered as a kind of external memory store which can be accessed instantaneously by casting one's eyes (or attention) to some particular location. Thus, the extreme richness of visual perception is – according to O'Regan – a kind of illusion that is created by the immediate availability of information in this external store. Such view encourages us to abandon the idea that the act of "seeing" involves passively contemplating an internal representation of the world. O'Regan proposes that we need to understand seeing as an active process of probing the external environment (as it were a continuously available external memory). It is argued that this helps explain the great richness and "presence" of the visual perception.

2. Sensorimotor approach. Collaborations and discussions with philosophers

Back in 2001, the Behavioral and Brain Sciences journal published a seminal and often discussed paper *A sensorimotor account of vision and visual consciousness* (O'Regan & Noë, 2001; see also the interview below for further discussion). In opposition to the traditional (mental representations based) view on vision and visual experience (wherein the activation of internal representations is claimed to give rise to the experience of seeing), the authors proposed what they called a sensorimotor contingency theory. Quoting their paper:

"The central idea of [...] is that vision is a mode of exploration of the world that is mediated by knowledge of what we call sensorimotor contingencies." (2001: 940).

Sensorimotor contingencies (sometimes also referred to as sensorimotor dependencies or co - variations) are to be understood as sets of laws that link perceiver's actions to the changes in sensory input and changes in sensory input to perceiver's actions. The claim is that the organism's exploratory activity in the environment is mediated by the (implicit) knowledge of these laws that constitutes a perceptual skill. There are at least two key terms associated with this theory that need to be introduced here. The first is *corporality* (or *bodiliness*). It refers to the aspect of how much the input to the perceiver's perceptual apparatus will change when the perceiver moves – for example, the greater the changes the higher degree of corporality. This term thus serves as a measure of the intimate link between perceiver and their environment. The second term is *grabbiness* (or what may be called *alerting capacity*). This refers to the tendency of something to grab or attract a perceiver's attention. According to the authors, it is the high bodiliness and high grabbiness of perception (or sensory experience) that gives it forcible presence – that is: it imposes itself upon the perceiver from the outside and is present to him without the perceiver making any mental effort and exercising voluntary control. For more detailed discussion see O'Regan et al. 2005 or Myin & O'Regan, 2002 (paraphrased above).

Currently, our guest is working on exploring the empirical consequences of the sensorimotor approach to perception and perceptual consciousness. The interview below tackles the issues of how his current work distinguishes from the 2001 paper he co-authored with Alva Noë.

Useful online resources and websites:

J. K. O'Regan's website (with papers and demos):: <http://nivea.psych.univ-paris5.fr/>

Supplements to *Why Red Doesn't Sound Like a Bell*: <http://nivea.psych.univ-paris5.fr/FeelingSupplements/index.html>

Laboratoire Psychologie de la Perception, CNRS at Université Paris Descartes: <http://lpp.psych.univ-paris5.fr/>

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