"Subjective Perception"

The report "Neuronal correlates of subjective visual perception" by Nikos K. Logothetis and Jeffrey D. Schall (*1*) appears to have overextended its implications by the use of the word "subjective" in the title and in a few other places.

What was in fact observed and studied was a behavioral indicator of a perceptual discrimination between two directions of motion made by a monkey. While there may or may not have been a subjective or conscious perception of the movement, its existence cannot validly be evaluated by such evidence. A perceptual discrimination and a decision to act on it can be and often is made by human beings without any recallable subjective awareness of this. Consider the common experience of driving an automobile while engrossed in other thoughts or listening to the radio, and so forth. One may find one has gone some distance in this condition while making accurate visual perceptual discrimination of traffic and signals and responding with successful decisions about them, without having any recallable introspective awareness of all this.

The conclusion by Logothetis and Schall, that their results "suggest the possibility of experimentally relating the activity of single neurons in the visual system to the internal perceptual state of the subjects" would be justifiable only if they were to restrict this conclusion to cognitive and decision-making processes and if they excluded the implication that a conscious, subjective phenomenon or state has been neuronally represented (*2*).

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Response: Libet agrees that what was measured is a perceptual decision-making and not a simple manifestation of sensory information processing. The disagreement arises about whether this was a subjective, conscious phenomenon or not.

Libet defines consciousness as the subjective awareness and experience including sensory experiences of our external or internal environment or subjective experiences of our feelings and thoughts, or both (*1*). Concepts like consciousness, subjectivity, or intentionality have been central issues in numerous philosophical discussions, and their definitions, even for humans, is anything but a settled issue (*2*). Things are particularly tangled since both examples of conscious experiences without an existing sense perception (*3*) and examples of perceptual decisions without subjective awareness (*4*) have been reported in human psychological or psychophysical experiments.

In our report, we used the word "subjective" in a restricted and pragmatical sense. Perceptual alternations during dichoptical inspection of rivalrous stimuli have an entirely intrinsic mechanism that unavoidably has a subjective nature. Imagine, for example, an observer contributing in the experiments described in our report, through a similar viewing system allowing the observer to see exactly the same stimuli presented to the monkeys. Differences in rivalry onset times and alternation periods would result very often in the perception of different patterns by the monkey and by the observer. This is hardly different from one plausible definition of subjectivity: "I see the world from my point of view, you see it from your point of view" (*5*). Searle's "world," which is represented in our experiment by the stimulus, will be always the same at any time for both the observer and the monkey. Nevertheless, the perceptual report will in many cases be different and subjective, reflecting only the internal perceptual state of the subjects.

In Libet's example of the driver who has gone some distance making accurate visual perceptual discriminations without having any recallable introspective awareness of all this, the subject (the driver) has not been asked to resolve an ambiguous situation, particularly one which is neither "natural" nor "common experience" in everyday life. Each trial in our experiment is an individual "inquiry" about the subject's perceived motion direction, and the subject has been taught to "wait," "resolve," "perceive," and "act" correspondingly. The reaction times in all cases were considerably longer than when the monkey had to make a decision about the direction of coherent motion with a significantly larger variation (possibly reflecting a perceptual indecision). As we noted in our report, we think all this could indeed suggest the possibility of experimentally relating neuronal activity with the internal perceptual state of the subjects.

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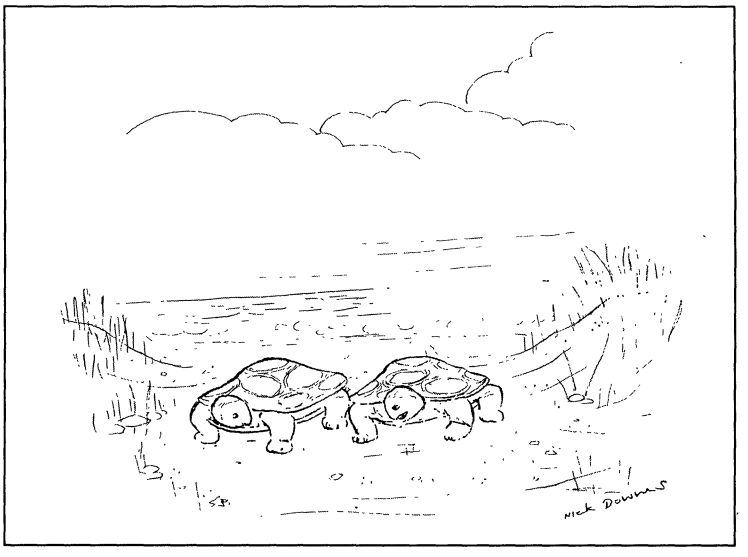

" The 19th? Worst century of my life."