

# Cognitive and non-cognitive conceptions of consciousness

Morten Overgaard<sup>1,2</sup> and Thor Grünbaum<sup>3,4</sup>

<sup>1</sup> CNRU, Department of Communication and Psychology, Kroghsstraede 3, 9220 Aalborg, Aalborg University, Denmark

<sup>2</sup> CNRU, CFIN, MindLab, Hammel Neurorehabilitation and Research Centre, Noerrebrogade 44, 8000 Aarhus C, Aarhus University, Denmark

<sup>3</sup> Section for Philosophy, Department of Media, Cognition and Communication, University of Copenhagen, Njalsgade 80, 2300 Copenhagen S, Denmark

<sup>4</sup> Danish National Research Foundation: Centre for Subjectivity Research, University of Copenhagen, Njalsgade 140-142, Building 25, 2300 Copenhagen S, Denmark

In a recent article by Block [1], different interpretations of the classical Sperling experiment [2] were discussed. In this experiment, subjects were only able to report letters from one of three rows. However, with post-stimulus cueing, subjects could report whatever row they were asked. Block [1] interprets the experiment to show that conscious experience overflows the amount of information that is attended and available in working memory. The suggestion that 'we experience seeing the entire display of letters, yet we report only a limited amount' appears so intuitively true that it seems difficult to disagree.

Indeed, why would anyone deny the overflow interpretation? Cohen and Dennett [3] argue that conscious content must have a cognitive function. According to their view, a person cannot be conscious of X but be principally unable to report about X or be unable to use it for rational control of action. This idea is supported by a strong intuition: it makes no sense to ascribe consciousness of X to a subject if the subject denies seeing X. Going along with this intuition it is natural to think that consciousness plays a cognitive role, and that a subject is conscious of some information if it is used by the subject's cognitive system in a particular way.

It is common to understand cognitive function associated with consciousness in terms of attention and working memory [3,4]. If content is conscious only if it fulfils some cognitive function, and the most likely candidates for such a function are attention and working memory, then the overflow phenomenon must be denied or explained away as some kind of illusion. We end up with two mutually exclusive intuitions: that consciousness overflows attention and working memory *and* that consciousness is a cognitive phenomenon. Both intuitions seem equally compelling but *either* we accept overflow but also accept non-cognitive consciousness or we accept cognitive consciousness but deny overflow.

The apparent paradox may only be resolved by investigating the underlying pre-empirical assumptions. Although the discussion may be led, as is the case between Block [1] and Cohen and Dennett [3], by interpreting results from relevant experiments, we believe this is potentially misleading. Rather, the debate is grounded in pre-empirical definitions, eventually deciding what may be used as a measure of conscious experience in experiments.

According to a 'cognitive approach', consciousness can be associated with controlled processing, working memory, selective attention, or some network of different cognitive processes. This means that established paradigms for studying these various cognitive phenomena can be used to study consciousness as well (as also suggested by Cohen and Dennett). By contrast, a 'non-cognitive approach' considers consciousness to be a state, a process or a property that is not cognitive. By dissociating consciousness from cognitive capacities [5,6], the approach will in most cases stay with the subjective criterion as the only acceptable one, arguing that any cognitive capacity can exist consciously as well as unconsciously. Accordingly, consciousness cannot be operationalized in terms of cognitive function.

The choice between cognitive and non-cognitive approaches is decisive for one's criteria of consciousness, experimental methodology and, accordingly, findings. Despite attempts by researchers on both sides, the dispute between cognitive and non-cognitive theories of consciousness cannot be settled by empirical evidence. As neither position can be stated in an empirically falsifiable manner, the debate cannot itself be resolved by empirical data. In the end, the debate is about a more fundamental issue: which intuitions about consciousness do we trust?

## Acknowledgements

M.O. was supported by a Starting Grant, European Research Council.

## References

- Block, N. (2011) Perceptual consciousness overflows cognitive access. *Trends Cogn. Sci.* 15, 567–575
- Sperling, G. (1960) The information available in brief visual presentations. *Psychol. Monogr.* 74, 1–29
- Cohen, M.A. and Dennett, D. (2011) Consciousness cannot be separated from function. *Trends Cogn. Sci.* 15, 358–364
- Kouider, S. *et al.* (2010) How rich is consciousness? The partial awareness hypothesis. *Trends Cogn. Sci.* 14, 301–307
- Lamme, V. (2006) Towards a true neural stance on consciousness. *Trends Cogn. Sci.* 10, 494–501
- Rees, G. and Frith, C. (2007) Methodologies for identifying the neural correlates of consciousness. In *The Blackwell Companion to Consciousness* (Velmans, M. and Schneider, S., eds), pp. 553–566, Blackwell Publishing