

We contend that any evidence for phenomenal consciousness, whether it is of a functional or neural type, can be reinterpreted as reflecting either partial awareness (when subjects express the feeling of being able to see more than they can report) or unconscious processing (when subjects are denying any form of awareness but some supposedly indirect marker of consciousness is observed). Block relies on a view of conscious access that is too restrictive. Yet, it is possible to reframe the issue of dissociable forms of consciousness into dissociable levels of conscious access. We recently proposed that an observer's experience involves many (but sometimes inaccurate) components that interact across various levels of representations [2]. For instance, when probed for consciousness, observers can fail to access higher levels (e.g. identity of the letter, words, etc.), but still have access to lower levels (e.g. fragments). Access to higher levels (e.g. letters) might, under conditions of perceptual difficulty (degraded, peripheral, unattended stimuli, etc.), reflect perceptual illusions resulting from the combination of low-level information (e.g. letter-like fragments) with top-down prior expectations. This offers a functional explanation of the impression of seeing a whole array of letters in the Sperling task, now described as a well-grounded perceptual illusion based on partial information.

Block is right to point out that there is more to consciousness than the scarce reports usually obtained in

experiments under conditions of focal attention. There are indeed many situations leading, for instance, to the feeling of being able to grasp subjectively a large part of the surrounding world. However, it is not necessary to rely on a distinct and special form of consciousness to describe these phenomena. Functional descriptions might also do the job and, in addition, offer a more parsimonious description that: (i) allows the generation of predictions; and (ii) can be falsified empirically.

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Response to Kouider *et al.*: which view is better supported by the evidence?

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Kouider *et al.* [1] argue that the information in the brain that explains partial report superiority is unconscious. I say that it is conscious [2]. Kouider *et al.* also argue that my view is unfalsifiable, whereas theirs is more parsimonious, makes predictions and can be falsified empirically. Actually, the same experimental evidence is relevant to both positions.

Kouider *et al.* are mistakenly appealing to falsifiability (i.e., definitive disproof) rather than support by the evidence. Definitive disproof rarely, if ever, occurs in science. The Poisson bright spot was once thought to provide definitive disproof of the particle theory of light [3], but subsequent developments showed otherwise.

Participants in the partial report experiments have a capacity of about 10.5 items in the Sperling task and up to 15 items in the Amsterdam tasks as compared with a cognitive access (working memory) capacity of 3–4 (for items of comparable level of complexity) [2]. Specific representations encode letters with enough detail to decide among the 26 letters of the alphabet and encode rectangles with enough detail to decide orientation in the Amsterdam experiments.

Is the specific information necessary for the partial report superiority unconscious, as Kouider *et al.* claim, or conscious, as I claim? Instead of confronting the actual evidence, Kouider *et al.* appeal to an 'observer effect' that 'might' render the issue immune to scientific investigation. My argument [2] appealed to direct evidence [4] that unconscious working memory is too weak to account for these capacities (among other pieces of evidence). A problem in that evidence [4] is that the perception was made unconscious by masking, thereby weakening the percept. However, other paradigms indicate that even when unconscious perceptions are strong, they decay rapidly (Carmel, D. *et al.* (2011) Fast unconscious fear acquisition. Presentation at the *15th Meeting of the Association for the Scientific Study of Consciousness*). In addition, Sligte *et al.* [5] provided evidence for persisting representations in V4 but not in the early visual areas (V1, V2 or V3), where one would expect them if they were unconscious. These experimental points reflect the methodology that I endorse: holistic consideration of which hypothesis is better supported.

According to the hypothesis Kouider *et al.* put forward, what is in consciousness before the cue are generic representations plus specific representations that are too

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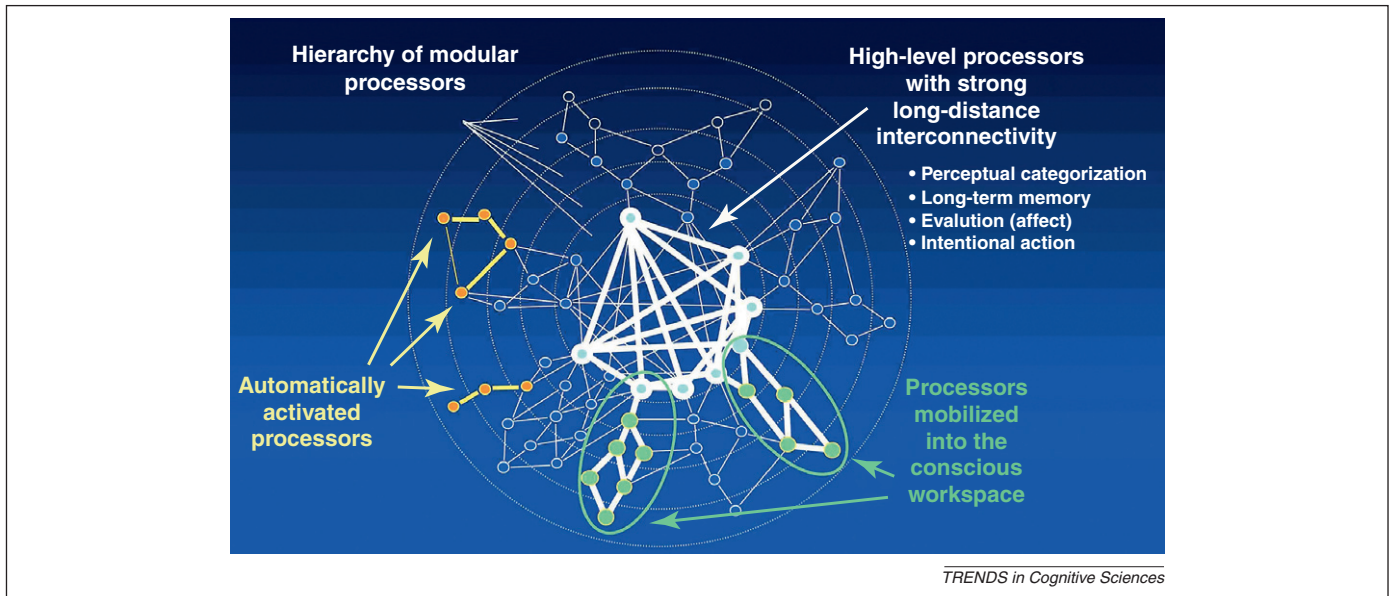


Figure 1. Access vs. accessibility. The distinction between cognitive access and cognitive accessibility can be illuminated by reference to the global neuronal workspace model [10], a model that purports to explain how sensory information can become widely available to mechanisms of reporting, decision making, and control of action. Dots and lines in the outside rings indicate sensory activations and their connections, whereas dots and lines in the center of the diagram indicate workspace activations. The thicker lines and dots indicate greater activation. Neural activations in the sensory areas compete with one another to 'ignite' reverberatory activity in the center which in turn maintains the peripheral sensory excitation until a new dominant coalition wins out. The sensory activations can be thought of as 'suppliers' of representations, whereas the central workspace neurons are 'consumers' that feed to mechanisms of reporting, reasoning, evaluating, deciding, remembering, and control of action. Dominant neural coalitions involving the workspace are accessed, whereas the weaker activations that could be activated by a shift of attention are merely accessible. Figure courtesy of Stanislas Dehaene.

sparse to provide the information necessary to explain partial report superiority. However, on their hypothesis one would expect a substantial error rate concerning the uncued items. However, Kouider *et al.* [6] found the error rate to be small: their own evidence counts against them.

Overgaard and Grünbaum [7] agree with Kouider *et al.* that data are irrelevant. They claim that the disagreement depends on pre-empirical intuitions about whether consciousness is cognitive or not and argue that cognitive conceptions of consciousness are supported by a strong intuition that it makes no sense to ascribe consciousness when the subject denies it. We disagree about the value of this intuition (as well as about the value of pre-empirical intuitions in general) but fortunately the value of these intuitions is not at issue in this debate. (I have mentioned the possibility of inaccessible consciousness in other work [8], but not in the overflow argument as explained in [2].) Overgaard and Grünbaum [7], much like Cohen and Dennett [9], are conflating access with accessibility (see Figure 1 for an illustration of this distinction). Subjects in the overflow experiments do not deny consciousness of the items and all or almost all of them are accessible – even

though, necessarily, most items are unaccessed, none are inaccessible.

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