

accessibility. There is a subjective difference between Sperling cases and inattentive blindness, which suggests that phenomenology occurs under conditions of accessibility, and not inaccessibility.

For more than a decade Ned Block has been defending the thesis that phenomenal experience can occur without cognitive access. In his target article here, he compellingly argues for the more restricted view that phenomenal experience outstrips accessibility *in a narrow sense*. In Block's terminology, a perceptual state is narrowly accessible if it has been encoded in working memory (or encoded in a "global workspace" in frontal cortex). It would be more perspicuous to describe such states as "accessed," rather than "accessible." In contrast to these, there are states that are accessible but not yet accessed, and states that are totally inaccessible (Dehaene & Naccache 2001). Therefore, we may ask whether consciousness outstrips mere accessibility in addition to access. Block is largely agnostic about this question here, but he implies that phenomenology outstrips accessibility; his methodological claims seem to entail this conclusion, and his phenomenal/access distinction may depend on it (Block 1995b). In this commentary, I argue that Block can grant the existence of inaccessible phenomenal states only on pain of multiplying the number of phenomenal states beyond plausibility.

Elsewhere I argue that phenomenal consciousness requires attention (Prinz 2005; 2007; forthcoming). I define attention as the process that allows representations in perceptual centers to gain access to working memory. Attended representations are accessible, but not necessarily accessed, as confirmed by studies of divided attention and passive movie watching (Goldberg et al. 2006; Kouider et al. 2007). If this account is right, the neural correlate of consciousness is the neurocomputational process that underwrites accessibility. That process might be a distinctive pattern of neural activation, or perhaps activation levels above a critical threshold. When the process occurs, the affected neurons can send afferent signals to working memory structures in frontal cortex, but task demands, lateral competition, and other factors determine which neurons in the window of attention propagate beyond perceptual centers and get encoded in working memory. Thus, there is a three-way distinction between unattended, attended, and encoded, or inaccessible, accessible, and accessed.

Block correctly concludes that phenomenology outstrips working memory encoding, but he underestimates the behavioral evidence for the view that accessibility is necessary for phenomenology. Research on inattentive blindness, attentional blink, extinction, and visual neglect strongly suggest that phenomenal experience disappears when attention is withdrawn. Block seems to disagree. He implies that phenomenology can occur without attention (consider his discussion of extinction and his enthusiasm for the view that reentry is the neural correlate of consciousness). Block implies that cases of inattention are comparable to Sperling cases (and standard change blindness experiments), in which participants report seeing a stimulus but cannot identify it. He may think that we have phenomenology in both cases. If so, this is a fatal flaw in his position. Sperling cases and cases of inattention are radically different. In cases of inattention, participants insist that they have seen nothing, and they are at chance in guessing whether there was an object presented in their unattended fields. There is no reason to postulate phenomenology under total inattention, and overwhelming reason to postulate phenomenology in Sperling cases (and cases of change blindness), where subjects attend to the stimuli and have vivid experiences, despite limitations of reportability. In my terminology, Sperling cases involve accessibility without (complete) encoding, and inattention cases render stimuli inaccessible. Therefore, consciousness depends on accessibility.

Block might counter with a methodological objection: The claim that phenomenology disappears under inattention is based on what participants report in the relevant studies, and taking reports as authoritative begs the question against those

who believe that phenomenology outstrips accessibility. Against this, I have two replies. First, the evidence does not rely solely on reports. There are dramatic *subjective differences* between inattentive blindness and Sperling cases; anyone who has seen both kinds of stimuli can experience the contrast. There are presumably also psychometric and physiological differences that correlate with the subjective differences, and these can be used to test for phenomenology when reports are unavailable or unreliable (as with aphasia or anosognosia). Under non-pathological conditions, every subject can subjectively confirm that when phenomenal experiences occur, we can at least report that *something* was experienced. That gives us reason to trust such reports in others. Reports can be subjectively confirmed.

Second, Block implicitly relies on reports in defending his own conclusions. For example, he dismisses the view that activations in low-level visual areas are conscious by appeal to the fact that there are low-level activations corresponding to unseen stimuli in binocular rivalry studies. But the assumption that participants in rivalry studies are not experiencing both concurrently presented stimuli is based on what they report. Block must either concede that reports are authoritative or deny that we can rule out the possibility of conscious states in V1 and earlier visual areas.

In response, Block should reject the conjecture that both stimuli are conscious in binocular rivalry on subjective grounds: When you participate in such a study, you feel like you are seeing just one stimulus. The subjective method of determining which states are conscious does not presuppose that consciousness depends on reportability; even if I don't trust the reports of other participants, I can participate in the studies and see for myself. If Block grants that subjective confirmation is authoritative, then he should concede that there is no experience of stimuli under conditions of inattention. If he denies that subjective confirmation is authoritative, then he will have no way of ruling out that we have conscious experiences of both stimuli in binocular rivalry – indeed, Block will have no way of ruling out the possibility that there are phenomenal states in the LGN and the retina. On the first horn, Block would have to concede that phenomenology requires accessibility, and, on the second horn, he would proliferate the number of phenomenal states beyond plausibility. In sum, I think Block can postulate inaccessible phenomenal states only on pain of rendering every visual response conscious. The dramatic subjective distinction between Sperling cases and cases of inattentive blindness undermines efforts to establish phenomenology without accessibility.

## Phenomenological overflow and cognitive access

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**Abstract:** I argue that the partial-report results Block cites do not establish that phenomenology overflows cognitive accessibility, as Block maintains. So, without additional argument, the mesh he sees between psychology and neuroscience is unsupported. I argue further that there is reason to hold, contra Block, that phenomenology does always involve some cognitive access to the relevant experience.

Block's argument for the overflow of cognitive accessibility by phenomenology relies primarily on the partial-report results of Sperling (1960) and others. I argue first that those results do not by themselves support that overflow. I then raise concerns

about whether phenomenology could be altogether independent of cognitive access, as Block maintains.

Subjects in Sperling's experiment can identify only a few of the presented letters, but they report that they are all letters. Block convincingly argues that this limitation in identifying results from constraints imposed by visual working memory. He also urges that "phenomenology persists beyond the stimulus" (sect. 9, para. 4), since post-stimulus cuing enables subjects to focus on the subset of items they then identify. Because that cuing occurs after the stimulus has ceased, one reasonable hypothesis is that the identifying relies on persisting phenomenology.

Still, subjects identify all the items as alphanumeric independent of any cuing; as Block notes, subjects "can bring them [all] under a general concept like 'alphanumeric character'" (sect. 9, para. 2). So all the items are at least partially conceptualized independent of cuing, presumably before the stimulus ceases.

So it may well be that, even before the stimulus ceases, the items are all conceptualized in respect of their specific alphanumeric identity. Identification of specific letters might then rely solely on that conceptual information, rather than on persisting phenomenology. The working-memory bottleneck would still be operative; conceptual representations of the specific identities of all the letters would be available prior to cuing, but only about four could get through to figure in subjects' identifications.

On this model, only persisting conceptual representations figure in whatever identifications the bottleneck permits. As with the Global Workspace model of Dehaene and Naccache (2001), which Block considers, the limit on specific identifications results from a constraint on how much conceptual information can get through.

Perhaps phenomenology does persist, as Block urges. But some conceptual representations plainly persist as well, since subjects can identify all the items as alphanumeric long after phenomenology has clearly ceased. So if phenomenology does persist, it is accompanied by persisting conceptual representations, and those representations may by themselves be the basis of whatever specific identifications subjects can make.

The same holds for the related results of Landman et al. (2003). Block urges that these "[s]ubjects are apparently able to hold the visual experience for up to 1.5 seconds" (sect. 9, para. 7). But, as with the Sperling result, subjects' post-cuing ability to detect which rectangles have changed may be the result, not of persisting phenomenology, but rather, of persisting conceptual representations.

Block takes phenomenology to overflow cognitive access because subjects must have "persisting experiences as of more specific shapes than can be brought under the concepts required to report or compare those specific shapes with others" (sect. 9, para. 10). But the working-memory bottleneck may instead operate by restricting the number of fine-grained conceptual representations that can figure in reporting and comparing.

The upshot of the partial-report results, then, would not be "phenomenological overflow" (sect. 9, para. 13), but rather overflow of the working-memory bottleneck by fine-grained conceptual representations. Since the mesh Block argues for is "between the psychological result that phenomenology overflows cognitive accessibility and the neurological result that perceptual representations that do not benefit from attention" (sect. 14, para. 10), that mesh is in jeopardy. So it cannot help resolve Block's puzzle about "whether the cognitive access underlying reportability is a constitutive condition of phenomenal consciousness" (sect. 2, para. 9).

In any case, there is reason to think phenomenology does always involve cognitive access. Block notes that "when one has a phenomenally conscious experience [i.e., an experience with phenomenology], one is in some way aware of having it" (sect. 6, para. 1). This reflects the widespread intuition that phenomenology is a matter of how our mental lives appear to us. There being something it is like to have an experience is just a matter

of such mental appearance. Block denies that being thus aware of an experience itself involves some cognitive access to it, but his reasons for that rejection are unconvincing.

One way to explain why phenomenology always involves awareness of the experience is to posit a distinct higher-order state about the experience (Rosenthal 2005). Block notes that phenomenology occurs even when we do not notice, attend to, or think about it. But that does not rule out having inattentive, nonconscious thoughts about one's phenomenology.

Block also notes that young infants are often in pain, though they may be incapable of such higher-order states. But it is possible that infants' pains are not conscious pains. A state can have qualitative character even if there is nothing it is like for one to be in that state (Rosenthal 2005, Ch. 7); it is question-begging here simply to assume otherwise. And because nonconscious pains have largely the same causal connections to behavior and to a strong desire for pain to cease, they are just about as bad. So infants' pains are compatible with the hypothesis that higher-order cognitive states are required for pains to be conscious – for there to be something it is like for one to have them.

Block also argues that a higher-order theory of consciousness "fits both science and common sense" (sect. 6, para. 3) less well than same-order theories, on which the awareness of an experience is internal to the experience itself. But according to standard same-order theories (Brentano 1874/1924; Kriegel 2005), that awareness is every bit as cognitive as on the higher-order-thought hypothesis (Rosenthal 2005).

Block's concession that phenomenology always involves being aware of it also raises a difficulty he does not address. Phenomenology may occur, he holds, when there is activation in the fusiform face area of the extinction patient G.K., even though G.K. "not only does not know about, but ... cannot know about" (sect. 14, para. 13) that phenomenology. But awareness of things standardly results in one's knowing about them and in being able to express that knowledge in verbal reports. If phenomenology always involves awareness of it, why would such awareness fail here to have those results?

Perhaps Block thinks that G.K. might in this case have only a weak phenomenology, like the nonconscious qualitative character that may occur in infants. But that is not ordinary phenomenology, which involves there being something it is like to have it.

Higher-order theories of consciousness and many same-order theories avoid this difficulty, since they hold that some cognitive awareness is constitutive of all phenomenology. By contrast, the global-workspace theories Block favors do not help explain why ordinary phenomenology always involves some awareness of it.

Block argues for the possibility of phenomenology wholly without cognitive access. But the awareness that always accompanies phenomenology and the compelling intuition that phenomenology is essentially a matter of mental appearance together suggest a close tie between phenomenology and some type of cognitive access.

## Conscious access overflows overt report

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