REPLIES TO COMMENTATORS

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I want to thank warmly the commentators of my paper for their effort and the many thoughtful and challenging observations. The topic of consciousness is work in progress in general and for me in particular, which is why their contributions are most welcome and helpful. Let me add that, in addition to some further elaborations, the paper is based on a condensed and simplified précis of my 2010 book OUR OWN MINDS (henceforth OOM), which is why, inevitably, many claims in the former are less developed and defended than in the latter. In what follows I will refer to both texts and organize the discussion around the topics that got most of the attention of my commentators.

I would like to start by noting a methodological strategy I adopted. Consciousness can be approached from many angles. One of them is that of neuroscience: where it happens and through what brain processes. It is the angle from the bottom, so to speak. It is not mine. Another is the mostly philosophical angle from the top, reflected in such questions as 'what-it-is-like-to-be X phenomenally?' or 'what makes a mental state conscious?' or 'what exactly is one conscious of?' or 'who/what is the self that is conscious?' This is mostly the angle informed by inside intuitions, ordinary or folk concepts, the ordinary talk of consciousness as well as by connected topics in philosophy of mind, such as intentionality, reference, selfhood and the subpersonal lack of it, and the like.

Despite occasionally gesturing to some elements of this philosophical cocktail, in support of my hypotheses, this is not my angle either. I pitch my inquiry in the middle, so to speak, and focus on the very possibility of consciousness as a mental competence, which is revealed by the conditions in which it evolved/develops and the reasons for these conditions. This is why I have deliberately left open, for further inquiry, the specific properties of the key parameters of self-consciousness, as I construe it, such as self, relatedness or intentionality, the modalities of relatedness (perception,

memory, thinking) and their targets. These parameters of self-consciousness, left open by my inquiry, are bound to be variable across species and developmental stages. At a level of generality higher than the specific values of these parameters, my interest is in the invariant design of self-consciousness as a competence and the reasons for its very possibility.

With this methodological option on record, let me begin with a relevant question raised by my commentators and say more about this competence angle and the dispositional format of self-consciousness.

Self-consciousness as a competence (Ferguson, Shevlin)

The aim of OOM was to explain the possibility of self-consciousness as a mental competence and its installation during ontogeny, not its performances or applications in particular cases. To take an analogy, explaining the competence for grammar is distinct from charting its pragmatic applications. What makes a particular mental state conscious belongs to the applications of the competence, on a par with the pragmatic uses of grammar in particular utterances. The same is true of remembering or emoting. These are competencies exercised in the form of specific memories and emotions. A stimulus (and other mental conditions) activate the competence in a specific application and thus explain the occurrence of a particular memory or emotion. But what makes the latter memories or emotions is the exercise of the competence, not the stimulus and collateral conditions.

Kyle Ferguson and Henry Shevlin challenge me to explain what makes <u>particular</u> mental states conscious. Since this was not my aim, I did not develop the required explanatory framework in OOM or the paper under discussion. But I will say this much. Any account of what makes a particular mental state conscious is a <u>performance</u> account of the exercise of the competence, not an account of the competence, that is, of what makes mental states conscious in general.

Higher-order representation (perception, thought) theories of consciousness, to take just one notable example, can be read as <u>performance theories</u> -- theories of the “pragmatics” of consciousness, if you like. They are important theories, revealing mechanisms of the <u>exercise</u> of consciousness, but they do not explain the competence itself. I happen to

think that higher-order representation theories actually explain the application or intense activation of one or two high-level executive abilities, such as top-down attention and metacognition, with the additional (and plausible) hypothesis that such an application or activation is guided by a higher-order mental representation responding to a specific input. To answer a question raised by Shevlin (his page 3), one or the other of the executive abilities in question can be in a low activation state while the higher-order mental representation may focus, intensify and guide its occurrent application.

Despite how they advertise themselves, the main theories of consciousness (higher-order, representationalist, functionalist) actually explain -- and, if successful, manage to explain only -- the consciousness of instances of kinds of mental states, which (again) is a performance explanation. They do not explain phenomenal consciousness in general, least of all its phenomenal character. In its thin indexicality, the latter is not easily amenable to any sort of explanation, as noted below, in the paper and in OOM, chapter 8.

It is also the business of performance theories to explain which particular mental states are conscious and which are not in an agent at a particular time. In the much-discussed case of the absent-minded driver (evoked by Shevlin) I suggested in OOM that her extrovert, perception-bound consciousness is lacking, through the failure of the relevant world-directed executive machinery, while her introvert consciousness is on, courtesy of her thinking hard about some topic, with the relevant mind-directed executive machinery on high gear. This is an example of the extrovert competence itself not working, for executive reasons, affecting perceptual consciousness generally.

The very concept of self-consciousness (Ferguson, Shevlin)

In construing self-consciousness as a conscious sense of self-to-target relatedness, I started from the empirical truism that most mobile organisms are intrinsically goal-directed (where goals are external things or states of affairs) and hence are related to targets in the world, and also to targets projected by their own minds (an account developed in an earlier book, Bogdan 1994), and cannot adaptively handle this target-relatedness

without abilities to differentiate their selves from the world (self-determination) and guide their selves to targets (self-guidance). Internal monitoring mechanisms enable organisms to have a sense -- a sentient or neurofunctionally effective sense -- of how well their self-determination and self-guidance work. There is nothing fancier or more specific in my notion of self-to-target relatedness than what is implied empirically by these italicized notions. The question, then, for my inquiry is in what conditions and for what reasons this sentient sense of self-to-target relatedness becomes conscious, as self-consciousness.

What I just said should begin to answer several questions raised by my commentators. Henry Shevlin thinks that I take only conscious behavior to be goal-directed. Not so, as just noted. In fact, in an earlier work (Bogdan 1994) I went so far as to suggest that goal-directedness is the essence of life, from the lowest creatures to the highest. Furthermore, goal-directedness and self-regulation do not require a concept of self, as Shevlin implies and Ferguson rightly expects me to clarify: a sense of selfhood (in the two versions just sketched) requires self-determining and self-guiding mechanisms, in a basic neurofunctional or cybernetic sense. It is the work of these mechanisms, not the work of a concept, that underpins an organism's sense of self-to-target-relatedness.

To follow up on this idea, in OOM (ch. 7) I actually distinguish three kinds of selves with their specific kinds of thoughts -- me-self with me-thoughts (the ownership version of self generated by self-determining mechanisms), I-self with its I-thoughts (the mental agency version generated mostly by self-guiding mechanisms), and finally the projected self with its self-thoughts (generated by mechanisms of reflexive and metarepresentational projection, which develop after the age of 4 and are involved, inter alia, in autobiographical recall and self evaluation). Focused solely on the installation of the competence, I argue that introvert self-consciousness develops in midchildhood under the pressure of factoring a projected self and its explicit self-thoughts into one's mentation, in response to new sociocultural and sociopolitical (cooperative and competitive) challenges.

A projected self and its self-thoughts are what older children turn

their executive machinery to, intramentally, to answer a legitimate query of Kyle Ferguson. This turn leads to the ontogenetic installation of introvert self-consciousness. As for Ferguson's helpful suggestion of the ways in which my notion of self-consciousness can be construed (on his page 9), I would say that formula (5) [R<o, R<ms, s>>] comes closest to capturing the introvert self-consciousness involved with explicit self-thoughts, while (4) [R<o, ms, s] comes closest to extrovert self-consciousness, where 'R' is the relevant relational modality (perception, memory, etc.), 's' his stimulus, my target, 'o' his organism, my (notion of) self (under some appropriate description), and 'ms' mental state.

This analysis could also respond to Ferguson's astute counterexample (his pp. 7-8), whereby a savvy blindsighter, told about her above-chance guesses, comes to believe that she is seeing a visual target in the blind field after all. In what way is she self-consciously related to the visual target? To paraphrase Ferguson, by applying her intuitive-psychological understanding to her own behavior, she forms the thought 'I am seeing the red target,' which is also the thought formed by a normal sighter. The difference is that the blindsighter, but not the normal sighter, operates here with a projected self and its self-thoughts. The blindsighter has an introvert self-consciousness of her self-thought about what she is told, whereas the normal sighter has an extrovert self-consciousness of what he actually perceives. This, of course, may not be the only explanation, since the blindsighter has normal vision as well, outside the blind field, and can easily enlist genuine visual memories of red objects to interpret what she is told.

Ferguson is right to observe that my concept of self-consciousness is that of transitive consciousness but I go further and argue (in OOM) that this, as far as I can see, is the only empirically sound concept, involving complex and multimodal mental manifolds and not isolated mental states or (intransitively) entire target-indifferent creatures. Mental-state consciousness and creature consciousness may be useful ways of focusing on and talking about select aspects of self-consciousness (top-down attention to a specific mental state in one case, immensely drowsy in another -- both kinds explained by the work or failure of executive machinery) but they do not capture distinct forms of consciousness as mental competencies -- not on my counting anyway.

The role of folk psychology (Ferguson)

Moving on, it should also be apparent by now that my notion of self-consciousness is not indebted to folk psychology, as Kyle Ferguson suggests.

Before I explain why, it will help to clarify my terminology. I construe intuitive psychology (or mindreading) as an evolved mental competence made of two components -- a naive psychology, as a largely procedural and partly innate expertise that operates alone in the first few years of childhood (and possibly, to some extent, in other primates) and a commonsense psychology that develops after the 4 to 5 interval on this naive foundation but incorporates new conceptual resources, of a cultural and public nature, and is responsible for turning the overall intuitive-psychological competence toward self. That mind-directed turn toward self can work only through a similar mind- and self-directed turn of high-level executive abilities, with introvert self-consciousness as a result.

Now back to folk psychology. This term may mean commonsense psychology as just sketched or may mean an accumulated lore about the mind, more like folklore. In either version, I do not take folk psychology to be descriptive of the workings of the mind. On the contrary: over the years, in partial sympathy with instrumentalists and even eliminativists, I argued that folk psychology does not care about, and hence is not a good prototheoretical guide to, the architecture of the mind -- even though (again) as a mental competence that includes its commonsense component, intuitive psychology is massively implicated in the ontogenetic design of our mental architecture, including self-consciousness (Bogdan 1993, 1997, 2000, 2009; 2010). But being a mind designer is quite different from being true about the mind in general and consciousness in particular.

True, our folk-psychological conception allows useful talk about consciousness, such as creature-consciousness talk (“he is conscious all right”, we may say about somebody just involved in an accident) and less often isolated mental-state talk (“I wasn’t aware that I believed that” -- a specific proposition) but generally this conception of consciousness is robustly relational, which is why I cited it but without building any substantive argument on this relational insight and certainly not taking it as delivering necessary truths about consciousness.

Where folk psychology looks (uncomfortably) indispensable, as Kyle Ferguson notes (his page 3), is in ascertaining the presence, absence or degree of consciousness. This indispensability reflects the privacy of consciousness and its indirect public expressions. Nevertheless, there are also behavioral and neuroimagistic tests, which neuropsychology increasingly relies upon and which I read as supporting an executive take on consciousness (with concrete details in OOM). I am inclined to treat the indispensability of folk psychology not as a pretheoretical and unreliable window on mental architecture, in the spirit of David Lewis favored by Ferguson, but rather as a sort of translation manual that enables an intelligible traffic between private experiences and a public language with its commonsense conceptual assumptions about minds -- indeed, a way of making common or public sense of minds (more in OOM, chapter 6).

It suffices to note here that, as a result, we think of our own kinds of conscious mental states (desires, beliefs, pains, feelings, memories and so on) in commonsense or publicly intelligible terms. As commonsense psychologists, we rarely if ever think and talk of phenomenal consciousness as such, of its nature, aside from the occasional (and likely executive) creature talk, illustrated earlier. The commonsense focus is on instances of kinds of mental states. The very fact of being phenomenally conscious is treated more like an indispensable indexical, so thin as to be close to contentless, in the sense suggested in my paper. If this is plausible, there isn't much that commonsense psychology can tell science about phenomenal consciousness. What-it-is-like-to-be phenomenally conscious is private but is also so indexically thin that neither cognitive science nor commonsense psychology seem to bother. In the paper, and OOM, chapter 8, I gestured toward a history-of-ideas diagnosis of why philosophers of mind got excited about phenomenal consciousness in recent decades.

Extrovert, perceptual, distal or proximal (Lurz)

Robert Lurz raises an interesting objection. He takes me first to claim that all consciousness is extrovert, probably because some of my formulations mention an external environment. For most animal species and young human children, that may be true, but I also envisage an introvert self-consciousness. Introvert consciousness also has contents and is therefore

relational, usually by projecting targets in a fictional or imagined environment.

This brings our discussion to the notion of target. As noted earlier, I left it deliberately vague, as an end point of conscious relatedness or intentionality, whose specific properties are to be determined empirically and contextually. The full notion is of course that of 'target as represented.' Lurz challenges the notion that all perceptual consciousness is extrovert on the grounds, if I understand him right, that extrovert consciousness may be proximal (the table top looks rhomby) whereas perception, through constancy mechanisms, can also deliver distal properties (say, a square table top). I do not talk of perceptual consciousness precisely in order to avoid this kind of distinctions. For it really does not matter to my argument whether extrovert self-consciousness tracks proximal or distal targets, as long as it tracks targets representable some way or another. Whatever extrovert self-consciousness tracks perceptually, it still reflects a conscious sense of self in relation to a represented target.

A further clarification is needed in this context. Robert Lurz takes me to link blindsight and absent-mindedness essentially only with introvert self-consciousness. I don't, as both the text he cites (on his page 4) and the rest of my paper and book indicate. The essential link of blindsight is with extrovert self-consciousness; that is what is missing in blindsight and absent-mindedness. What may have created the wrong impression is the notion of high-level executive abilities. Such abilities are actually involved both in extrovert and introvert self-consciousness. To simplify quite a bit, it is just that in the extrovert version of early childhood they operate online on perceptuomotor, affectuomotor and communicational relations to external targets, whereas in the introvert version they also operate offline on thoughts and other mental states. Furthermore, several executive abilities required for the introvert version, such as inhibition, autobiographical recall and a capacious working memory, are absent in the extrovert version of young children and possibly other primates. Their absence is fairly good evidence of a developmental asymmetry in the human ontogeny of self-consciousness, which is my next topic.

The phylogenetic/ontogenetic asymmetry (Lurz)

I knew that this asymmetry claim would be controversial. Let me start narrowly and then enlarge the picture. Robert Lurz takes recent work to show that children younger than 4 are "conscious of their own perceptual experiences and use [this] knowledge to understand the visual perception [or perspective -- the text is not clear] of another agent" (his page 5). I am not sure about the second claim (it may be the other way around or the self-to-other transfer may be done unconsciously by mirror neurons or Meltzoff's earlier like-me mechanism) but surely extrovert self-consciousness does imply consciousness of one's perceptual experience of external targets, precisely because it requires top-down attention, monitoring, metacognition, memory recall (to identify targets), among other high-level executive abilities available online to young children and other primates. There is nothing introvert in this scenario. Online metacognition is also executively practiced by young children and monkeys. As far as I can tell, their metacognition is not introvert thinking about thinking (that is a late childhood acquisition, as the extensive work of John Flavell (1995) has shown; also Bogdan 2000), but rather an online monitoring and correction of mental and behavioral activities, which need not even be conscious, let alone introvertly so.

Let me now move to the larger picture. I make the case for a developmental asymmetry in human self-consciousness by surveying not only the use and world- or mind-orientation of high-level executive abilities but also of a host of other mental developments, from thinking to memory, which show a similar extrovert-first-introvert-later asymmetry. Most importantly for my account, it is the children's intuitive psychology, oriented extrovertly in the first four years of life and introvertly only after, that confers a commensurate asymmetry to self-consciousness because it is the former that recruits and orchestrates high-level executive abilities in patterns responsible for the emergence of the latter. This correlation of asymmetries, by the way, is largely missed if one adopts one of the popular accounts of intuitive psychology (module, simulation, theory-theory), as I argue in chapter 3 of OOM.

Let me enlarge the picture still further. Many people in the consciousness business, as well as hoi polloi, take consciousness to be some

sort of brute ingredient of neural experience, a constant dimension of mentation, widespread in the animal world and uniformly present in human ontogeny. I find this view gravely mistaken, first of all for evolutionary reasons. Mental competencies, and self-consciousness is one, do not come out of the blue; they build gradually on many prerequisite abilities, for some reason or in response to some challenges or pressures. If, as I propose, self-consciousness builds upon a network of high-level executive abilities assembled by children's intuitive psychology, the evolutionary question to ask is what challenges would explain the asymmetric development of that network and the resulting self-consciousness.

It turns out, not surprisingly, that the strongest and most persistent challenges of early childhood are the relations to adults and the assimilation of their language and culture, all requiring an extrovert stance mediated by an equally extrovert intuitive psychology. It is only after the 4-to-5 interval, once children fully enter the world of their peers and start playing complex sociopolitical games of cooperation and competition, that a self-image and an active awareness of how self figures in dealing with others become important and call for an inward work of their intuitive psychology and the executive abilities this work requires. It is thus no wonder that a full recognition of one's own attitudes, autobiographical memory, self-control and introspection emerge only after this interval. The overall point, then, is that the asymmetric ontogeny of self-consciousness -- and more basically of intuitive psychology and the executive abilities it assembles -- reflects and responds to an asymmetry in the very challenges that these competencies evolved to handle.

Sentience, phenomenality, experience (Shevlin)

I have tried my best so far to avoid philosophical and terminological debates about key words in the consciousness vocabulary. But I fear some queries give me no further elbow room at this point, where notions like experience, phenomenality and sentience show up for scrutiny. So be it.

Is consciousness, as I understand it, phenomenal? If by 'phenomenal' we mean the qualitative or what-it-is-like character of experience, then the biochemistry of the brain ensures that it is. Things, properties, events are registered in some specific way in consciousness, more so in the extrovert

than the introvert version, where abstract thoughts and cold attitudes (such as opinion or inclination) may be lacking in phenomenal vivacity.

How about blindsighters and, similarly, many animal species? Do they experience what they do phenomenally yet unconsciously? I would say yes, for this is what sentience is all about, but I agree that the issue at stake here rests on conceptual and terminological decisions, which I fear are bound to be philosophically messy and difficult. Henry Shevlin wonders whether sentience as unconscious phenomenal experience makes sense without collapsing into mere neurological nonmental processing. I construe sentience functionally as involving the registration, encoding and representation of things, events and properties, including qualia, such as colors or sounds, and feeding into appropriate behavioral reactions. This psychofunctional construal is no mere neural firing. Retinal and LGN stimulations are just early stages in visual sentience. Early vision in David Marr's computational explanation is visual sentience, on my analysis. Is visual sentience part of an organism's visual experience? If 'to experience X' is to register, process and represent X or elements of X at some functional level, as in early vision, then yes, visual (and other forms of) sentience are experiences. If the functional registration, processing or computation and representation of qualia are deemed to be phenomenal (i.e., ways of appearing to specialized faculties of the organism), then yes, visual (and other forms of) sentience are phenomenal yet unconscious, as blindsight clearly indicates.

But, wonders Shevlin, do the notions of experience and phenomenality, so construed, make sense at a subpersonal level? He seems to take subpersonal states as simply neural underpinnings of genuine mental states. Yet, as noted, there is subpersonal psychofunctional life, plenty of it, as in early vision or blindsight, and it does not reduce to mere neurology. (When I wrote that the explanation of blindsight belongs to neuropsychology, I meant the emphasis to be on psychology, which is in the business of functional explanations.) And there is plenty of genuine mental activity, from predictions to decisions, that takes place subpersonally, below the radar of consciousness.

Can such subpersonal functional states and processes qualify as phenomenal experiences, without appearing as something to a subject as person? If the answer is no, because a subject or person is required, that is

fine with me, but then my account draws at least two implications.

I haven't offered an account of personhood, but one implication I foresee is that personhood goes together executively with self-consciousness (as I construe it), so that only young children and a few other species are extrovert persons who experience things phenomenally and only older children and adults are also introvert (and therefore full) persons with commensurately new and externally and internally integrated phenomenal experiences -- the very experiences we have privately as older children and adults. On this view, all subpersonal but functional states and process are merely or nonphenomenally sentient. Most animal species, then, would lack not only self-consciousness (on my analysis) but also phenomenal sentience (on this strong view of personhood).

The other and related implication, alluded to in OOM and the paper, is that if only self-conscious persons can have phenomenal experiences, then there is nothing for a bat or rat or (alas) cat or even blindsighter (in the blind field) to-be-like. If this conclusion looks like a reductio, then there is phenomenal but not conscious sentience after all.

My preference is indeed to downgrade the notions of experience and phenomenality to an unconscious and subpersonal but psychofunctional level, in order to build plausible explanatory bridges across the mental lives of various species and their developmental phases, and also to account for the ample, rich and sophisticated mental activity just below the radar of human consciousness but within its conscious reach once the right executive moves are possible and effected. In this light, then, the central question of my OOM book and the paper under discussion can be seen as asking in what conditions and for what reasons phenomenal experience or sentience becomes self-consciousness.

Postscript

I have been often talking here of the competence for self-consciousness. This is not quite accurate. Actually, the competence that emerges in response to the sociocultural and sociopolitical challenges of childhood through the mediation of intuitive psychology is an integrated network of high-level executive abilities. It is this integrated network that actually evolved as a competence, not self-consciousness as such. This

means that there was no selection for self-consciousness as such but rather for an intuitive psychology, which in turn can do its job only by recruiting and assembling an executive network at a high level of complexity in order to respond adaptively to the sociocultural and sociopolitical challenges of childhood.

In general, executive networks respond to what minds do in order to handle the challenges of their environments -- physical, social, cultural. Since the complexity and integration of these executive responses is bound to vary across species, their developmental phases and the environments in which they operate, so will the presence and nature of their self-consciousness.

The work of the executive network underpinning human self-consciousness in turn yields the occurrent synthesis of the outputs of several mental faculties. It is this synthesis in turn that produces our integrated phenomenal self-consciousness. One is reminded here of Kant's notion of consciousness as "unity of apperception" -- built in my account on an executive foundation. Self-consciousness, in other words, is the synthetic expression of the integrative work of a complex executive competence that develops first extrovertly and later introvertly.

If this evolutionary picture is plausible, then some of the difficult and puzzling questions about consciousness could be shifted to and asked about the underlying executive competence. I am thinking of questions such as those raised by Libet-style experiments and doubts about a conscious free will, also questions about the causal potency or (on the contrary) the epiphenomenality of consciousness, and the like. I am not going to address these questions here but I think that the executive account I proposed could make the questions more intelligible, manageable and less puzzling.

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