

H.O.T. Theory, Concepts, and Synesthesia: A Reply to Adams and Shreve

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Abstract: In response to Fred Adams and Charlotte Shreve's (2016) paper entitled "What Can Synesthesia Teach Us about Higher Order Theories of Consciousness?", previously published in *Symposion*, I argue that H.O.T. theory does have the resources to account for synesthesia and the specific worries that they advance in their paper, such as the relationship between concepts and experience and the ability to handle instances of 'pop-out' experiences.

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In response to Fred Adams and Charlotte Shreve's (2016) paper entitled "What Can Synesthesia Teach Us about Higher Order Theories of Consciousness?" (*Symposion* 3: 251-257), I argue that H.O.T. theory does indeed have the resources to account for synesthesia and the specific worries that they advance in their paper, such as the relationship between concepts and experience and the ability to handle instances of 'pop-out' experiences.

1. Some Initial Points

First, Adams and Shreve (hereafter, A&S) define synesthesia as follows: "Synesthesia is a condition in which stimulation of one sensory modality causes unusual experiences in a second unstimulated modality." (Adams and Shreve 2016, 252) They mention the example of someone "seeing red when hearing C-flat." However, as A&S know, synesthesia doesn't always involve the blending of two or more *senses*, such as in the more common color-numerals case whereby synesthetes see numbers as colored.

Second, I have a slight quibble with their initial introduction of H.O.T. theory in so far as it ignores a central motivation for the theory. A&S explain that "H.O.T. theories of consciousness maintain that what makes an experience conscious is a higher order thought that takes that experience as its content... what turns a non-conscious experience into a conscious one is the higher order thought that takes the non-conscious experience as its content." (Adams and Shreve 2016, 251)

Fair enough, but I think it is important to keep in mind that H.O.T. theorists often start with the highly intuitive claim that has come to be known as the Transitivity Principle (TP):

(TP) A conscious state is a state whose subject is, in some way, aware of being in it (Rosenthal 2005).

One motivation for H.O.T. theory is the desire to use this principle to explain what differentiates conscious and unconscious mental states. Thus, when one has a conscious state, one is aware of being in that state. For example, if I am having a conscious desire or pain, I am aware of having that desire or pain. Conversely, the idea that I could have a conscious state while totally *unaware* of being in that state seems very odd (if not an outright contradiction). A mental state of which the subject is completely unaware is clearly an *unconscious* state. For example, I would not be aware of having a subliminal perception, and thus it is an unconscious perception. Of course, how best to understand the ‘aware of’ expression in TP is what accounts for different versions of higher-order theories (Gennaro 2004, 2006).

Third, although A&S do rightly point out that H.O.T.s need not themselves be conscious (Adams and Shreve 2016, 254, fn. 5), I worry that they still sometimes mistakenly conflate (unconscious) H.O.T.s with conscious H.O.T.s (= introspection) in a couple of key places. It is only when a H.O.T. is conscious that one’s attention is focused inward at a mental state. This is definitive of *introspection* as opposed to (first-order) outer-directed consciousness. But, for example, A&S say the following: “...one may be exerting pressure on the seat of the chair upon which one is sitting, but not be consciously experiencing that pressure. However, *as soon as one’s attention turns to that pressure, it will be consciously experienced.*” (Adams and Shreve 2016, 251, my emphasis) This reference to turning one’s attention to the feeling of pressure sounds like introspection to me in the sense that A&S seem to have in mind *consciously* turning one’s attention to the pressure sensation in question. The same seems to be the case when they then speak of it taking an “act of conscious will or attention” to make the experience of pressure conscious. But, once again, H.O.T. theory does *not* require introspection for merely having a first-order conscious state, that is, the H.O.T. is *unconscious* in these cases. It is of course still true that “...when one directs attention to a state, attention is a conscious state” (Adams and Shreve 2016, 254, fn 5) if this is taken to mean that when one introspects a mental state, then that mental state becomes the object of one’s *conscious* higher-order thought.

2. H.O.T.s and Sub-personal States

A&S seem to infer from a mental state’s being ‘sub-personal’ to it being ‘not higher-order.’ For example, in the context of discussing my view of the binding problem involving feedback loops and top-down integrations of brain activity (Gennaro 2012a), A&S say that “Gennaro believes this is compatible with higher-order accounts. However, we think this explanation would make higher-order theories rely crucially on sub-personal states. If they do, this removes the ‘higher’ from the higher-order theories and resorts to replacing higher-order thoughts with the lower level information processing in the brain that is well below what can be accessed even in principle by the person.” (Adams and Shreve 2016, 256)

Now, first of all, if 'sub-personal' mainly just initially means 'unconscious,' then a H.O.T. can surely still be sub-personal, unconscious, and higher-order. Indeed, as we have seen, most H.O.T.s are unconscious. Further, as I have argued at length elsewhere (Gennaro 2012b), I think of unconscious H.O.T.s as 'presupposed' in conscious states, somewhat along Kantian lines whereby the 'understanding' conceptually operates on and synthesizes incoming sensory information. So, yes, H.O.T.s (normally at least) do rely crucially on sub-personal states but it is unclear to me why sub-personal states cannot also be higher-order. There are, to be sure, also some feedback loops and neural integration at lower neurophysiological levels but we also find significant neuronal feedback between lower- and higher-level brain regions. So 'feedback processes' can be both unconscious and higher-order.

I do not dispute the abundance of evidence, cited by A&S, for the immediate 'pop out' experience of synesthetes or in normal experience. However, I think that H.O.T. theory can account for this. A&S claim that

the reason this is interesting in regard to H.O.T. theories, is that the 'popout' phenomena is a bottom-up visual experience. The subjects did not first see the shape (triangle or circle) and then have the higher-order thought ('triangle' or 'circle') causing the experience of the shape to become conscious. Rather, the perceptual pop-out produced the conscious visual experience of the shape prior to the having of the thought about the shape experienced. According to H.O.T. theory, the experience should be non-conscious before a higher-order thought about it raises it to consciousness. So, an H.O.T. theorist would need to say that when the circular or triangular shape pops out, first the subject is having a non-conscious experience until the H.O.T. is applied. But this seems to have it backwards. The subject has no idea of which shape to look for or whether there will actually be one. The visual pop-out is immediate and vivid in its color presentation. It first looks red and circular or red and triangular and only then has the subject the time to apply the relevant concept ('circle' or 'triangle'). (Adams and Shreve 2016, 254)

A&S are supposing that, according to H.O.T. theory, applying a concept to something is always conscious, but this is not the case on H.O.T. theory and in everyday life. When we walk down the street and consciously see a tree, do we see the tree *and then* consciously apply the concept TREE? I don't think so. We immediately apply the concept TREE to the perception (if we recognize it as such) but the H.O.T. is unconscious in this world-directed case. Concepts, among other things, enable us to *recognize* objects and to distinguish objects and properties in the world. This is commonly referred to 'seeing-as,' 'hearing-as,' and so on. So when A&S say "The subjects did not first see the shape (triangle or circle) and then have the higher-order thought ('triangle' or 'circle') causing the experience of the shape to become conscious," I think that this is true but only if "not first see" means "not first consciously see." Again, the application of the concept can happen unconsciously and prior to the conscious experience. So when A&S say that "the perceptual pop-out produced the conscious visual experience of the shape prior

to the having of the thought about the shape experienced," I once again disagree since I hold that both the unconscious perception *and* the unconscious H.O.T. occur prior to (or right about the same time as) the conscious visual experience. H.O.T. theory doesn't have it 'backwards;' rather, as Kant argued contra the empiricists, conscious experiences are the *products* of both sensory input and cognitive thought.

A&S do mention that "Andre Galois and Rocco Gennaro suggested to us that unconscious [H.O.T.s] may be able to explain both pop-out phenomena and the example of becoming conscious of the pressure you exert on the chair." Part of the purpose of this section is to elaborate more on exactly why. Still, A&S then ask: "But if so, why are you not conscious of the pressure on the chair even prior to one's calling your attention to it?" (Adams and Shreve 2016, 254, fn 6). Well, when there is a genuine *first-order* conscious feeling of pressure on the chair, the feeling is still clearly conscious. The same goes for any first-order conscious mental state. But of course when one focuses *attention* on the pressure, then the feeling will in this case become the *object of a conscious H.O.T.* That is, one is consciously noticing the feeling. As we saw above, this seems to be much closer to introspection. Perhaps feeling pressure on a chair is not the best example here as opposed to, say, an instance of conscious visual experience.

A&S entertain the reply of "How long does a thought take?" (Adams and Shreve 2016, 255) so they concede that many may not find their example persuasive. But my point here is simply that *both* the initial unconscious first-order state *and* the relevant unconscious H.O.T. (with its concept application) occur *prior to* the resulting conscious experience. It can still be the case that the H.O.T. occurs just milliseconds after the initial unconscious perception. A&S say that the seeing of color when observing a numeral is not under conscious control. I agree but this is consistent with the notion that concept application often occurs unconsciously.¹

3. H.O.T.s and Conceptualism

To follow up further on the above theme of how concepts relate to conscious experience, I'd point out that I have defended conceptualism at length in other work (Gennaro 2012b, especially chapter six). It can be defined as follows: Whenever a subject S has a perceptual experience *e*, the content *c* (of *e*) is fully specifiable in terms of the concepts possessed by S. Although conceptualism does not automatically follow from H.O.T. theory, it seems to me that H.O.T. theory and conceptualism fit together hand in glove. One motivation for conceptualism stems from the widely held observation that concept acquisition colors and shapes the

¹ For more on the issue of the temporal order of perceptual experience and conceptual application, see Gennaro 2012b (especially section 6.4.3). There I respond to a similar objection against conceptualism called the 'priority argument.' It is, to be sure, an important problem which also has deep and interesting implications for how we *acquire* concepts.

very conscious experiences that we have. This also a primary rationale for H.O.T. theory, for example, via Rosenthal's wine-tasting example of the way that one's taste experience can literally differ after one acquires concepts about wine in, say, a wine-tasting class.

We are all familiar with the phenomenon of 'seeing-as' whereby one subject, perhaps with more knowledge, might see an object as a tree, whereas another person might only see it as a shrub. One person might see an animal as a lizard while another might see it more specifically as an iguana. The same is true for 'hearing-as,' 'tasting-as,' and so on. This phenomenon is also particularly noticeable in cases of perceiving ambiguous figures, such as the well-known vase–two faces picture. We might say that when one sees the vase–two faces *as a vase*, one is applying the concept VASE to one's visual experience. When one switches and sees the figure *as two faces*, it would seem that FACES is applied in that experience. One is clearly categorizing and experiencing different objects in each case, which involves concept application. Normally, the categorization occurs unconsciously prior to the visual experience. However, it can also occur consciously by focusing one's attention in certain ways to one's experience of the picture.

All of the above, then, runs counter to one central theme that runs through A&S's paper, namely, that experiences, unlike thoughts, are not conceptual: "While experiences themselves may be concept-free, H.O.T.s of their nature involve concepts because thoughts, unlike experiences, involve concepts.... The non-conscious experience of the pressure you are exerting upon your chair does not involve a concept. Not being conscious, there is no concept applied to it, nor is your experience applying a concept to the chair or to pressure. Your non-conscious experience may be responding to pressure or sensory input, but unlike a thought, it is not categorizing or conceptualizing that input. A thought however, by its nature categorizes and conceptualizes." (Adams and Shreve 2016, 251) The underlying difference between our views cannot be clearer. As should be obvious at this point, I do not think that "thoughts, *unlike experiences*, involve concepts" and I disagree that experiences themselves are concept-free. With regard to synesthesia, then, I therefore think that A&S's either/or question presents a false dichotomy: is "synesthesia a conceptual or perceptual phenomenon?" (Adams and Shreve 2016, 253). My view is that such experiences are both conceptual and perceptual, as is the case with all conscious experience. Further, when one has a synesthetic experience involving more than one sensory modality, it is plausible to suppose that a single H.O.T. might include concepts referencing multiple modalities. This is one reason that I think that the "cross-activation hypothesis" actually bolsters the case for my view because there will be greater neural connectivity between sensory areas in the brain in these multimodal cases.

Overall, then, I think that H.O.T. theory can effectively handle the objections raised in Adams and Shreve's paper.

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