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## *That lonesome whistle: a puzzle for the sensorimotor model of perceptual experience*

ANDY CLARK

Might perceptual experience consist in an agent's expectations concerning the ways sensory stimulation will vary with movement? Such, in barest outline, is the intriguing proposal of the 'sensorimotor' model of perceptual experience' (also known as 'sensorimotor contingency theory') (O'Regan and Noë 2001, Noë 2004).

Thus consider a certain visual shape. According to O'Regan and Noë:

the visual quality of [that very] shape *is precisely* the set of all potential distortions that the shape undergoes when it is moved relative to us, or when we move relative to it. (O'Regan and Noë 2001: 942. Emphasis in original)

This account, we are told, yields a satisfying explanation of perceptual presence: the sense that we have of, for example, right now seeing a whole tomato even though only one side is currently stimulating the retina. The sensorimotor model depicts this sense of presence as rooted in knowledge of 'patterns of sensorimotor contingency', e.g. 'our implicit understanding

(our expectation) that movements of our body to the left or right, say, will bring further bits of the tomato into view' (Noë 2004: 63). The same general argument is deployed to give an account of the perceptual presence of detail in the visual scene: we implicitly know how eye and head movements would bring different details into focus (2004: 55–59) and this known pattern of accessibility yields (or better, constitutes) our veridical experience of detail.

But consider a case of perception in a non-visual modality. In particular, consider the following description of the auditory perception of a long and drawn-out sound such as a sustained note in an opera:

There you are at the opera house. The soprano has just hit her high note – a glass shattering high C that fills the hall – and she holds it. She holds the note for such a long time that after a while a funny thing happens: you no longer seem only to hear it, the note as it is currently sounding ... in addition, you also seem to hear something more ... the note now sounds like it has been going on for a very long time ... what you hear no longer seems to be limited to the pitch, timbre, loudness and other strictly audible qualities of the note. You seem in addition to experience, even to hear, something about its temporal extent. (Kelly Forthcoming: ms: 1)

This description strikes me as phenomenologically accurate, and very close in spirit to the descriptions Noë himself gives of the perceptual presence of that which is strictly speaking out of present view. Yet the case poses a *prima facie* challenge. If the perceptual experience depicts the sound as, in some real sense, right now (this instant) sounding 'as if it has been going on for a long time', then this is one case where we cannot, even in principle, unpack that aspect of the phenomenology by invoking capacities of access or exploration. For that which makes the note long is all in the past (we can assume it is ending right now) and simply cannot be 'present to perception as accessible' (Noë 2004: 63).

There is, in short, a *prima facie* problem in accounting for the feeling of presence of a note that literally sounds as if it has been going on for a long time. It seems that we cannot do so by appeal to any sense of the potential availability of the missing parts of the temporally extended sound stream, nor can we know (indeed, it is barely intelligible to ask) how those missing parts of the soundstream would vary or come into focus as we move our head or body.

A first response, on the part of the fan of the sensorimotor model, might be to try to explain the phenomenology by appeal to more advanced aspects of (in this case) our acquired musical understanding. Thus Noë (personal communication) compares the case to the hearing of

speech. When we hear speech (in a language we know) we seem to hear meanings as well as sound. Similarly, perhaps we have here a kind of musical understanding that allows us to assimilate the final note to a temporally extended pattern. The test for this proposal, Noë suggests, would be that such effects should not occur for non-music or non-speech sounds.

But surely we *do* get the very same effects in domains where this appeal to more recondite forms of understanding (even assuming that such an appeal is not itself in danger of compromising the sensorimotor model) is not plausible. Thus consider the child who hears, for the first time, the long drawn out wail of the steam-whistle of an American locomotive. The child will, I submit, experience the wail (towards the end) as having been going on for a long time. But in this case there is (let's assume) no body of acquired steam-whistle understanding underpinning this experience.

Noë (personal communication) disputes this possibility. Either, he suggests, the experience must present itself to the child as 'white noise' or she must fit the sensory inputs into some pattern of sensory expectations.

It is easy to see why the proponent of a sensorimotor model is forced into such a view. For there is a general puzzle, for such accounts, concerning first-time or genuinely novel experiences. In such cases there seems to be no background of sensorimotor understanding available to support (to constitute, on these accounts) the perceptual experience. But there seems to be no reason (apart from prior acceptance of the very model that the examples aim to call into question) to assume that we cannot experience a totally novel soundstream as structured, or a novel shape as shaped, or a novel taste as tasting thus-and-so, and so on. As it happens, I remember quite vividly the first time I heard a steam whistle, and it was not white noise that I heard. Indeed, I would venture to suggest that steam whistles still sound the same to me as when I first heard one: a result that seems doubly incompatible with any model that assimilates my experience to expectations concerning sensorimotor dependencies. It seems doubly incompatible because first, it should not have sounded like structured noise the first time around, and second, because, although I now have expectations that I then lacked, it still (or so I claim) sounds the same to me as it did then.

The case of the first-time steam whistle thus combines several challenges for the sensorimotor model in a single package. First, there is the need to account for novel perceptual experience. A corollary of this is the need to allow for the possibility of having structured perceptual experiences *while learning the sensorimotor contingencies themselves*. Second, there is the need to allow for sameness of later experience despite changes in our sensory expectations. And third, there is the need to accommodate

cases where our sense of the ‘missing parts’, that seem nonetheless to be informing some experience, cannot be unpacked by reference to any potential for bringing such parts ‘into view’ (such parts being now in the past).

A more general lesson, I think, is that not all forms of mature perceptual experience look equally likely to involve (in any profound or potentially constitutive fashion) expectations concerning the results of active exploration. Thus consider the feeling of orgasm, the taste of a chili pepper, or the pain of a toothache. While there are no doubt many ways in which such experiences will morph and alter in response to subtle movements of the body, it seems far less plausible to suppose that the perceptual experiences themselves are, in these cases, fully (or even partially) constituted by our expectations concerning the ways movement would bring about such effects.

So how *should* we accommodate the case of the lonesome steam whistle? The very simplest way to do so would be a straightforward appeal to representational content. As the sound continues, we begin (even, indeed perhaps especially, on first hearing) to represent it as *having been going on for a long while*. That is, after all, just how it sounds! But there are other options too. The perceptual experience might gain its character not from some simple representational tokening, but from the way we are disposed to identify the sound with other (equally long and drawn out) sounds, from the way we are disposed to reproduce the sound, by means of a long drawn out whistle that we ourselves make, and so on. That is to say, we might seek an account (such as Pettit 2003) that is still broadly speaking skill-based, but that depicts the skills in question as skills of matching, sifting, sorting, re-identifying and the like rather than as skills of active exploration or by appeal to detailed expectations concerning how sensory stimulation would vary with movement. One way or another though, a satisfying account of perceptual experience should surely make room for that lonesome whistle.

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