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The Power of Natural Selection

Abstract: *In a recent paper, Steven Horst argued that if traditional physicalist accounts of consciousness cannot explain why there are conscious phenomena in the world then teleological accounts of consciousness that appeal to the notion of natural selection cannot do so either. I agree with Horst's conclusion but his reasoning fails to address a rebuttal to his argument made by the major proponent of such theories, namely, Fred Dretske. Dretske argues that artificial selection can create new features and that, in an analogous fashion, natural selection can too. I show that Dretske's rebuttal is inadequate because crucial features of the analogy fail. Teleological accounts of consciousness that appeal to natural selection can only explain the prevalence of consciousness.*

Some naturalistic theories of consciousness give an essential role to teleology.¹ This teleology is said to arise due to natural selection. Thus it is claimed that only certain states, namely, those that have been selected for by evolutionary processes because they contribute to (or once contributed to) an organism's fitness, are conscious states. These theories look as if they are assigning a creative role to natural selection. If a state is conscious only if it has been selected for, then selection appears to be able to create a new feature of states, namely, their conscious nature. Yet, intuitively, natural selection cannot create anything. Natural selection chooses certain features that already exist and makes them more (or less) prevalent in a population, but it cannot bring features into existence itself. Natural selection can select for conscious states, but it cannot create them. This conclusion has recently been argued for by Steven Horst (1999). If it is right, then teleological theories of conscious states should be rejected. A state cannot become a conscious experience in virtue of having been selected for by evolutionary process.

I believe that this line of reasoning is correct and that any effort to show that natural selection can create something will not succeed. In this paper I examine

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[1] The major proponent is Dretske (1995), but many authors give a prominent role to natural selection in aspects of the mind such as representation, that are closely connected with consciousness. See, for example, Millikan (1984), Papineau (1993) and Flanagan (1992).

Dretske's attempt to show that natural selection can be creative and I argue that it fails. Dretske's argument rests on showing that artificial selection can be creative and then claiming that natural selection is similar in certain crucial respects to artificial selection. I argue that the argument fails, not simply by appealing to the intuitiveness of the idea that natural selection cannot create anything, but by showing that there is an important disanalogy between artificial selection and natural selection. Horst's (1999) paper does not address Dretske's crucial analogy.

In *Naturalising the Mind*, Dretske (1995) argues that conscious experiences are systemic, analogue representations which have the natural function of interacting with the cognitive system to produce beliefs and desires that control behaviour. A state is such a representation only if it has been selected for because it carried information about what it now represents and interacted with the cognitive system, in so doing increasing the fitness of creatures that have the state. If a state does not have such a natural function then, according to Dretske, it is not a conscious experience. Dretske is therefore committed to holding that natural selection creates conscious experiences.

Dretske discusses the objection that natural selection cannot be creative. From his work, one can see that Dretske must think that the objection takes the following form:

Premise 1: Natural selection only works by selecting a pre-existing thing.

Premise 2: If natural selection explains the existence of conscious states, then natural selection must have selected for conscious states.

Conclusion: If natural selection explains the existence of conscious states, then natural selection must have selected a pre-existing conscious state. Natural selection is not creative and merely increases or decreases the prevalence of a type of state.²

Dretske's way to disarm the objection is to agree with premise one but to deny premise two. Dretske claims that once the role which he gives to evolution is appreciated then we can see that while it is true that natural selection works by selecting already existing states or features of states, it is not true that it cannot be creative. He claims that on his account natural selection works by selecting for already existing features, since it selects for states that carry information. But Dretske claims that in selecting for already existing things (information carrying states), selection can thereby bring a new feature into existence, namely, those states' conscious nature. Dretske says:

The objection misidentifies the role that the Representational Thesis assigns to natural selection. Natural selection is not supposed to select for consciousness. That is not how the story goes. It selects for something else, something that, by being selected, becomes conscious (Dretske, 1995, p. 163).

[2] This is also the form that Horst's reasoning seems to take: '[W]hat evolutionary explanation really explains is the proliferation of a phenotype, *given the plausibility of its initial appearance*. . . [W]hat such a theory can give an account of is why consciousness would flourish — *given that it has appeared in the first place*' (Horst, 1999, p. 44; original emphasis).

I believe that this reply only alleviates part of the intuitive worry that lies behind the above objection. The reply demonstrates that according to Dretske's theory evolution is working by selecting already existing things (informational states, whose existence is not explained by selection), but it does not explain how selecting for a pre-existing feature can bring a new feature into existence, namely those states' conscious nature.

This is the crucial point. Let us agree with Dretske that evolutionary processes do not select conscious states, rather they select states that at some point are not conscious. What is selected for are *mere* information-carrying states. Now the question arises: why should the proliferation of such states lead to such states becoming conscious states? Intuitively, mere increase in prevalence cannot change the nature of the states in question. Without an answer to this question, I believe we are entitled to be sceptical of Dretske's account. Indeed, if we were not provided with such an answer it would be plausible to think one of two things must be true. Either the states in question were conscious prior to selection and thus natural selection does not explain the nature of consciousness, or the states in question were not conscious prior to natural selection and it was not selection that made such states conscious, if indeed, the states in question are conscious states.

Dretske, however, provides an analogy that is supposed to help us understand how selective processes can bring a new feature into existence. This analogy carries a lot of weight because it has to persuade us, contrary to our intuitions, that selection can bring into existence a new feature. Dretske claims that a variable resistor becomes a volume control by someone selecting and installing it in their amplifier. The resistor was not a volume control before it was selected for this purpose. In this way, Dretske says we can see how selection can bring a new feature — a volume control — into existence. We are invited to think that natural selection can bring new features into existence in a similar fashion. (Dretske calls selection that occurs due to someone's intentions or purposes 'artificial selection'. This is to be distinguished from natural selection where selection occurs without the intentions and purposes of a conscious agent.)

It seems to me that the important feature of the variable resistor/volume control story is that artificial selection places some piece of hardware into a system where it can perform certain tasks (adjusting volume) that it could not perform before. The resistor comes to have a causal role that it previously lacked. This is what makes it plausible to think that the resistor becomes a volume control. Before selection the resistor had no way of altering volume, after selection it does. The question we have to ask is whether natural selection can perform this kind of selective process.

In some places, Dretske's account of the natural selection of experiences exactly replicates the account of the resistor. He says:

What natural selection does with this raw material [an organism's needs and its information carrying states] is to develop and harness information-carrying systems to the effector mechanisms capable of using information to satisfy needs by appropriately directed and timed behavior (Dretske, 1995, p. 164).

This makes it sound as if, like artificial selection, natural selection places some information carrying states into a system where they can then interact with beliefs and desires to produce appropriate behaviour (and thus these states become conscious experiences). The type of selection is such that by changing the surroundings of a state, and what the state is connected to, the state comes to have a new causal impact upon the world. But this account is at odds with what Dretske stresses is an important feature of natural selection:

Natural selection is quite different. Unlike artificial selection, an item cannot be naturally selected to do X unless it actually does X. It has to do X because the way it gets selected is by having its performance of X contribute in some way to the survival and reproductive success of the animals in which it occurs (Dretske, 1995, p. 165).

For an information-delivery system to acquire the natural function of delivering information, for it to produce natural representations, then, the information it delivers must actually *do* something. It must make a positive contribution to fitness. It must be useful to and actually used by (or have been used by) the organisms to which it is delivered (Dretske, 1995, p. 166).

It is therefore a very misleading description of what natural selection does to say it *develops and harnesses* states that carry information to states that control appropriate behaviour. Natural selection can only select for existing features, and select them in virtue of the existing causal roles that such features have. It cannot develop new connections or harness one state to another. It can merely select for states which are already connected or harnessed in the appropriate way. It cannot make a state come to do something that it did not do before. The information carrying states must already contribute to the behaviour and fitness of a creature in order to be selected for.

Thus, the analogy between creating a volume control by artificially selecting a variable resistor, and creating conscious states by naturally selecting information-carrying states, breaks down. This is because prior to becoming experiences, the information-carrying states must already be in place and be causally interacting with the cognitive system to control behaviour in order to be selected for in virtue of the causal relationships that they have. When one creates a volume control, however, one places the resistor in a situation where it comes to have different causal effects. It can now change the volume of your music. When one creates a volume control, one makes the resistor have a different causal impact on the world, which it did not have previously when it was sitting on the shelf. But when natural selection selects for states that are hooked up to the cognitive system, it does not make those states have any different causal impact than they did previously. It is therefore hard to see how a new feature of those states, such as consciousness, could be created by selection when the intrinsic properties of the selected states remain the same *and* the causal impact of these states remains the same. While one can be persuaded by Dretske that artificial selection can bring a new feature into existence, one should not be persuaded that natural selection can do likewise.

One might object to my line of thought on the grounds that my explanation of what was relevant in the case of artificially selecting a resistor to be a volume

control was slightly inaccurate. I said that what was relevant was that the variable resistor was actually placed in a system so that it could alter volume. Dretske constantly stresses, however, that someone can artificially select an object to be something or to do something, in the absence of that object performing effectively. He says:

I can, for example, choose (or design) something to be a volume control (thus giving it that function) even when it is utterly incapable of controlling volume. Through ignorance or carelessness, I can select a variable capacitor to be my volume control, wire it to my amplifier, and wonder why it won't do the job I gave it (Dretske, 1995, p. 165).

Thus, one might think that if something can become a volume control in virtue of this kind of careless selection, then something new can be created when none of its intrinsic properties are altered and when it does not come to have any new causal impact on the world. Thus, my above objection aimed at showing that natural selection cannot create a new feature appears flawed.

Clearly, there is a sense in which someone can create a new thing — a volume control — by selecting a variable resistor with the intention of making it control volume, while not changing the actual causal impact of that thing, by installing the resistor incorrectly. Noting this example, however, we can say that for someone to create a new thing — a volume control — they must either change the actual causal impact which the resistor has, *or intend to do so*. It seems reasonable to think that one does not create a volume control out of a resistor if one does not change the actual causal impact of the resistor (by installing it correctly so that it can alter volume) or if one does not intend to change its causal impact in this way. Now we can see that Dretske's analogy still fails to work. When natural selection selected for information-carrying states it did not make the states have a new causal impact upon the cognitive system. It selected them because of the causal impact they already had on the cognitive system — the one which yielded appropriate behaviour and hence helped the organism to survive. Nor did natural selection have the intention of changing the causal impact of those states. Natural selection does not have intentions, unlike a person who can artificially select something.

Therefore I believe that Dretske's resistor/volume control analogy, which is intended to show how it possible for natural selection to create a new feature by comparing it with artificial selection, breaks down. In artificial selection, of the kind we have seen Dretske espouse, an object of one kind becomes an object of another kind by either a change in the causal connections between that object and other things, or by someone intending such a change. Since natural selection cannot effect such a change and cannot intend to do so, then one should conclude one of the two following things:

- (i) The states in question (systemic, analogue information-carrying states) that were naturally selected for were not conscious before selection and did not become conscious in virtue of natural selection. (Perhaps they became

conscious due to something else that happened to them or perhaps they never became conscious states.)

- (ii) The states in question that were naturally selected for were conscious before selection and therefore selection has no role in explaining why they are conscious.

The question of whether all and only appropriate information-carrying states connected in the right way to the cognitive system are conscious states or not, and whether their being states of this kind explains why they are conscious, lies beyond the scope of this paper.³

In conclusion, it remains mysterious how a non-conscious state could come to be a conscious state simply in virtue of being selected for by evolutionary processes. The moral is that the power of natural selective processes is *limited* to altering the prevalence of certain things. It does not include creative power.

References

- Dretske, F. I. (1995), *Naturalising the Mind* (Cambridge, MA: MIT Press).
Flanagan, O. (1992), *Consciousness Reconsidered* (Cambridge, MA: MIT Press).
Horst, S. (1999), 'Evolutionary explanation and the hard problem of consciousness', *Journal of Consciousness Studies*, 6 (1), pp. 39–48.
Macpherson, F. (forthcoming), 'Novel colours and the content of experience', *Pacific Philosophical Quarterly*.
Millikan, R. (1984), *Language Thought and Other Biological Categories* (Cambridge, MA: MIT Press).
Papineau, D. (1993), *Philosophical Naturalism* (Oxford: Basil Blackwell).

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[3] In my 'Novel colours and the content of experience' (forthcoming), I argue that naturalistic, representational theories of phenomenal character face a serious objection.