

# Perception, Biology, Action, and Knowledge

CHRISTOPHER PEACOCKE

*Columbia University and University College, London*

Tyler Burge's *Origins of Objectivity* is a great contribution that will be studied for years to come, a landmark of contemporary philosophy. I agree with much of the broad thrust of its argument. In the extremely limited space available here, I question its conception of the relations between biology and perception, and suggest an alternative; I express a need for clarification on the perception of certain physical relations; and contribute a positive proposal explaining how Burge's position is well-placed to elucidate the relations between perceptual content and epistemic distinctions at higher, conceptual levels.

## 1. Biological Constraints or Action Constraints?

Is biological function not merely evidentially or epistemically relevant to the determination of content, but constitutively involved as a matter of the very nature of perceptual representational content itself? Burge answers affirmatively: "I believe that biologically basic actions—eating, navigating, mating—along with whole-animal biological needs figure epistemically and constitutively in background conditions for perception, representation, and empirical objectivity" (292). More specifically, "perceptual states are constitutively (partly) dependent for their representational content, not only on the environment's causally impinging on individuals, but on individuals' fulfilling basic whole-animal functions. The constitutive ground for this latter dependency lies partly in the role that perception and perceptual kinds play in explaining realizations of individual biological function—centrally, individual activity" (371). I call this thesis about a constitutive dependence of perceptual representational content on biological function "the Biological-Constitutive view".

That view *prima facie* contrasts with the Action-Answerability view, according to which the correct attribution of representational content to

perceptual states is constitutively answerable to the range of properties of actual and counterfactually possible actions of their subject that those perceptual states are capable of explaining (in combination with other states). According to the Action-Answerability view, proposed ascriptions of representational content that go beyond anything that can be grounded in such action explanation are illegitimate. The Action-Answerability view does not mention biology in its constitutive account.

Here is how these two competing accounts treat, sometimes in disagreement, three important issues.

(i) The distinctive shape and colour of certain kinds of fruit that a creature needs to ingest to meet its biological needs will easily be counted by the Biological-Constitutive account as entering the content of the creature's perceptual states. The Action-Answerability view will give a different reason for the same conclusion that this colour and shape enter the representational content of perception. The actions of a hungry creature that wants to eat something will be counterfactually sensitive to the presence of fruit of that shape and colour. Fruit of a different shape or colour will not, other things equal, be eaten; and there is counterfactual sensitivity—if the fruit had had a different colour or shape, the creature would not have eaten it. The relational, environmental properties of the action that are explained by the perception, in combination with the creature's other appetites, are properties that relate the creature to the colours and shapes of things in its environment. The counterfactual properties of the action are keyed to instantiation of these properties.

Here, the competing views agree on including the relevant kinds of colour and shape in the perceptual content, but they do so for different reasons.

A proper deployment of the Action-Answerability view will actually incorporate the perceptual constancies that Burge emphasizes as crucial to the correct classification of a state as genuinely representational. Suppose a creature recognizes certain facial shapes as those of a predator. The shape may appear at different orientations, and at different egocentric directions and distances. The production of an action of self-protection will be the same across these various nearby possibilities. What is explained is a relational property of an action—doing something in relation to a presentation of that shape, at whatever orientation, angle and distance. The counterfactuals supported will be correspondingly invariant across that range of nearby possibilities. Even the actions of a jumping spider may have this kind of counterfactual sensitivity to spatial properties and relations, and thus involve a form of perceptual constancy.

(ii) The Biological-Constitutive and the Action-Answerability views will offer different responses to Quine's claims about indeterminacy of meaning. Burge writes, "Language initially gets its meaning and reference from perception" (215). I agree. Burge also appeals to biology to refute Quine's

indeterminacy claims. He writes, “Bodies are more basic to biological explanations of most animals’ pursuits than temporal stages, undetached spatial parts, or instances of universals (all as such). So bodies have *prima facie* priority in determining perceptual referents and contents. Most of the alternatives that Quine uses to suggest gratuitousness are ruled out by these sorts of consideration” (215).

On the Action-Answerability view, a proper consideration of the role of perception in the explanation of action can serve to rule out the Quinean bizarre referents, independently of biological considerations. Let us say that an action is *counterfactually sensitive to a boundary* if that boundary is essential in unifying in environmental terms (in terms of the agent’s relations to the environment) how the agent would act if the agent had the same operative desires, drives, needs, inclinations and so forth, but simply stood in a different relation to the environment. The different relation might be that a perceived object was at a different distance, or egocentrically specified angle, or in different lighting, and so forth. Our ordinary actions, and those of the simple language user Quine was considering, are counterfactually sensitive to the boundaries of rabbits. (Actually, the issue is sensitivity merely to the boundaries of rabbit-like objects, not to instances of a natural kind. Henceforth, strict readers can replace “rabbit” with “rabbit-like object”.) If a predator is chasing after a rabbit, then if the rabbit were in a different direction, then our predator would move in that different direction in which the rabbit lies. No particular boundary round any undetached part of a rabbit ever needs to be mentioned in unifying the counterfactuals that are true of the agent’s actions based in part on the agent’s perception of the rabbit. If we tried to formulate the counterfactuals in terms of undetached rabbit parts, we would have to say something like the following: the agent reaches in the direction of a specified undetached rabbit part only if that is a way of moving towards the whole rabbit (which it may or may not be if the rabbit is changing direction). We will not unify these counterfactuals unless we mention the rabbits. Any mention of the undetached rabbit parts can be eliminated in one way or another.

The position outlined here in effect draws on and extends a combination of the treatment of explanation by externally individuated states in Peacocke (1993) with the points about the role of boundaries in referential semantics made by Evans (1975). Burge gives an extended response to Evans; I agree with Burge that Evans’ critique of Quine on referential indeterminacy contains some mistakes and missteps. Nonetheless, I think a version of Evans’ point stands. Burge’s argument is that Evans’ objections to the non-standard interpretations do not work. Burge writes of the interpretation of the compound ‘White Rabbit’, “one can in principle determine that the relevant undetached parts [relevant to interpreting

‘White Rabbit’—CPJ—those that are referred to in the context—are those that make up the full rabbit shape. The semantics of the sentence, on the non-standard scheme, is that it is true if and only if a sufficient (quite large) number of *that* plurality of undetached rabbit parts are white” (222). This seems to me not to take account of an asymmetry. The non-standard interpretation has to make reference to rabbits, and to their distinctive boundaries, as it does in Burge’s reference to “the full rabbit shape”. But the standard interpretation does not have to make reference to undetached rabbit parts or to their shapes. So there is excess interpretation—attribution of unnecessary, explanatorily irrelevant distinctions—in the non-standard interpretation. Burge rightly says that in considering an ontology of *undetached* rabbit parts, Quine already implicates a sensitivity to rabbit boundaries (220-1); I think this simply serves further to highlight the asymmetry. The explanatory irrelevance of undetached rabbit parts is shown by the fact that no actions are sensitive to their boundaries. An ontology of objects whose boundaries play no explanatory role in action should not be attributed. This is the force of Action Answerability.<sup>1</sup> The position does not confuse ontological commitment with boundaries; it rather insists on a constraint connecting them.

Our grasp of what counterfactuals are sustained, in ordinary circumstances, by an action that is explained by the representational content of a perception forms an important component of our understanding of what is distinctive of such explanation. Correspondingly, what unifies the sustained counterfactuals is equally important. I think in both cases that these points go not only to our conception of explanation by states with representational content, but that they reach also to the nature of such explanation. Our conception of such explanation is this way because the explanation itself has a certain character and significance. If this is right, then these properties of counterfactuals are not mere concomitants of such content-involving explanations, but they bear upon the nature of the explaining states and events in such explanations.

It will be adaptive for an agent’s actions to be counterfactually sensitive to the boundaries of objects and events that are biologically significant for the fulfillment of its needs. That can hold without any commitment to the view that biology is partially constitutive of representational content.

---

<sup>1</sup> I suspect we would also need to use a natural generalization of the Action-Answerability view to say what is wrong with a perverse formulation of biology itself, a formulation in which the perceiving organism is represented as standing in biologically significant relations to undetached parts of objects, or to their time-slices. What would be wrong with that formulation is that the only distinctions that have any explanatory force in the biology are those that apply when undetached parts are parts of a single continuant object, or are parts of different continuants of a given kind; and similarly for time-slices.

(iii) The Biological-Constitutive account seems in some kinds of case to undergenerate representational content, and in others to overgenerate. Undergeneration seems to arise in examples in which random mutation in a creature produces perceptual states with representational contents of a kind not found in any of its ancestors. A creature might be the first to perceive some objects as symmetrical, for example. The actions explained by such perceptions would display a counterfactual sensitivity to the symmetry of the perceived objects, in accordance with the Action-Answerability view. The symmetrical objects might be of unusual food value; they may be fun to play with; they may be dangerous. But whatever the effects of the symmetrical objects, it cannot be that this perceiver's activities with them fulfill a biological function, under the standard characterization of such activities as those that exist because they contribute to survival for mating (320). Since this is the first individual in which there are such activities, their existence does not contribute to any such explanation. Nor need the activities contribute to the explanation of the continuing existence of the individual itself if the activities are dangerous. Perhaps it will be said that perception of something as symmetrical is merely new predicative representational content, and not a new kind of representatum, not a new ontology. But we could vary the example to make the same points about a creature which, by random mutation, is the first to represent events, say, rather than continuant objects; and that would be a new kind of representatum. I regard these points as an extension of Burge's convincingly argued position that there is a "root" mismatch between the notions of biological function and representational content (301). Perhaps Burge would say that the Biological-Constitutive account is meant to apply only to a baseline of cases, and something like the Action-Answerability account can legitimately capture representational content beyond the baseline. My position is rather that the Action-Answerability account captures the baseline cases too, and thus provides a uniform and unifying account.

A converse issue of overgeneration arises from the fact that counterfactuals about action sometimes slice more accurately, in constraining ascriptions of perceptual content, than do biological constraints alone. This can apply even when we consider activities that do further biological functions. Consider a carnivore that enjoys perceptual states. It is plausible that its action systems, and possibly also its perceptual systems, represent some objects as edible. Burge's discussion (322–3) of attribution of content in a comparable case of frog vision suggests he would agree. The carnivore's biological needs will be fulfilled partly through the operation of systems involving such representations. But the biological explanation of the survival of the animal, and the persistence of its species, and the persistence of the activity of eating, will be in part that the animal consumes things

that contain flesh, or indeed contain proteins. The notions *flesh* and *containing protein* do not need to enter the animal's perceptual representational states, however biologically important it is for the organism to interact in specific ways with things falling under these notions. I suggest that these notions do not enter the content of states of the carnivore's representational systems (either in action or in perception) because there are no counterfactuals concerning actions of the carnivore that can be properly unified only by considering its relations to flesh, or to what contains protein—as opposed to unifying them by the organism's relations to what looks or smells or feels a certain way. If the carnivore were to be in states with contents that represented flesh as such, or the property of containing protein as such, independently of look or smell or feel, then one would expect there to be actions with certain properties in certain possible circumstances that reflect this fact, and display a sensitivity to flesh or proteins, whatever their look or smell or feel. In fact in simpler creatures there are no such nearby counterfactual actions with such properties, which is why the notions *flesh* and *containing protein* are not in the intentional contents of the states of our simple carnivore, while colour or smell or feel are so. This problem of the missing counterfactuals seems to lead to such notions as *containing protein* and *flesh* being counted as in the carnivore's perceptual content on the Biological-Constitutive view, but not on the Action-Answerability view.

In fact I think the Action-Answerability view is the best way to support claims Burge himself makes about incorrect attributions of content in other cases. He says the frog's perceptual system does not represent anything as a bee-bee (for British readers: as a projectile for an air gun): "There is no explanatory value in taking a frog's perceptual system to represent human artifacts as such" (323). There is no such value, because nothing in the frog's actions is sensitive to the distinction between what is an artifact, and what is not.

On the view of perceptual content I am recommending, biology answers some how-questions and some why-questions: "How are such-and-such biological functions fulfilled?", "Why do organisms that succeed in fulfilling such-and-such functions survive and reproduce?". The answers to some of these how- and why-questions will mention perceptual states. All of this is consistent with the answer to a constitutive question, "What is it for a perceptual state to have a given content?", not itself being a matter of biology.

As far as I can see, the Biological-Constitutive view is not an inseparable part of Burge's general approach to perception. The anti-individualism, the significance of formation laws, the importance of the constancies in picking out the genuinely perceptual—these important theses could all remain,

consistently with accepting the Action-Answerability, rather than the Biologically-Constitutive, view.<sup>2</sup> My own view is that a proper elaboration of Action-Answerability actually requires anti-individualism and these other theses.

## 2. Perception of Mechanical Relations

Burge's strictest criterion of objective subject matter in perception is that it be physical, represented in some content that entails that the subject matter is physical (54). The physical includes relations of mechanical force. Ordinary human perceptions do have representational contents that have entailments about force. You can perceive one thing as *leaning on* something else, perceive one object as *crushing* another, perceive a device as *squeezing* something; and so forth. These broadly mechanical contents can be elements in the nonconceptual content of perception.

Now suppose that in fact, and in nearby possible, relevant circumstances, any instance of the relation *x is leaning on y* is also an instance of a certain geometrical relation between the objects in question. Suppose too that a particular intentional content for a relation features in the content of a subject's perceptions, and does so in precisely the cases in which the perception represents objects as being in the geometrical configuration present in all and only cases of one object leaning on another. Would that make it a content concerning *leaning on* as such? It seems to me that would not be sufficient. The content in question is not a representation of leaning as such unless it is involved in constraints about what the subject takes to be empirically possible successive states of the environment. Suppose the perceiver is not at all surprised when the support on which the object is leaning is removed, it doesn't fall down. It would not then be a representation of leaning as such. Lack of surprise can be shown in looking reactions, as per many experimental paradigms. The expectation, or lack thereof, can be below the level of conceptual thought. Incidentally, even with such constraints on expectations of what could succeed one state of the world, that wouldn't be enough for *leaning* to be in the content. As always, we should distinguish kinematics from dynamics. There needs to be some further connection with

---

<sup>2</sup> There is a partial parallel in the issue between the Biological-Constitutive and the Action-Answerability views, on the one hand, and competing views about sense in natural language on the other. It has often been noted that there are evolutionary mechanisms, and a kind of selection, for which words with which meanings persist in a given natural language. It is entirely consistent with that point to hold also that what it is for a word to have a given sense in a language is, as a constitutive matter, independent of whether the word's currently having that sense is a result of selection mechanisms. Sometimes sense is just stipulated, and accepted in a community. What it is for the word to have a given sense is one thing, how that sense persists over time, and why it helps the community (if it does) to have word with that sense are different, further things.

contents concerning mass or force for the content to be about leaning as such. Perhaps perception of mechanical relations as such requires a connection with a primitive mechanics something going beyond constancy relations. In any case, it would be clarifying to learn Burge's views on such cases.

### 3. Constancy and Epistemology

Finally I comment, positively, on the relation between Burge's position and its relation to the higher-level conceptual capacities to which perception contributes. There is a widely acknowledged condition for knowledge that has come to be known as safety, though the condition was recognized some time before that terminology. Roughly, the condition is that a thinker's belief is knowledge only if the method by which it is reached is one that, if applied in circumstances that could easily have obtained, would equally have led to true belief. The application to particular instances of a general notion of a method is somewhat problematic; but we do have an ordinary practice of taking basic perceptual experience of an object as falling under a notion at face value, and basing upon it a corresponding judgement with conceptual content. This practice ordinarily yields knowledge. It can do so only if the constancy phenomena obtain. If an object of fixed shape and size really looked a different shape and size from different angles and distances, and in different easily obtaining viewing conditions, then the method of taking certain perceptual states at face value would not be safe. It would lead to false beliefs in easily obtaining circumstances. It follows that in demonstrating that, at least for basic perceptual notions, the constancy phenomena are necessarily present in genuinely perceptual mechanisms, Burge has also provided the resources for contributing to a philosophical explanation of how in these cases perceptual states can lead to the conditions for knowledge being fulfilled. My view is that this is but one of the many links with conceptual content, judgement and norms that can be articulated by drawing on the philosophical account Burge has offered in this major contribution.

### References

- Evans, G. (1975) 'Identity and Predication' repr. in his *Collected Papers* (Oxford: Oxford University Press, 1985)
- Peacocke, C. (1993) 'Externalist Explanation', *Proceedings of the Aristotelian Society* XCIII (1993) 203–230.