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PHENOMENAL CHARACTER AS THE MODE OF PRESENTATION OF ENVIRONMENTAL PROPERTIES

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Abstract
The purpose of this paper is to defend and further develop an account of the phenomenal character of perceptual experience. Rather than identify the phenomenal character with the intrinsic properties represented by perceptual experience (phenomenal externalism), my aim is to support the alternative claim that the phenomenal character of a perceptual experience is to be identified with the mode of presentation of environmental properties.

0. Introduction

As Block says, the concept of consciousness is a mongrel one: consciousness is articulated in different ways. Among these, the one that certainly raises more problems is consciousness in the phenomenal sense. Our perceptual experiences differ from our other intentional states, because they have essentially phenomenological features. When tasting a wine, we become aware of its tannins, aroma, ruby color, or other traits. The properties of the wine phenomenally appear to us in a specific way. However, if perceptual experiences have essentially phenomenological features, like other intentional states, they are also characterized by their intentional status, that is, their particular representational content. As propositional attitudes, perceptual experiences place certain satisfaction conditions on the world that, once satisfied, make the experiences in question veridical.

It is important to note that, although natural, this assumption is in no way consensual in the contemporary philosophy of perception. Numerous authors reject the supposed representational status of perceptual experience. According to them, instead of placing accuracy conditions on the world, perceptual experiences put us in direct contact with the objects perceived (relationalism). Thus, normal perceptual experiences (veridical or illusory) and hallucinatory experiences have nothing in common (disjunctivism). However, to undertake here a defense of the representational status of perceptual experience would lead me far afield, requiring, in fact, a new paper. Thus, the fundamental axis on which the present work hinges may be expressed in a

conditional form: if we endorse the idea that at least so-called perceptual experiences have not only an essentially phenomenal character but also representational content, it is natural to suppose that there is a connection between these two crucial aspects of the experience.

Such a connection places few constraints on any satisfactory view of perceptual experience that here takes the form of three desiderata. However, it is important to emphasize that, in contrast to the status of representational content of perceptual experiences, all three desiderata are highly controversial. Indeed, the truth is that none of the important names in contemporary philosophy of perception is willing to acknowledge the legitimacy of the three desiderata together. Despite these circumstances, I find all of the desiderata intuitive, and I reiterate that only a conception that satisfies all three as a whole may be considered satisfactory.

The first is the thesis that perceptual states are individuated, in part on the basis of their representational content, and these, in turn, on the basis of patterns of relations that species (to which the perceiver belongs) has with the different objects, properties, and kinds of natural environments. I call this first desideratum *representational externalism.*

The second desideratum establishes the most tenuous connection between the phenomenal character of perceptual experience and its representational content: the phenomenal character of perceptual experience *determines* its representational content in the sense that there could be no difference in representational content if there was no difference in phenomenal character. The fundamental idea here is that the phenomenal character is a crucial element in recognizing the representational content of perceptual experience. In the absence of a better name, I call this second desideratum *representationalism.*

In order to avoid misunderstanding, it is important to distinguish representationalism, the label I use here, from the thesis expressed by the same label according to which the representational content determines the phenomenal character of experience in the sense that there could be no difference in phenomenal character if there was no difference in representational content. In short, we can have perceptual experiences with different phenomenal characters representing the same content, but not

the other way around; perceptual experiences with the same phenomenal character cannot represent different content.

For this reason, it worth noticing that, as I conceive it here, representationalism is agnostic about the ways the relationship between phenomenal character and representational content are usually understood. This relationship is neutral on the assumption that the phenomenal character of experience is founded on its representational content. In other words, it is agnostic about the assumption that we can provide a reductionist account of the phenomenal character in non-phenomenal terms. For the same reason, representationalism is also agnostic about the identification of phenomenal character with the properties of the natural environment represented by the experience, a thesis that, from now on, I refer to as *phenomenal externalism*.

The third and last desideratum is the thesis of the local supervenience of phenomenal character of perceptual experience on the relevant physical properties of the biological substrate. In opposition to doxastic states, the phenomenal character of perceptual experience seems to depend crucially on the physical properties of the biological substrate from which individuals are made.

Taken together, the desiderata seem inconsistent. The problem takes the form of a classic trilemma in which the satisfaction of each pair excludes the possibility of satisfying the remaining third. In principle, the trilemma would be insoluble, as only the possibility of its *dissolution* by the rejection of one or more desiderata would remain. The most important contemporary positions on this topic can be characterized according to the different attempts to dissolve the trilemma.

Thus, despite their differences, by accepting both representationalism and representational externalism, Harman (1990), Dretske (1995), and Tye (1995) are forced, inter alia, to reject the local supervenience of phenomenal character on the biological substrate and hence to embrace what I previously named phenomenal externalism. That is, they must embrace the thesis that identifies the phenomenal character of perceptual experience with the physical environmental properties represented by experience.

However, what the satisfaction of the desideratum of representational externalism effectively excludes is what we may refer to here as *representational internalism*, that is, the assumption that the content of perceptual experience, unlike the

doxastic content of propositional attitudes, can be individuated and constituted independently of any reference to the perceiver's external environment. What satisfaction of the desideratum of representationalism excludes is what Block (2003, p. 165) calls *phenomenalism*, that is, the assumption that the phenomenal character of perceptual experience *outruns* its representational content, or the assumption that neither does representational content determine phenomenal character nor does that phenomenal character determine representational content. Now, even if we reject both representational internalism and phenomenalism, we do not need to give up what I have called phenomenal internalism.

The second proposal to dissolve the trilemma is formulated by Block (2003). Block endorses representational externalism. However, in response to the phenomenal externalism of Dretske, Tye, and others, he opposes phenomenal internalism, that is, the thesis that the phenomenal character locally supervenes on the biological substrate of the organism, or "depends on the details of the physiology or physico-chemical realization of the computational structure of the brain" (2003, p. 166). Thus, he must reject what I have here called representationalism and embrace what he calls phenomenalism: that neither the representational content determines the phenomenal character of experience, nor the phenomenal character of experience determines the representational content.

Now, the assumption of phenomenal internalism (the local supervenience of the phenomenal character of experience on the biological substrate) rules out phenomenal externalism (the assumption that phenomenal character consists of the properties represented by perceptual experience). Further, the assumption of representational externalism excludes representational internalism, that is, the assumption that the content of perceptual experiences can be individuated independently of any possible relations an individual may have with different objects, properties, and kinds of natural environments.

Thau (2002) suggests the third and last form of dissolution of the trilemma. Like Block, Thau endorses phenomenal internalism. However, Thau supports representationalism. This means he must reject representational externalism and embrace what I have called here representational internalism; both the phenomenal character and the representational content of perceptual experience would be

individuated independently of any reference to an individual's external environment. However, what the assumption of representationalism excludes is phenomenalism, and what the assumption of phenomenal internalism excludes is phenomenal externalism.

In this paper, I intend to show that contradiction between the three desiderata is only apparent, or, in other words, that there is a solution to the trilemma. The simultaneous satisfaction of the three desiderata depends on the assumption of two central theses. The first concerns the representational content of perceptual experience. If it is true that content is individuated, *in part*, by patterns of relations that the individual has with the objects, kinds, and properties of his natural environment (representational externalism), it is also undeniable that such content is individuated, *in part*, on the basis of the mode of presentation of those entities. Thus, the content of perceptual experience cannot be Russellian, that is, purely referential. In addition to objects, properties, and relations, such content is also constituted by the way that these entities are given to perceptual experience.

The second fundamental thesis concerns the phenomenal character of perceptual experience. As representational content is also individuated, in part, by the individual's discriminatory and recognitional abilities, the natural assumption is to understand that the phenomenal character of perceptual experience is the conscious element by which objects, properties, and kinds of natural environments are *given to* perceptual experience. Thus, based on a critical examination of Dretske's design problem, I claim in this article that the phenomenal character of perceptual experience is nothing but a way of processing information about the instantiation of some property peculiar to individuals, groups, or entire species. It is because of the phenomenal characteristics that emerge from the causal interaction of the individual with the properties of his natural environment that his neural states are recruited by natural selection to indicate that such properties are instantiated.

In addition to this general introduction, this work comprises five further sections. In each, I want to make plausible each of the three desiderata, showing, at the same time, its compatibility with other remaining desiderata. However, it is important to note that I do not intend here to refute any of the three opposing theses (namely, phenomenal externalism, representational internalism, and phenomenalism). Such an enterprise would extend beyond the limits of a single article. I critically appreciate these

competing views only to the extent that they help motivate and situate the view I develop and defend. My aim is to show that the alternative proposal defended here is more plausible than any of its competitors.

1. Phenomenal Internalism: Representionalism without Phenomenal Externalism

Assume initially (a) that the phenomenal character determines the representational content of experience (representationalism) and (b) that perceptual states are individuated, *in part*, by their representational content and these, in turn, individuated, in part, on the basis of the patterns of relations that the species to which the individual belongs have with the different objects, properties, and kinds of species in a given natural environment (external representationalism). The initial question that arises is whether, assuming (a) and (b), we are committed to phenomenal externalism, according to which the phenomenal character of perceptual experience is identical to the physical properties represented by experience.

Inverted spectrum scenarios, originally suggested by Shoemaker (1994), raise doubts about phenomenal externalism. Suppose that John and Peter are individuals who grew up and live in the same environment, belong to the same species, and belong to the same speech community. Consequently, they discriminate and represent the colors red and green in exactly the same way. Both agree that ripe tomatoes are red and unripe ones are green. This supports the assumption that their perceptual states are individuated, in part, by their interactions with the red and green colors of the natural environment they inhabit. Thus, their visual experiences represent the color of unripe tomatoes as green and the color of the ripe tomatoes as red. Yet the way the color of the unripe tomato phenomenally appears to John (the inverted) is the same as the way the color of ripe tomatoes phenomenally appears to Peter. In sum, respective visual experiences of the same color possess different phenomenal characteristics.

The natural assumption here would be that the phenomenal differences between Peter's and John's perceptual experiences is due to a physical distinction between them. Relative to some relevant physical aspect of their brains, or perhaps relative to certain relevant physical aspects of their respective visual apparatuses, Peter is different from John. Thus, the assumption that the phenomenal character of perceptual experience locally supervenes on physical properties of the brain or of sensorial apparatuses

(phenomenal internalism) is the only one consistent with the philosophical intuition expressed in these scenarios of inversion. If two individuals are functional replicas in the sense that they likewise represent colors, although their visual experiences of colors differ phenomenally, the moral to be drawn is that they must differ in relation to some relevant physical aspect.

However, the simple scenario of inversion is not *per se* a decisive argument against phenomenal externalism. Under the assumption that phenomenal character is one and the same as the physical properties represented by experience (phenomenal externalism), the inverted would be wrong; that is, he would be misrepresenting the colors, albeit systematically. If John's visual experiences of unripe tomatoes represent them as red, and if his visual experiences of the ripe ones represent them as green, then John misrepresents the colors in the sense that his experiences do not correctly track the colors of his environment.

This problem arises only in phenomenal externalism when we add the (quite plausible) assumption that scenarios of inversion are relatively common. Under this assumption, we have no means of non-arbitrarily telling apart *normal* individuals, whose experiences were correctly tracking colors, and the *abnormal* individuals, whose experiences were tracking them incorrectly. So, if by means of his visual experiences of ripe tomatoes (whose phenomenal character is, say, phenomenal redness) Peter correctly represent their color as red, Peter's visual experience of the same ripe tomatoes (whose phenomenal character is the phenomenal redness) also correctly represents their color as red.

As I anticipated in the introduction, I do not intend here to refute phenomenal externalism. That would lead me far afield. My aim is only to point out the greater plausibility of phenomenal internalism. When considering single individuals or subpopulations of a species, we can perhaps accept the characterization of perceptual states of the inverted as misrepresentations of colors. However, when considering entire species, it is far more plausible to assume that the perceptual experiences of these individuals are representing these colors correctly. Further, what explains the phenomenal difference between experiences of *normal* individuals and experiences of the inverted is their distinctive biological makeup.

2. Representational Externalism:
Phenomenal Internalism without Representational Internalism

Suppose now (c) that the phenomenal character of perceptual experiences locally supervenes on the biological substrate (phenomenal internalism) and (a) that the phenomenal character of perceptual experience determines its representational content (representationalism). The question that now arises is whether, assuming (c) and (a), we are committed to representational internalism. Thau's account is a case in point. According to him, inversion spectra scenarios establish only that the phenomenal features of perceptual experiences are not determined by the way "the outside world is represented" (2002, p. 31). Nonetheless, nothing prevents the supposition that these phenomenological characteristics are determined by the way in which the subject represents external properties *for himself*. Thus, unripe tomatoes not only appear phenomenally red to the inverted; they also represent as red for him. Thus, the phenomenal character of the perceptual supervenes locally on the physical properties of the biological substrate (phenomenal internalism), and determines the representational content of the experience (representationalism), but only because such content is individuated independently of the external environment (representational internalism).

It is inevitable to think that one of the motivations of representational internalism is its adherence (albeit unconsciously) to the traditional act-object model. In light of this model, the experience of an external object is understood as the perception of an internal image resembling the object, thus mediating our cognitive access to it. We would become directly aware of this datum only indirectly through the external properties of objects. We would perceive a red bulgy tomato by means of our immediate perception of an internal datum that is red and bulgy.

Thus, the color of the unripe and ripe tomato not only appears phenomenally inverted to normal and inverted individuals, they would also be represented in different ways, since the internal data would be materially different. Normal and inverted people only agree in relation to the color of ripe and unripe tomatoes in the doxastic domain of beliefs and thoughts, that is, when they acquire the concepts of "red" and of "green" by means of the acquisition of language.

However, if we accept that the content of doxastic states are individuated, in part, based on patterns of relations the species to which the individual belongs has with

the different objects, properties, and kind of natural environment (doxastic externalism), how could we assume that the content of perceptual states is individuated independently of the external environment?

The inverted Earth scenario was originally conceived by Block as an argument against phenomenal externalism. However, it also allows us to illustrate the difficulties of representational internalism. Like Putnam's famous Twin-Earth idea, the inverted Earth would be similar to Earth, except for two crucial aspects. (I) All objects that are red on Earth are green there, and vice-versa; all objects that are green on Earth are red there. (II) People on the inverted Earth employ the predicate "red" to refer to the color of green objects, and the predicate "green" to refer to the color of red objects. Suppose now that Peter is transported to the inverted Earth through inverting his lenses. He could not possibly notice any difference. If he contemplated a ripe tomato on the inverted Earth, the phenomenal character of his visual experience would be qualitatively identical (in all its relevant aspects) to the phenomenal character of his visual experience of a ripe tomato on Earth.

The crucial point is the following. If, according to Putnam's original thought experiment, Oscar would be wrongly thinking of water by contemplating the substance in the rivers, lakes, and oceans of the Twin-Earth, Peter would also be misrepresenting the color of ripe tomatoes as red and the color of unripe tomatoes as green on inverted Earth and for exactly the same reason. If Oscar's doxastic states are individuated in part by their representational content and these, in turn, based on patterns of relations that individuals of Oscar's community have with H2O on Earth, Peter's perceptual states would also be individuated in part by their representational content. This content would be based on patterns of relations that individuals of the species to which Peter belongs have with the color red on Earth. If Oscar is mistaken when he thinks of water (H2O) on the Twin-Earth, Peter also must be wrong if he represents a ripe tomato as red on the inverted Earth.

Interestingly, Block believes that once Peter has adapted to the inverted Earth, he will begin to correctly represent the ripe tomato as green and the unripe tomato as red, even though ripe tomatoes appear phenomenally red to him while unripe tomatoes appear phenomenally green. Block notwithstanding, it is much more reasonable to think that Peter's visual experiences and memories are causally tied to his original

environment. The causal ties are linked to recognitional abilities, which are prompted by the qualitative nature of experiences. Thus, when transported to the inverted Earth through inverting lenses, Peter must be misrepresenting the colors of ripe and unripe tomatoes when he contemplates them.

The fundamental question that now arises is whether the rejection of representational internalism also commits us to the rejection of phenomenal internalism, that is, the rejection of the assumption that the phenomenal character of perceptual experiences locally supervenes on the physical properties of their biological substrates. In other words, we wonder if representational externalism necessarily leads to phenomenal externalism.

Indeed, this is Dretske's position. In his famous 1995 work, he initially suggests that the main motivation of phenomenal internalism would be what I called above the act-object model (Dretske, 1995, pp. 127-128). In light of this model, we would become directly aware of the phenomenal character of our experience and only indirectly of external objects and properties that the same experience represents. Now, if representational internalism seems to assume an adherence, though implicit, to the act-object model, we cannot say the same of phenomenal internalism. To say that the phenomenal character of perceptual experience is "in the head" is not to endorse in any way the literal assumption that we would perceive such experience as a datum inside our consciousness, or, more precisely, as a supposed mental image. It only means we assume that phenomenal character supervenes locally on the physical properties of a biological substrate.

One year later, Dretske (1996) acknowledges that he can provide no argument that counters phenomenal internalism. All he has against it is that, in his opinion, it is incompatible with the main intuition—that the sensory qualities through which perceptual experiences are individuated "are not in the person where it is the experience" (Dretske, 1996, p. 144). The idea is that sensory qualities are not properties of experiences themselves, but rather "relational properties" (1996, p. 145). In representational externalism, we identify beliefs based on what they represent. Likewise, we would identify the sensory qualities of experience based on what they represent. Thus, the only reason Dretske presents for rejecting phenomenal internalism is its previous adherence to phenomenal externalism, that is, the assumption that the

phenomenal character of perceptual experience is one and the same as the physical properties represented by the experience.

The internal phenomenal stance is not only compatible with the external representational one, but it also provides a more plausible alternative than phenomenal externalism. The inverted Earth scenario allows us not only to counterfactually dissociate the phenomenal character of perceptual experience from the physical properties such experience represents. The scenario clearly also suggests that the phenomenal character locally supervenes on the physical properties of a given organism. If, when on the inverted Earth, Peter misperceives a ripe tomato as being red because his experience of red is caused by inverting lenses, then phenomenal redness supervenes locally on the physical properties of his perceptual apparatus.

3. Representationalism: Phenomenal Internalism without Phenomenism

Suppose, finally, (d) that perceptual states are individuated, in part, by their representational content and this, in turn, in reference to patters of relations that the species to which the individual belongs have with objects, properties, and kinds of external environments, and (c) that the phenomenal character of perceptual experiences locally supervenes on the biological substrate (phenomenal internalism). The question that now arises is whether by assuming (d) and (c) we are committed to the rejection of what I have called representationalism and hence to the acceptance of phenomenalism, according to which the phenomenal character of perceptual experience does not determine the representational content.

As we saw, the scenarios of inversion raise doubts about phenomenal externalism, that is, the thesis that the phenomenal character of perceptual experience is one and the same as the physical properties represented by such an experience. It is reasonable to suppose that John (the inverted) represents unripe tomatoes as green (just like Peter) although they phenomenally appear to him just as ripe tomatoes phenomenally appear to Peter. However, if phenomenalism is correct, the reverse must also be true. It would thus be reasonable to assume that John's and Peter's visual experiences could represent ripe tomatoes as red and unripe tomato as green, even though they appear to them in the same phenomenal way.

The crucial difficulty of phenomenalism lies in the fact that the phenomenal character of perceptual experience is one of the key elements in the individuation of representational content. As we saw, representational content is individuated, *in part,* on the basis of different objects, properties, and kinds of perceivers' natural environments. Nevertheless, representational content is also individuated, *in part,* on the basis of the perceiver's discriminatory and recognitional abilities. John (the inverted) is only able to recognize the ripe tomato as red by means of his experiences of phenomenal green, just as he is only able to recognize unripe tomatoes as green through his experience of phenomenal redness. Thus, if John's visual experiences of ripe tomatoes and unripe tomatoes possess exactly the same phenomenal character, he could not possibly represent them as different.

It is worth emphasizing, once again, that I do not intend here to refute phenomenalism. My aim is only to show that representationalism (in conjunction with phenomenal internalism and representational externalism) provides us with a far more plausible picture of perceptual experience than the alternative represented by phenomenalism in conjunction with representational externalism.

4. Phenomenal Mode of Presentation

However, if phenomenal character is one of the key elements of individuation of perceptual content and of perceptual modes of presentation, the question that arises is how we should understand such modes of presentation and such content. Frege has never clearly defined what he means by "mode of presentation" of the reference or "the ways that objects are given" <Gegebenheitsweise der Gegenstände>. His most famous examples are properties uniquely instantiated, such as the "property of being the evening star" and "property of being the morning star," as the ways of presenting the referent of "Phosphorus" and "Hesperus," respectively.

For an initial approximation, following Chalmers (2004, 2010), "modes of presentation" can be cast out to extensions of linguistic expressions as certain identifying conditions. For example, the color red (understood as a physical property of reflectance of a certain spectrum of light) can be identified, roughly, *as the property that normally causes experiences of phenomenal redness in certain individuals under normal lighting conditions* (Chalmers, 2010). In a more precise way, perceptual modes

of presentation can be formally modeled on Chalmers' two-dimensional semantic framework as functions from centered worlds (in which a subject, a given time, and the perceiver's perceptual experiences are at the center) to extensions. When we consider as an argument of this function a possible world for Peter and imagine his experience of phenomenal redness at the center, the value of the function is the color red, understood as a physical property of light-reflectance. In contrast, when we consider as an argument of this function a possible world with John and his experience of phenomenal redness at the center, then we have as a value the color green, understood as a physical property of light-reflectance.

Such an approach raises a question about the status of perceptual modes of presentation of objects and properties, namely, whether they are descriptive or not. Descriptive modes of presentation (*de dicto*) are essentially characterized by the fact that the reference is determined indirectly, that is, by the subject's propositional knowledge that the referents uniquely satisfy one of those identifying conditions expressed by the respective mode of presentation. For example, if my reference to the color red is determined by my knowledge that the color red satisfies the identifying condition of being the color *that normally causes experiences of phenomenal redness in certain individuals under normal lighting conditions*, then the mode of presentation in question is descriptive or *de dicto*. In contrast, non-descriptive modes of presentation (*de re*) are essentially characterized by the fact that the reference is determined in a purely relational way, or by means of the existence of some relation between the subject and referent (Bach, 1987). Consequently, if my reference to the color red is determined by the fact that this color is what *normally causes experiences of phenomenal redness in certain individuals under normal lighting conditions*, then the mode of presentation in question is non-descriptive or *de re*.

Now, when the subject refers to the color red through his visual experience, he does not do so based on the propositional knowledge that *such color experiences typically cause experiences of phenomenal redness in individuals such as himself*. Such an assumption would be a form of hyper-intellectualism, and even Chalmers recognizes that the perceiver could not possibly be representing the color red in terms of the proposed description (2010, pp. 368-369). In short, Peter's visual experience of a ripe tomato represents the color of the tomato as red *because* that color is causing his visual

experience, but certainly not *as* the color that uniquely satisfies the condition of being the color that normally causes experiences of phenomenal redness in individuals like him under normal conditions. That said, perceptual modes of presentation are essentially non-descriptive.

Now, although the perceptual mode of presentation is *de re,* or non-descriptive, representational content cannot be reduced to Russellian content consisting only of one or more physical properties, like the property of light-reflection, as phenomenal externalism assumes. For one thing, representational content is individuated not only on the basis of the patterns of relations between the individual and the objects, kinds, and properties of the natural environment. It is also individuated based on the individual's recognitional and discriminatory abilities. Peter is only capable of recognizing the color red by means of his visual experiences of phenomenal redness, while John is only capable of recognizing the same color by means of his experiences of phenomenal greenness. Thus, although Peter's and John's visual experiences of ripe tomatoes refer to the same red color, their representational content differs slightly. While Peter's visual experience represents the color red *as* the color that appears phenomenally red to him, John's experience represents the same color *as* that which appears phenomenally green to him.

Three observations are crucial here. First, when I say, for example, that John represents red *as* the color that appears green to him, I do not presume that John has to possess the concept of green to refer to the color in question. The representational content of experience is non-conceptual content in the broadest sense of the term: the perceiver need not possess any concepts involved in the canonical specification of the representational content of his perceptual experiences. To represent the red of the ripe tomato as the color that appears green to him, John does not need to possess the concept of the color green; as he does not even need to possess concepts of causality, experience, or other such ideas.

The second observation is this. The proposal does not assume in any way the act-object model. When I say that John represents red *as* the color that appears green to him, I am not assuming that John first perceives the phenomenal greenness of his visual experience of red, say, as an internal datum to his consciousness, and only later perceives the color itself. Rather, the suggestion proposed here is fully compatible with

the thesis of transparency (Tye) and model of introspection known as displaced perception (Dretske). The proposal is entirely congruent with the thesis of transparency in that it assumes that, on behalf of his visual experience of phenomenal greenness, John does not perceive anything other than what his own visual experience represents, namely, the red color of ripe tomatoes. Moreover, the proposal is also congruent with the displaced-perception model of introspection, that is, with the assumption that John can only become introspectively aware of the phenomenal greenness of his visual experience of ripe tomatoes as the result (output) of a reliable process whose input is the perception of the color of ripe tomatoes itself, considered an external property. In short, to say that John's visual experiences represent the red of ripe tomatoes *as* the color that appears green to him is only to say that the phenomenal greenness is the peculiar way in which John himself perceiving the color red; that is, it is the conscious element by means of which John recognizes that color.

The third observation is this. Even though the proposal assumes that the phenomenal character of perceptual experience is a crucial element in individuation of the perceiver's representational content, it does not need to further assume that the phenomenal character of perceptual experience is nothing more than some ability or know-how to discriminate and recognize instances of properties in the perceptual field. To be sure, phenomenal character enables the perceiver to discriminate and recognize instances of properties. Still, phenomenal character is not manifest in those abilities. Rather, it manifests as a physical property of the brain state that emerges from the brain through causal interaction with instances of environmental properties.

My proposal depends on a critical re-examination of Dretske's design problem (Dretske, 1988, pp. 96-98, 101-103). We begin by reviewing the naturalization of the representational content of experience proposed by Dretske. All events and facts in the world convey information. This comprises the set of all possibilities that a given event or fact excludes. For instance, if it is raining, this fact excludes the possibility that it is snowing or that the sun is shining. We can then characterize the information conveyed by an event or fact as a narrowing of the set of possibilities consistent with the occurrence of the event or fact in question. This is only possible, however, in situations in which events and facts A depend nomically or statistically on other events or facts B in such a way as to make the following counterfactual true: an instance of A would not

have occurred if B had not been instantiated. When a fact or event A covaries nomically or statistically with a fact or event B, the occurrence of A carries information about the occurrence of B, or, more specifically, instances of the carriers of information are generated from the occurrences of B. Thus, for example, if the diameter of the rings of a tree covaries nomically with the age of the tree, then a measure of the diameter of the rings of a certain tree carries information about the age of the tree in question.

However, what particularly interests us are physical events in the brains of sentient creatures and laws or neurobiological statistical covariances prescribing which events should occur under which conditions. The first step in this direction is to recognize the existence of statistical correlations between certain neural states N and certain properties F of proximal stimulation triggering physiological activity in a sensory organ. Thus, a state N could not occur in an individual S, unless S bears some relation to F. Consequently, occurrences of N provide information about the instantiation of F.

Nevertheless, here emerges the traditional problem of disjunction. The measurement of the diameter of the tree rings in question not only covary nomically with age of the tree. It also covaries with the rainfall of the region, with soil nutrients, with the intensity of sunlight, etc. Likewise, the same neurological state N, which covaries nomically with some property of the proximal stimulation, also covaries with many other distal properties of physical events that trigger immediate physiological activity in a sensory organ. In other words, the available information in proximal stimulation significantly underdetermine the distal causes of that stimulation, hence the objects and properties represented in perception and the representational content of perceptual experience. For example, the same firings of retinal sensors are compatible with numerous possible causes. Consequently, any given pattern of information carried by proximal stimulation underdetermines the types of environmental entities perceived by humans and other animals.

Although Dretske does not take the problem of underdetermination into account, one of his favorite examples does illustrate the problem. Suppose that two speedometers are connected to the axle of two vehicles with tires of different diameters. In principle, those speedometers only register the speed of rotation (RPM) of their respective axes (proximal stimulation). In the vehicle with the larger tire, the rotation speed is lower.

This means that, in order to represent the speed of locomotion of their vehicles (distal property) they must be properly "calibrated" (Dretske, 1995); that is, they must acquire the function of indicating the vehicle's locomotion speed. However, once calibrated, the way each vehicle processes the information or represents the same speed of locomotion has to be different.

Thus, besides the nomological or statistical covariation, the representation of distal properties requires the satisfaction of an additional teleological condition. This additional condition is what Dretske calls *indicator function*. Initially, a neural state N carries information about the instantiation of properties on the basis of the proximal stimulation that triggers the neuronal activity that results in N. However, as we saw, this initial information is compatible with many distal causes. In order to *represent* a particular distal property D, besides covarying nomically with D (via the nomological covariance with F), N has to acquire the function of indicating D specifically (Dretske, 1988, pp. 53-59; 1995, pp. 48-50).

Let us say that Peter is a humanoid inhabitant of the primitive African savannah and that ripe tomatoes there are red and unripe ones are green. Suppose that, because of their red color, proximal stimulation coming from ripe tomatoes under normal environmental conditions triggers a neurophysiological activity in normal individuals like Peter that results in the neural state N. Following the same reasoning, because of its green color, proximal stimulation coming from unripe tomatoes under normal environmental conditions triggers neurophysiological activity in normal individuals such as Peter resulting in the neural state N'. Initially, N covaries statistically with the properties P of proximal stimuli, which are compatible with several distal causes, among them the color red. By the same token, N' covaries statistically with a certain property P' of the proximal stimulus P', which is compatible with several distal causes, among them the color green.

Let us now suppose that ripe tomatoes are edible while unripe ones are indigestible. This makes it indispensable to the survival of the species to which Peter belongs that its members eat the ripe tomatoes (action M) and avoid the unripe ones (action M'). Now, as ripe tomatoes are red and the unripe ones are green, Peter's neural states N and N' are recruited by natural selection to act as structuring causes of actions M and M', respectively. The fundamental point for Dretske is as follows. The neural

states N and N' are recruited as *structuring* causes of Peter's actions M and M' *because of what they indicate*, namely, the instantiation of the color red and the color green, respectively. Thereafter, neuronal states N and N' not only supply the information that the colors red and green, respectively, are instantiated. They also acquire the function of conveying such information.

As we saw, Dretske identifies the phenomenal character of visual experiences with the colors themselves represented by the experience (phenomenal externalism). Here, however, the problem of inversion returns. Suppose that John is another primitive humanoid inhabitant of the primitive African savanna who possesses an inverted spectrum relative to Peter. While the presence of a ripe tomato, by means of some proximal stimulation, triggers neurophysiological activity in Peter from which results a neural state N, in John, the same ripe tomato triggers another neurophysiological activity from which the neural state N' results.

Therefore, while, in Peter, the neuronal state N conveys the information that the color red is instantiated by ripe tomatoes in his visual field, in John, it is the neural state N' that carries the same information. While, in Peter, the neural state N' conveys the information that the color green is instantiated in his visual field, in John, the neural state N carries this information. Now, to the extent that John (the inverted) is as adapted to his natural environment as Peter, the natural assumption is that, in John, the neural state N', and not the neural state N, is recruited as the structuring cause of John's action M, which is eating ripe tomatoes. Conversely, in John, the neural state N, and not the neural state N', is recruited as the structuring cause of John's action M', which is to avoid eating the fruit.

Thus, Dretske's solution to the design problem requires some repairs. First, the inversion of spectra clearly indicates there are different solutions to the problem of natural design and, most importantly, whatever form it takes, the solution crucially depends on the physical constitution of organisms. If Peter and John are physically distinct individuals, then the distinct neural states in Peter and John will be recruited as structuring causes for the same types of action.

However, the most important addendum is as follows. As the actions in question are conscious, *it is because of the phenomenal characteristics that emerge from the causal interaction between the brain and the distal properties of his environment that*

his neural states are recruited by natural selection to indicate that such properties are being instantiated. It is because of the phenomenal redness of Peter's visual experiences of ripe tomatoes that his neural state N is recruited to represent the instantiation of the color red. Furthermore, it is due to the phenomenal greenness of John's visual experiences of the same ripe tomatoes that his neuronal state N' is recruited to represent the instantiation of the same red. Thus, phenomenal character is a physical property of a brain state that emerges from the brain's causal interaction with instances of environmental properties by virtue of which that brain state is recruited to indicate that such properties are being instantiated. Therefore, in opposition to what Dretske (1995, pp. 82-84) states, if we are to understand the phenomenal character, it is not enough to know which properties the experience in question has the function of indicating. It is also essential to know how the information about their instantiation is being internally processed.

That said, the most plausible suggestion is one that identifies the phenomenal character of perceptual experience with the conscious element in a way of processing information about the instantiation of distal physical properties in their perceptual field peculiar to individuals, groups, or a species. In other words, phenomenal character is the element of conscious experience by which the individual recognizes the instantiations of properties in his perceptual field. The phenomenal character of Peter's experience of the color of ripe tomatoes is the conscious element by means of which he discriminates and recognizes the color red.

5. Solving the Trilemma

As indicated in the introduction, any satisfactory conception of perceptual experience must meet at least three desiderata, namely, the desideratum of representational externalism, the desideratum of representationalism, and the desideratum of phenomenal internalism. The first is the thesis that perceptual states are individuated, in part, on the basis of their representational content and this, in turn, is individuated on the basis of the patterns of relations that the species to which the individual belongs has with different objects, properties, and kinds of natural environments. The second is the thesis that the phenomenal character determines the representational content. Finally,

the third is the thesis of the local supervenience of the phenomenal character on the biological substrate.

The solution proposed here is the only one that can solve the trilemma without abandoning any of the three mentioned desiderata. Furthermore, when compared to available alternatives, it presents itself as the most plausible conception of perceptual experience. First, as the phenomenal character of perceptual experience is understood as a way of processing information about the instantiation of a particular property peculiar to individuals, groups, and species, then the desideratum of phenomenal internalism is trivially satisfied: the phenomenal character of experience locally supervenes on the physical properties of the biological substrate. If John and Peter are individuals who differ in some relevant physical property of their brain or of their visual system, then the way in which the same property of light-reflectance appears to Peter is phenomenally different from the way it appears to John.

Nevertheless, even if the phenomenal character of perceptual experience is nothing but the manner by which the information about the instantiation of properties is internally processed, perceptual states are individuated, in part, by means of their representational content, and this, in turn, by means of the environmental properties those states represent. Therefore, this proposal satisfies the desideratum of representational externalism.

Finally, the proposal also satisfies the desideratum of representationalism. As phenomenal character is one of the crucial elements in the individuation of representational content itself, there can be no difference in representational content without a difference in phenomenal character.

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