

THE EPISTEMOLOGY OF EMBODIED ACTION: A LESSON FROM NEUROPSYCHOLOGY

Abstract: We contend that the distinction between the space of reasons and the space of causes - namely, the distinction between what is often taken to be epistemically relevant and what is not -- fails to consider the body *qua* body and consequently, masks its central epistemological role. The argument unfolds in two steps. First, we examine the behavior of patients suffering from visual agnosia; second, we show that the visuomotor capabilities of these patients suggest that the body occupies a place which is neither that of reasons, nor that of causes. The body cannot be assimilated to the space of reasons, for although the bodily behavior of agnostic patients is bestowed with intelligence, it cannot be captured by propositional attitudes. But neither can the body be assimilated to the space of causes: although it is physical, it is normative; and although it is natural, it cannot be naturalized. The body, therefore, occupies a space which lies between that of causes and reasons, and epistemology, we claim, should take stock of this.

I. THE PROPOSAL: AN OVERVIEW

Our proposal is rather simple. We contend that the distinction between the space of reasons and the space of causes -- that is, the distinction between that which is often taken to be epistemically relevant and that which is not, or the distinction between spontaneity and passivity -- fails to consider the body *qua* body and consequently masks its central epistemological role. The first thesis is ontological, the second epistemological. Although, we say something about the former, our main interest lies with the latter.

Partisans of the aforementioned cause-reason distinction have a choice: they can either situate the body in the space of causes or in the space of reasons. The first taxonomical arrangement robs the body of its intentionality, meaning, and significance. The second dictates that the body must either be endowed with representational content or, more likely, subsumed under the category of the mental. The cause-reason dichotomy allows for no middle grounds: the body is either a part of the world or a part of the mind. In no case, the body is a body. The purpose of the essay is to provide the reader with a *reduction ad absurdum* argument against this dichotomy. The argument can be summarized as follows: since neither of the alternatives that the

cause-reason dichotomy dictates are acceptable, the distinction must be rethought, and perhaps even abandoned.

The argument unfolds in two steps. First, we examine the behavior of patients suffering from visual agnosia and second, we show that the visuomotor capabilities of these patients suggest that the body occupies a place which is neither that of reasons nor that of causes. The body, as it will be shown, cannot be assimilated to the space of reasons, for although the bodily behavior of agnosic patients is bestowed with intelligence, it cannot be captured by propositional attitudes. Neither can the body be assimilated to the space of causes: although it is physical, it is normative; and although it is natural, it cannot be naturalized. If the present attempt to mark out a third space, a space which lies in between that of reasons and that of causes, is successful, then the notion of justification must be rethought. Justifications can no longer ignore the workings of the body, for they are neither purely causal, and hence irrelevant to epistemological matters, nor are they propositional, and hence adequately captured by beliefs or other propositional attitudes. The body therefore occupies a space which lies between that of causes and reasons, and epistemology, we claim, should take stock of this.

II. VISUAL AGNOSIA

Evidence for the existence of an in between space is found in studies and reports of patients that suffer from a disorder known as visual agnosia.¹ Accordingly, patients with this condition are

¹ With the exception of Bay (1953) and Bender and Feldman (1972), most neuroscientists, psychologists, and cognitive scientists hold that visual agnosia cannot be explained *away* as a visual deficit. Accordingly, visual agnosia is considered to be the disorder which results from damage done to the ventral stream. This damage, nonetheless, leaves the primary visual cortex unaffected. As a consequence, agnosic patients fail to recognize objects and that is not because they cannot 'see.' That is to say, the loss of recognitional capacity is not the result of cortical blindness. Support for this can be found in Ettliger (1956). Farah (2004:2-3) cites additional scientists who support the claim that visual agnosia is not due to a visual deficit. She additionally notes that the attempt to explain *away* agnosia was motivated by a particular theory of vision, which holds that object recognition occurs in two stages which are undifferentiated: that of 'seeing the object' and that of 'associating general knowledge with the visual percept' (3). If perception is understood in this light, then failure to recognize objects can occur either because

unable to visually recognize simple everyday objects, despite exhibiting a variety of perceptual, linguistic, and intellectual abilities.² Although the visual ability that makes possible object recognition is present, object recognition fails to take place. The agnosic patient, for instance, can navigate space, avoid obstacles, hold pencils, or pick-up objects. Yet, s/he is unable to recognize an object, match or group together similar objects, describe basic features of objects -- size, shape, or orientation -- or even copy (that is, draw) basic visual stimuli.³

A number of cases of visual agnosia have been recorded and they all attest to these deficiencies.⁴ For instance, Benson and Greenberg (1969) report that their patient had sufficient visual abilities to identify colors, notice changes in the intensity of light, and even point out the direction in which objects were moving. Nonetheless, when asked to reproduce a simple shape, he consistently failed.⁵ Two of such attempts are shown here:

of an impairment in vision or a deficiency in general knowledge. Since then, however, alternative physiological, neurological or functional accounts of vision have taken precedence. Now visual agnosia seems implausible to be explained away as a visual impairment. For a more detailed account see Farah (2004: introduction), and Bauer and Demery (2003).

² Farah (1999: 181) provides a more systematic definition: visual agnosia is ‘the impairment of visual object recognition in people who possess sufficiently preserved visual fields, acuity and other elementary forms of visual ability to enable object recognition, and in whom the object recognition impairment cannot be attributed to ... loss of knowledge about objects...impairment is one of visual recognition rather than naming, and is therefore manifest on naming and non-verbal tasks alike.

³ The medical literature following Lissauer (1890) divides visual agnosia into two types: ‘apperceptive’ or ‘associative’ agnosia. In this essay, the use of the distinction is purely heuristic, and nothing depends on whether the distinction stands or falls. In fact, the documented study of H.J.A. might be used as evidence for arguing that the distinction is insufficient to cover all cases of visual agnosia (see Riddoch and Humphreys 1987). Setting aside this complication, apperceptive agnosia can be described as the disorder in which failure of visual recognition occurs due to an impairment of visual perception which is nonetheless not an elementary (or low-level) visual deficit. In other words, the impairment of vision is not sufficient for failure in visual recognition. On the contrary, associative agnosia is the condition under which visual recognition fails mainly because the patient is unable to access relevant information about objects from memory. Our discussion is limited to apperceptive agnosia. The different types of agnosia and the ways in which they relate to different accounts of vision – for instance, to Maar’s (1982) account – are discussed in Farah (1999 and 2004) and Bauer and Demery (2003).

⁴ In addition to the ones cited in the body of the essay, see also Alexander and Albert (1983), Goldstein and Gelb (1918)

FIG. 1.4. Example of an attempt to copy the letter "B" by Benson and Greenberg's (1969) patient.

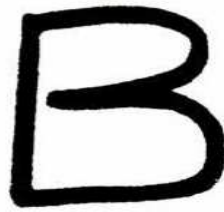


FIG. 1.5 Example of an attempt to copy the number "3" by Benson and Greenberg's (1969) patient.



Figure 1: Reproduction is taken from Humphreys and Riddoch (1987:17)

Similar phenomena are described elsewhere. Reporting on patient Mr S., Efron(1968:156) writes: 'Mr S. can point with his finger to an object which is held before him...only if the object is moved before his eyes.' As soon as the object is stationary, the patient is at a loss: 'he does not appear to know what object he has been asked to look at; his eyes randomly scan the entire room and he appears to be "searching."' Landis *et al.* (1982:522) report a similar case. Their patient could recognize simple geometric figures only if he was allowed to trace them and only 'if the point of departure for tracing was unimportant (e.g., circle, triangle).' The patient could also read aloud slowly. 'This "reading,"' they write, 'was accomplished by rapid tracing of letters, parts of letters or words with his left hand alone or with both hands...[When] movements of the fingers could be prevented...this abolished reading' (ibid.).

Two observations should be made – even at this early stage. First, it is undeniable that the disorder is impairing: patients cannot recognize, match, or report objects. Second, the cited findings of Efron (1968) and Landis *et al.* (1982) indicate that certain visuomotor abilities are

⁵ Additionally, Adler reports what her patient replied when asked to explain why it was so difficult to copy shapes and figures. The patient said the following: 'when it is curved I should trace round. But I see other parts and I lose myself. Then I do not see the beginning any more' (cited in Humphreys and Riddoch 1987:16).

preserved, and in some ways help to alleviate some of the visual deficiencies.⁶ The preservation of visuomotor abilities is clear in the everyday activities of agnosic patients. Adler (1944) says the following about her patient:

At home...she confused the silver on the table. When getting dressed she had difficulties, confusing her underwear with her blouse and not getting her arms into the right sleeves. After the first three months, these errors did not recur (Cited in Humphreys and Riddoch 1987:17).

Adaptability in the environment and preserved visuomotor abilities are common among agnosic patients. We are told, for instance, of patient Mr. S. that he 'could navigate corridors successfully with his wheelchair' (Benson and Greenberg 1969:83), and of another patient, R.C., it is reported that he could both 'negotiate obstacles in a room' and also 'reach out to shake hands and manipulate objects' (Campion 1987:208-9).

These reports suggest a difference between everyday and other more abstract or intellectual tasks. This distinction is reinforced by Milner's *et al.* (1991) findings. The patient under examination, D.F., experiences several difficulties. *Inter alia*, she fails to copy basic drawings, she is very poor in recognizing or discriminating between simple geometrical shapes, and she is unable to recognize line drawings, letters, or digits. She can, however, recognize objects that she is permitted to explore tactually, and she can write down simple letters and draw simple objects when they are respectively dictated or retrieved from memory.⁷ In a series of experiments, Milner *et al.* (1991) concentrated on the reaching behavior of D.F. and discovered that although she could not accurately describe or compare shapes, sizes, and orientations of

⁶ Landis *et al.* (1982) report of their patient Mr X that he was able to identify letters and other shapes by monitoring his own hand movements while tracing them. For how *not* to interpret this observation see note 29.

⁷ In this way, her ability to gather information from the sense of touch or from memory 'did not reflect a general failure in accessing stored information about shapes and forms' (Milner and Goodale 2006:124).

objects, she was, like previously mentioned patients, in possession of many motor skills, such as reaching out and grasping everyday objects.⁸

The experiments demonstrate a striking disparity between her ability to visually report, describe, or discriminate objects and her visuomotor ability to grasp objects. In one experiment, Milner *et al.* (1991) set up an apparatus which included a ‘vertically mounted disc in which a slot was cut’ and ‘on different test trials, the slot was randomly set at’ different angles (Milner and Goodale 2006:129). Then they asked D.F. to report on the angle of the slot or to match the angle by inserting her hand or another card into the slot. They summarize their findings as follows:

[W]e found that D.F.’s attempts to make a perceptual report of the orientation of the slot showed little relationship to its actual orientation and this was true whether her reports were made verbally or by manually setting a comparison slot. Remarkably, however, when she was asked to insert her hand or a hand-held card into the slot from a starting position an arm’s length away, she showed no particular difficulty...In short, although she could not report the orientation of the slot, she could ‘post’ her hand or a card into it without difficulty (*ibid.*).

The difference between the accuracy of the two methods is highly pronounced. Whereas conscious and deliberate judgment or matching yield no accuracy, the visuomotor method was almost perfect (see figure 2).⁹ Milner and Goodale(2006) put forth a neurophysiological explanation that accounts for the discrepancy between perceptual reports and visuomotor ones.¹⁰

⁸ ‘She is very good,’ they report, ‘at catching a ball,’ ‘negotiating obstacles in her path,’ and following a moving light with her eyes (Milner and Goodale 2006: 128-9). As it is the case with other agnosic patients, D.F. cannot be characterized as blind. Not only she has (limited) ability to discriminate between colors, but she can also reach for and grasp objects with accuracy. In fact, the ability to catch a ball is indicative of the accuracy of her visuomotor behavior. As Noë (2004: 88) writes, in relation to this: ‘To experience the ball as moving in an arc is to experience it, precisely, as moving in such a way that to track it you would need to move your head in a characteristic way. The experience of a thing’s movements depends on your understanding of the sorts of sensorimotor contingencies mediating your relation to the thing.’ Notwithstanding issues about the exact meaning of ‘sensorimotor contingencies,’ catching a ball requires a certain ability which is undeniably missing from blind patients. For a more detailed description of D.F.’s abilities, see Goodale and Milner (2004).

⁹ The results hold only for basic shapes: D.F. was able to rotate and insert into a slot only simple objects. She could not perform the same task with T-shaped objects. See Goodale *et al.* (1994b).

¹⁰ In line with Trevarthen (1968), Schneider (1969) and Ungerleider and Mishkin (1982), Milner and Goodale (2006) argue that their findings provide support for the ‘two visual systems’ hypothesis (see also Goodale and Milner: 2004). At the same time, Milner and Goodale reject Ungerleider and Mishkin’s claim that the distinction between the ventral and the dorsal stream should be understood a distinction between pathways which process ‘what’ and ‘where’ – that is, object identification and object localization -- respectively. Instead, they advance a

Regardless of the validity of this explanatory account, the discrepancy between perceptual reports and judgments on the one hand, and action or engaged interaction with the world on the other, remains. While the first is deficient, the latter is -- given the circumstances -- almost identical to that of the norm.

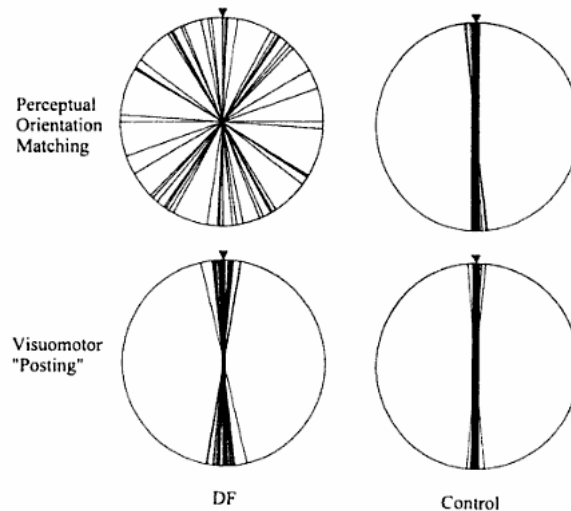


Figure 2: Reproduction taken from Milner and Goodale 2006:130

III. THE SPACE IN BETWEEN

Does D.F. have knowledge of the orientation of the slot? For instance, does she know that the slot is orientated at X and not at Y degrees? Before providing an answer to this question, a few preliminary considerations are in place. The answer depends upon at least two parameters: the relationship between perception and knowledge and the definition of knowledge. Evidently the two are interrelated: what constitutes knowledge has a bearing on how we understand its

functional distinction according to which the 'structural and spatial attributes of the goal object are being processed by both streams, but for different purposes': one for perception and one for action (Milner and Goodale 2006:310, 24ff.). As a consequence, Milner and Goodale's 'two visual systems' hypothesis states that the visual system that furnishes us with visual experience is not that which guides our motor behavior. Without access to the former, the patient will not be able to judge and recognize shape, size, and orientation. By having access to the latter, however, the patient will be able to have limited bodily abilities. The 'two visual systems' hypothesis stands in opposition to what Clark (2001: 496) calls the 'experience-based control' (EBC) thesis, that is, the view that 'conscious visual experience presents the world to the subject in a richly textured way; a way that presents fine detail...and that is, in virtue of richness, especially apt for, and typically utilized in, the control and guidance of fine-tuned, real-world activity' (ibid.).

relationship to perception – and vice versa. Our examination, however, is exclusively one directional, for not only we start with the latter, but also we consider the former only in light of the latter. Thus, when we ask whether D.F. has knowledge of the orientation, or whether she knows that the slot is located at such-and-such orientation, we wish to examine whether D.F. *is in a state which demonstrates a correlation (and not necessarily nomological) between the orientation of the slot and her being in such a state.*^{11,12} This reformulation of the question with which we opened this section is intentionally ambiguous. On the one hand, the invoked notion of ‘being in a state’ is broad enough to rescue us from the threat of behaviorism. On the other hand, it allows us to take into consideration a plethora of differing accounts of knowledge: narrow or broad, actual or dispositional. Accordingly then, the set of states deemed to be sufficient to demonstrate a correlation between the orientation of the slot and her being in such a state determines in what way D.F. knows the orientation of the slot.

In accordance to at least one interpretation of what knowledge is and consequently, of what states should be taken as sufficient, the answer is obvious: not only does D.F. not know the orientation of the slot but moreover, she cannot even think about the slot. This is the Kantian, but also, the coherentist path. It maintains that ‘thinking is cognition through concepts’ and concepts are functions: they order or unify ‘representations under a common one’ (Kant1998:A68/B93;

¹¹ Perhaps, this account sounds too much like Armstrong’s (1973:75) ‘Thermometer Model of Knowledge’ and thus, can be accused of failing to capture what we normally mean by ‘knowledge.’ To alleviate this difficulty we add, in a form of a requirement, that D.F. must also be aware of the following two facts: she must be aware of herself being in such a state, and she must be aware that a correlation between the orientation and her being in this state holds. We take this additional requirement as unproblematic. In fact, the description found in Milner and Goodale (2006) and Goodale and Milner (2004) about what D.F. *can* do and what has learnt to do, provides precisely support for this.

¹² Considering D.F., an artificial restriction must be placed upon the nature of this state: it is restricted to sensual input (and feedback loops) of visual perception and proprioception. That is because what is of interest here is not whether D.F. can know using *any* sense modality whether the slot is in such-and-such orientation, but rather whether she can come to know the orientation of the slot *visually* and/or *proprioceptively*. Also, ‘being in a state’ need not be thought as a species of ‘being in an informational state.’ Cf. Evans (1982) and Dretske (1981).

see B147).¹³ The Kantian or coherentist path forecloses the possibility of assigning knowledge to D.F.¹⁴ The only way that D.F. is able to report of the orientation is by trying to put either her hand or card through the slot. The ability that D.F. possesses is not that of abstract deliberation. She does not first judge the orientation of the slot and *then* act in a certain manner. What the Kantian account requires cannot be realized by D.F.'s behavior. If (*empirical*) concepts are what Kant says they are, then it is highly improbable that D.F. is in possession of concepts, much less those of 'opening,' 'slot' or 'X degrees of orientation.' Agnosic patients such as D.F. cannot visually recognize objects as being of a certain kind and thus cannot match or group together similar objects.¹⁵ If the patient is not able to group together or match similar objects, then the patient does not possess the concept of that object.

It is important to dwell on this point. The possession and use of a concept can be thought as the application of a rule, for instance, the subsumption of a particular under a universal. This rule following activity, however, must be in principle open-ended.¹⁶ To possess the concept of 'red,' for example, is to be able, while other things being equal, to identify all red objects, that is, all particular instantiations of red.¹⁷ Hence, to possess a concept is not to possess it *here and now*,

¹³ Or equivalently, a concept is a concept 'only because other representations are contained under it by means of which it can be related to objects' (A69/B94).

¹⁴ The concern here is not whether the so-called Kantian account is indeed an accurate description of Kant's position. We have no interest in interpretational disputes. If the reader finds this interpretation of Kant to be flawed, then she is invited to think of this as a *Kantian* interpretation: one which comes close to, but does not repeat, Kant's position.

¹⁵ Kelly (2002) also discusses the philosophical significance of D.F.'s behavior. The reader is encouraged to compare his interpretation to the one provided here.

¹⁶ This way of understanding concept-possession seems valid for both perceptual and non-perceptual concepts.

¹⁷ In line with Wittgenstein's (1953: §201ff) considerations on rule following, the possession of a perceptual concept, need not be understood as the ability to match a perceived object with a description in mind. The identification of a particular instance of red, for instance, might be immediate and not the result of the application of *modus ponens*. Whether this commits us to the stronger claim that, pace Evans (1982), perception is belief-independent, is inconsequential to present purposes.

but everywhere and always. Nonetheless, D.F. can be said to be in possession of a concept, for instance the concept of ‘X degrees of orientation,’ only retroactively, namely, only after she had performed the appropriate bodily movements. But such dispositional approach to rule-following activity is hardly satisfying, for it violates the requirement of having an open-ended applicability. D.F.’s dispositions, like ours, are finite (see also Kripke 1982).¹⁸

If the argument from the finiteness of dispositions does not by itself convince the reader, additional considerations will help to reinforce our point.¹⁹ The possession of a concept requires the ability to predicate that concept for a number of different things. The subject, therefore, who is in possession of a concept, must be able to make comparisons.²⁰ But again, how would D.F. be in a position to have such discriminating abilities? Can she distinguish between ‘*this* orientation’ (e.g. X degrees) and ‘*that* orientation’ (e.g. Y degrees)? Such an ability requires D.F. to know the orientation of both slots at the same time. In other words, and in agreement to the general definition of knowledge sketched above, she must be either in two distinct states at the same time or, more probably, at a state which exhibits a correlation with both orientations. Although it is not hard to imagine how this can be the case for normal subjects, it is not clear how D.F.’s

¹⁸ Brandom’s (1994) inferentialism, Sellars’ (1962, 1963, and 1969) functional approach to meaning, and Peacocke’s (1992: especially chapters 1 and 3) adherence to the ‘Principle of Dependence’ all seem to be in agreement with the Kantian reply. If it is necessary (here, we ignore conditions of sufficiency) for the possession of a concept to have mastered the use of a word, then D.F. can be said to be in possession of a concept only retroactively. As was stated in the main text, to master the use of word is to be able to use it in an infinity of ways and instances. Yet, this requirement does not seem to be fulfilled by D.F.

¹⁹ We admit that there are good reasons to find the argument unconvincing. For one, it might be argued that the argument does not show that D.F. lacks, for instance, the concept of ‘X degrees of orientation.’ Instead, the argument demonstrates that concept-possession for D.F. is intrinsically linked with her visuomotor capabilities. Notice, however, that if such concession is made, then this account of concept-possession, one which is fundamentally intertwined with the workings of the body, diverges greatly from a Kantian – or, for that matter, from a *Kantian* – one. If we wish to hold to the former, the latter must be rejected. In fact, such admission and consequently, a rejection of the Kantian account, works for our benefit. Our aim, after all, is to show the epistemological role of the body. And this concession does the work for us.

²⁰ To be in possession of the concept of ‘red,’ for instance, is to be able not only to recognize ‘red’ when one sees red, but also to point out that a green chair is not an instantiation of the concept under question.

visuomotor behavior would give rise to such knowledge. For instance, if she matches the orientation of the left slot with her left hand, and the orientation of the right slot with her right hand, how will she consequently compare her two hands? Is her proprioceptive/kinesthetic sense capable of making such a comparison? Evidently, this is an empirical question. Yet even if an affirmative answer can be provided, a more severe difficulty still persists: Can D.F. compare between two orientations which are *not* synchronously present? Or alternatively, can D.F. recognize a previously perceived object?²¹

The link between recognition and concept-possession is indeed strong. So much so that it is often argued that the possession of a demonstrative concept entails a recognitional capacity (see McDowell2000:57ff, Brewer1999:171, and Kelly2001).²² Minimally, that means the following: *x is in possession of a demonstrative concept y, if x is able to consistently re-identify an object or property p as being an instantiation of y.* McDowell (2000:57) expresses this as follows:

We can ensure that what we have in view is genuinely recognizable as a conceptual capacity if we insist that the very same capacity to embrace a colour in mind can in principle persist beyond the duration of the experience itself. In the presence of the original sample, "that shade" can give expression to a concept of a shade; what ensures that it is a concept... is that the associated capacity can persist into the future, if only for a short time...What is in play here is a recognitional capacity...that sets in with the experience.

But if the possession of a demonstrative concept, take for instance the demonstrative concept of '*this* orientation,' entails the capacity to consistently re-identify the orientation, and if this latter capacity must 'persist beyond the duration of the experience itself,' then we must conclude that

²¹ If D.F.'s only means of reporting the orientation of a slot is by bodily action, then in addition to the dispositional problem that we mentioned before, we also need to account for how, under normal circumstances, D.F. is not susceptible to error. Here we are not concerned with the fact that the faculty of memory might prove to be untrustworthy. Instead, we are concerned with how D.F. can keep track of what counts as a canonical instantiation of 'X degrees of orientation.' The possibility of D.F. being disposed in making certain kinds of mistakes cannot be so easily ruled out.

²² In fact, this recognitional capacity is a necessary condition for the possession of any concept – demonstrative or not. Here, however, we limit ourselves to an examination of demonstrative concepts.

D.F. lacks such recognitional capacity (ibid.). How is it that D.F. can compare whether *this* orientation is identical to the one with which she was presented before? No obvious answer comes to mind. A demonstrative concept is both context-dependent and context-independent. It depends upon the context insofar as it is demonstrative: it is *this* slot, the one to which the hands points. At the same time however, and insofar as a demonstrative concept is a *concept*, it does not depend merely upon the specifics of the situation: the concept applies over and over again. In the case of D.F., the conjunction of the two cases -- a conjunction required by the very nature of a demonstrative concept -- does not hold. For D.F. can recognize instantiations of the concept 'X degrees of orientation' only in the *here* and *now*. It is always *this* slot that is orientated at X degrees, and not *that* slot, the one, for instance, she encountered before.²³ If these ruminations are on the right track, then it seems reasonable to infer the following two claims: first, D.F.'s behavior cannot be explained in virtue of, nor can be caused due to, an anterior judgment about the orientation of the slot. 'In every judgment,' Kant states, 'there is a concept that holds of many, and that among this many also comprehends a given representation, which is then related immediately to the object' (A68/B93). As was shown, D.F. does not possess the necessary concepts and consequently, she cannot judge (at least, according to Kant) about the orientation of the slot.²⁴ Second, if her behavior is not conceptualized by her, then it cannot serve 'as (or for

²³ The question whether D.F. is able to generalize from the particular to the general, from '*this* orientation' to 'all orientations just like it,' is related to Evans' Generality Constraint. (In addition to Evans, McDowell (1998: 438-9), Peacocke (1992: chapter 2), and Davies (1992), also accept the Generality Constraint) According to Evans (1982:100-5), in order to ascribe to a subject the thought '*a* is *F*,' and consequently credit her to be in possession of concepts *a* and *F*, the subject must be able to do at least the following: she must be able to think that '*a* is *G*', where *G* is any property of which the subject knows, and also think that '*b* is *F*,' where *b* is any object for which the subject has a conception. The Generality Constraint seems to require a level of abstraction which cannot *always* be achieved by D.F. The qualification is necessary because there is no difficulty in asserting that D.F. fulfills this condition when she entertains a thought of the form '*a* is *F*', where the various instantiations of *a* and *F* are such that can be discriminated and re-identified by her. Nevertheless, in case where the thought under question is, for example, 'the orientation of the slot is 45 degrees,' it is doubtful that, assuming D.F. entertains such thought, she also entertains the thought that 'the orientation of the opening of the DVD player next to her is also 45 degrees.'

that matter stand in need of) a justification and so ground or constitute knowledge' (Brandom1997:122). Jointly, the above considerations lead us to the following conclusion that the visuomotor behavior of D.F. cannot be placed within the space of reasons.

Being outside of the space of reasons usually implies being inside the space of causes. Here we wish to contest this. Since Ryle, it has been customary for philosophers to draw a distinction between knowing-that and knowing-how, even if the only reason why they draw the distinction is to show that it is a false one. Ryle insists that knowing-how cannot be assimilated to knowing-that. In fact, Ryle states something stronger than that, but his exact position is not important here. What is pertinent to our considerations is that Ryle, in his discussion of the distinction between these two types of knowledge, provides the conditions that need to be fulfilled in order for a type of behavior to count as intelligible. He writes:

[W]hen they perform these operations, they tend to perform them well, i.e. correctly or efficiently or successfully. Their performances come up to certain standards, or satisfy certain criteria. But this is not enough....To be intelligent is not merely to satisfy criteria, but to apply them; to regulate one's actions and not merely to be well-regulated. A person's performance is described as careful or skillful, if in his operations he is ready to detect and correct lapses, to repeat and improve upon success, to profit from the example of others and so forth. He applies criteria in performing critically, that is, in trying to get things right. (Ryle2002:28-9)

Do the visuomotor capabilities of D.F. fulfill these conditions? We say yes. First, D.F. is able to put her hand through the slot. In this way, she is able to *successfully* perform the requested task. Moreover, her performances, as Ryle requires, 'come up to certain standards,' for they match the visuomotor abilities of the control subject.²⁸ But D.F., like other agnosic patients, does more than

²⁴ Again, if the reader objects to our findings on the grounds that they do not conclusively establish that D.F. does not possess the concept, for instance, of 'X degrees of orientation,' and instead show that D.F. concept-possessing ability is fundamentally influenced by her visuomotor abilities, then the reader, just like us, will not find recourse to the Kantian account or foundationalist account of knowledge. That is because both accounts miss the epistemological importance of the body. Also, see footnote 19.

²⁸ We have chosen not to describe D.F.'s behavior as one which fulfills (self-imposed or not) conditions of satisfaction. The use of those terms brings us very close to Searle's (1983) account of Intentionality and intention-in-action. The conditions of satisfaction of which Searle speaks are always propositional. Here we do not wish to

that. In a sense, she is able to learn from her mistakes, and she can recognize success from failure. Milner and Goodale (2006:144) report that ‘during the course of several years of living with her profound visual handicap, D.F. has acquired, wittingly or unwittingly, tricks or adaptive habits to overcome her perceptual difficulties’. She is now able to monitor her visuomotor behavior in such a way as to inform her overt perceptual judgment.²⁹ D.F. thus fulfills Ryle’s requirements. Her visuomotor abilities are such that force us to ascribe to her behavior a certain type of intelligence, one which, as we have shown before, does not involve the use of concepts, nor does it require judgment.

The philosopher who above of all recognized the full significance of this type of behavior is Merleau-Ponty. He himself drew many philosophical conclusions from the study of an agnostic patient (Schneider). In *The Structure of Behavior*, he provides an example which helps clarify the similarities between engaged action and the visuomotor behavior of D.F. Merleau-Ponty states:

For the player in action the football field is not an 'object', that is, the ideal term which can give rise to a multiplicity of perspectival views and remain equivalent under its apparent transformations. It is pervaded with lines of force ... and articulated in sectors ... which call for a certain mode of action and which initiate and guide the action as if the player were unaware of it. The field itself is not given to him, but present as the immanent term of his practical intentions; the player becomes one with it (Merleau-Ponty 1968:168).

The similarities between Merleau-Ponty’s example and the behavior of D.F. are clear. D.F. does not perceive the slot as an object. It is, as Merleau-Ponty comments, ‘present as the immanent term of [her] practical intentions’ (ibid.). The practical significance can in no sense be separated

take a stance on this manner, for we are not (so much) interested in her perceptual content, nor in the way in which she represents things. Rather, we wish to focus on the fact that she is able to act meaningfully, even when she cannot recognize objects.

²⁹This should not, however, let us conclude that D.F. has trained herself to perceptually report on objects. Consider the following example. There is an object placed in a container and then the container is filled with an opaque liquid. We are then asked to determine the size of the object without however removing the object from the container. D.F.’s reports are perceptual only inasmuch as we perceptually report the size of the object immersed in the container by looking at the size of our grip after we have grasped the object. In both cases, the absence of certain bodily behavior entails an inability to report on the size and orientation of objects.

from her perceptual (and overall) experience of the world. D.F. does not perceive sensations but meanings. Yet, as Merleau-Ponty writes elsewhere, her ‘perception is not an act of understanding,’ if by understanding we mean the subsumption of a concept under a rule or another concept (Merleau-Ponty2004:54; Cf. Kant2001:59, and 258). D.F. does not perceive the slot *as* a slot, yet she is able to report when requested the orientation of the slot with purely bodily means. Her behavior is intelligible, but this is not an *intellectual* intelligibility. We can say that D.F. has knowledge, but we cannot say that her knowledge is due to the possession of certain concepts; we can say that D.F. knows what she has to do (she opens doors, catches objects, etc.), but we cannot say that she has a goal or an end *in* mind. If her behavior amounts neither to a form of propositional knowledge, nor to an involuntary action, then what does it amount to? Merleau-Ponty puts it nicely: ‘It is knowledge in the hands, which is forthcoming only when bodily effort is made, and cannot be formulated in detachment from that effort’ (Merleau-Ponty2004:166). If the knowledge that D.F. possesses is explained in this way, then we need ‘to revise our notion of "understand" and our notion of the body’(164). Merleau-Ponty again provides us with a suggestion of how to go about and do this: ‘To understand is to experience harmony between what we aim at and what is given, between the intention and the performance - and the body is our anchorage in the world’(167).

The last claim is crucial. ‘The body is our anchorage in the world.’ It is the anchorage that coherentism lacks. Meanings are found not only in the space of reasons but also in a space which lies between reasons or, more precisely, which overlaps that corresponding to reasons and causes. It is not a novel kind of space, a space *sui generis* in regards to the other two. Rather, it is a zone which bridges the two. In other words, the body belongs to both spaces, but is reducible to neither. Embodied activity is already meaningful, yet not conceptual; it is natural, but cannot be

naturalized.³⁰ In order for our behavior to become answerable to the world, there is no need to turn to our ‘second nature,’ as McDowell has suggested.³¹ We simply need to attend to our only nature, that is, our bodily nature.

IV. CONCLUSION

In trying to suggest this in between space, we have used not only phenomenological but also scientific findings. Has our methodology undermined our own attempts? Is there an irreducible tension between phenomenology and science, or between the manifest and the scientific image? We believe not, but here is not the place to discuss this. What we have to state clearly is that we wish to avoid the phenomenological conviction that the ‘I can’ precedes and makes possible the ‘I know.’³² In other words, that there exists a realm more fundamental than that of conceptualization, a realm upon which all conceptualization rests. This is a position that ultimately leads us back to foundationalism, and whatever that position entails.³³ To indicate that

³⁰ The behavior of agnostic patients such as D.F. is intelligible and this is a type of knowledge that is elusive to propositional attitudes. Consequently, coherentist accounts of knowledge leave behind something crucial. What is missing, although clearly bodily or somatic, cannot be captured by naturalized epistemology. In such attempts, the manner in which the body meaningfully and normatively interacts with the environment is lost. Similar objections against naturalized epistemology can be found in Kim (1998) and BonJour (1994). Replies and more sophisticated accounts of naturalized epistemology are given by Kitcher(1983), Kornblith (1982 and 1985), and Antony (2004). J.J. Gibson’s (1979) ecological and O’Regan and Noë (2001)’s enactive accounts of perception also seem to be guilty of failing to capture the normative element present in our behavior. Fodor and Pylshyn (2002) address this issue in regards to Gibson’s account; Carman (2005) does the same but in regards to O’Regan and Noë’s position.

³¹ The following passage is indicative of McDowell’s confidence in the notion of second nature—a confidence which, incidentally, we do not share: ‘We tend to be forgetful of the very idea of second nature. I am suggesting that if we can recapture that idea, we can keep nature as it were partially enchanted, but without lapsing into pre-scientific superstition or a rampant platonism. This makes room for a conception of experience that is immune to the philosophical pitfalls I have described’ (2000: 85).

³² Not only Merleau-Ponty, but also Dreyfus (1992, 1999, and 2000) assigns priority to a mode of being which is not conceptual. Although this is not the place to discuss the reasons why a priority of the ‘I can’ over the ‘I know’ might be problematic, let us briefly mention that such a priority seems to go against the findings of psychological studies which concentrate on the behavior of patients suffering from optic ataxia. Such patients cannot accurately reach for, or grasp, objects, even though they can visually discriminate, recognize, and locate them. See Jacob and Jeannerod (2003: 90ff.), Balint (1909), Goodale *et al.* (1994a), and Perenin and Vighetto (1948).

³³ Foundationalism argues that human knowledge possesses an architectonic structure at the bottom of which, one finds the ultimate sources of empirical justification. The *terminus ad quem* of any given referential chain is a belief of a special kind, namely, a basic belief which does not depend -- inferentially or not -- on other beliefs. Such beliefs

visuomotor behavior or know-how exists, where know-that or propositional knowledge is missing, is not to state that the former is prior to the latter. It is simply to show that in some cases – e.g., in patients with agnosia -- the two are separable. But in all other cases, the two can neither be separated nor reduced to each other.

are epistemically warranted not because they stand in a certain logical relationship to other beliefs, but rather because they are immediately or intrinsically justified. The exact process by which epistemic warrant is bestowed upon basic beliefs is inconsequential for present purposes. What matters is that foundationalism -- or at least foundationalism as explicated here -- is committed to the following two-fold claim. First, it distinguishes between basic and derived beliefs and, second, it maintains that evidential support is necessarily one-directional: only basic beliefs justify derived ones, and never the converse. Proponents of epistemic foundationalism are too many to be listed here. But just to name a few: Russell (1940), C.I. Lewis (1929 and 1946), Chisholm (1964, and 1989), Price (1950). Although foundationalism is often credited for acknowledging the relevance of experience in the justification of beliefs, it is even more often accused of failing to account for the interdependence of beliefs: an accusation which is far from innocuous. Embedded in the accusation, one discovers the potentially devastating objection that foundationalism advocates for the acceptance of an arbitrary foundation. The foundationalist project of empirical justification has as its base a belief that no other belief can support, justify, or even distinguish from its contraries. A basic belief, or so the objection goes, is *ipso facto* a belief that resides outside the space of reason. It lacks propositional content and fails to provide logical support for any further inference. Hence, despite the foundationalist conviction that evidential support flows from the basic to the derived, such transfer never takes place. The foundationalist project appears thus to be groundless after all. The arbitrariness objection is found in Klein (1999). For replies to this objection see Bergmann (2004) and Howard-Snyder (2005). Additional objections are found in: Sellars (1956), Williams (1999:112), Rorty (1980:178), Lehrer (1974:187-8), McDowell (2000: 8, 13); Quine (1951: 41), Austin (1976), and Davidson (2006:229).

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