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Is Perception Enactive?

Constitutivism and Conceptualism about Perceptual Content

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Abstract

In his seminal book *Action in Perception*, Alva Noë powerfully advanced "the enactive approach" about perception. According to enactivism, perception is not something that passively happens on us, but something we actively do. Noë sought to depict perception not as a process on the opposite side of action, but as one which itself is a sort of action. To develop such a view, Noë did not just treat perception in the context of action, but rather treated action as an essential *component* of perception. At the core of Enactivism lies "the constitutivist thesis": the content of perceptual experience is constituted by sensorimotor knowledge or sensorimotor skills.

In this paper, I shall critically examine Noë's constitutivism and conceptualism about perceptual content. First, I will outline Noë's Enactivism. Second, I shall introduce Prinz's and Clark's criticisms about Noë's constitutivist view. Through this we will see a limit and a deficit in Noë's constitutivist view. Third, I will connect this argument to McDowell's conceptualism about perceptual content. I shall explore a different formulation of the constitutivist thesis from that of Noë's through an examination of "the dual stream model" proposed by Milner and Goodale. The revised thesis claims that the content of perception is constituted by *cognitive skills* which can be recognized as conceptual capacities. The thesis opens up the possibility of revising the notion of conceptualism toward further investigations.

1 Introduction

The mainstream of cognitive scientists has long taken for granted that sensory system and motor system work relatively independently. In our mental mechanism we have, on the one hand, a perceptual system as input. This system engages in the task of representing the external world, including our body. On the other hand, we have a motor control system which engages in the task of controlling our behavior as output. Between these sub-systems we have central systems which mainly govern higher-order functions such as cognition and reasoning. Each system bears its own task based on a division of labor, while maintaining coordination with the other systems on behalf

of the mental mechanism as a whole.

In his seminal book *Action in Perception*, Alva Noë powerfully advanced "the enactive approach" about perception against this mainstream view. According to enactivism, perception is not something that passively happens on us, but something we actively do. "Perceiving," says Noë, "is a way of acting."[1] Noë sought to depict perception not as a process on the opposite side of action, but as one which is itself a sort of action. In order to develop such a view, Noë did not just treat perception in the context of action, but rather treated action as an essential *component* of perception. "To be a perceiver is to understand, implicitly, the effects of movement on sensory stimulation."[2] Noë referred to the kind of implicit grasp of sensory changes that regularly occurs with movement as "sensorimotor knowledge." "[O]ur ability to perceive not only depends on, but is constituted by, our possession of this sort of sensorimotor knowledge."[3] According to Noë, the relation between perception and action is not just causal but also constitutive. "Perceptual experience acquires content thanks to the perceiver's skillful activity."[4] At the core of Enactivism there lies "the constitutivist thesis," which regards action as a component of perception.

In this paper, I shall critically examine Noë's constitutivist view. First, I will outline Noë's Enactivism and characterize his constitutivist thesis in more detail. Second, I shall introduce Prinz's and Clark's criticisms about Noë's constitutivist view. Through this we will see a limit and a deficit in Noë's constitutivist view. Noë tried to lay the foundation for enactivism by appealing to several empirical findings, but further detailed interpretation about these findings reveals that his defense is untenable. Moreover, Milner and Goodale's "dual stream model" of vision shows that there is a kind of *sensorimotor insensitivity* in our perceptual experience. The content of perception is actualized at a certain distance from sensorimotor knowledge. Third, I shall propose a different formulation of the constitutivist thesis from that of Noë's, through a further examination of the dual stream model. The revised constitutive thesis claims that the content of perception is constituted not by sensorimotor skills but by *cognitive skills*, which can be recognized as conceptual capacities. I will then connect this argument to McDowell's conceptualism about perceptual content. I shall conclude that the new constitutive thesis opens up the possibility of future empirical investigations within the framework of conceptualism.

2 The Enactive Approach to Perception

The concept of "enaction" was first introduced into both philosophy of mind and cognitive science by the late Francisco Varela.[5] "The enactive approach," which places this concept at the center of investigation, has been promoted by many competent successors, and Alva Noë is one of its most powerful proponents. In his book *Action in Perception*, Noë deeply investigated the possibilities of the enactive approach to perception and perceptual consciousness. This book has generated many

1 Noë (2004), p. 1
2 Ibid.
3 Ibid., p. 2
4 Ibid., p. 2
5 See Varela et al. (1992).

substantial discussions in the philosophy of perception since its publication.

According to enactivism, perception is not a passive process, as it is often conceived.[6] It is, on the contrary, something we *do*. It is a sort of active, skillful, embodied activity. The enactivist does not just claim that perception is embedded in the context of action. In other words, perception is not only externally related to action while remaining passive. Rather, it is *intrinsically* active. Perception is itself a form of action. We *enact* our perceptual experience. Noë wrote:

> Think of a blind person tap-tapping his or her way around a cluttered space, perceiving that space by touch, not all at once, but through time, by skillful probing and movement. This is, or at least ought to be, our paradigm of what perceiving is.[7]

Sensory stimulations regularly change depending on our bodily movements. The apparent size of a tree, the profile of a plate, and the loudness of a siren, all vary as we move relative to each object. Noë claimed that, to be a perceiver, we have to implicitly grasp such characteristic patterns of sensory changes due to the movement of our body.

> The central claim of what I call *the enactive approach* is that our ability to perceive not only depends on, but is constituted by, our possession of this sort of sensorimotor knowledge (italic in original).[8]

The claim that perceptual ability is constituted by implicit sensorimotor knowledge is extended into perceptual *content* and perceptual *consciousness*. What we perceive is determined by "what we know how to do."[9]

> Blind creatures may be capable of thought, but thoughtless creature could never be capable of sight, or of any genuine content-bearing perceptual experience. Perception and perceptual consciousness are types of thoughtful, knowledgeable activity.[10]

Thus, in Noë's view perceptual content and perceptual consciousness are also constituted by sensorimotor knowledge. Let's call this "the constitutivist thesis."

Against Noë's constitutivist thesis, two doubts, from two opposite directions, might immediately be posed. First, is Noë's enactivist view a form of behaviorism? For it seems to connect perceptual consciousness too tightly with sensorimotor explanation. Second, does Noë's view overintellectualize perceptual process? For it seems to take perceptual content to be constituted by some kind of knowledge.

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6 Such a conception is reflected in the traditional experimental paradigm of vision studies, in which a subject is typically immobilized of the head and presented instantaneous stimulations.

7 Ibid., p. 1

8 Ibid., p. 2

9 Ibid.

10 Ibid., p. 3

We can respond to the first doubt as follows.[11] Behaviorism, by definition, avoids appealing to any unobservable processes, and regards the inner mechanisms of the mind as a kind of black box. However, what Noë's constitutivist thesis says is that perceptual experience arises not from lawful dependencies between bodily movement and sensory stimulation, but from implicit sensorimotor *knowledge* about sensory consequences of bodily action. The former claim is surely behavioristic, but the latter is not. For by appealing to sensorimotor knowledge, Noë made use of something that is unobservable from the outside. "Unobservable," however, does not mean "intractable." As we shall see in what follows, this kind of knowledge can be empirically investigated. Noë thus escapes from the charge of behaviorism by admitting the central role of a form of knowledge in the formation of perceptual experience.

We can respond to the second charge as follows.[12] What Noë's thesis says is that the content of perception is constituted not by fully propositional or linguistic knowledge but by *sensorimotor* knowledge. The latter is a kind of *know-how*. Thus, animals and infants without language can also posses it. Hence Noë escapes from the charge of overintellectualization.

Andy Clark pointed out three virtues which Noë's constitutivist thesis seems to have.[13] First, it emphasizes skills rather than qualia, which are something internal and private, in explaining perceptual consciousness. Thus, according to the constitutivist thesis, sameness of sensorimotor skills implies sameness of perceptual experience. This conception, if successful, offers an effective antidote to the traditional problem of the zombie.[14] A zombie who possesses sensorimotor skills like us cannot exist without also having perceptual consciousness like us. Enactivism conceptually exorcises the possibility of zombie. Second, Enactivism focuses on how we form a sort of prediction about sensory change as the result of movement. This thesis can make use of the idea known in the artificial neural network studies as "prediction learning." Prediction leaning is a theory about the formation of prediction based on studies of the neural feedback system. It is computationally potent and probably also biologically actual. Noë's thesis might be able to find an empirical basis in this promising paradigm. Third, Noë's thesis can reconcile the notion of objective, mind-independent reality with the notion of reality relative to the embodied agent. Differently embodied beings, for instance a bat, will experience different worlds from us; not because our experienced world is enclosed in untouchable, private qualia, but simply because they are equipped with different sensorimotor skills than ours.

Clark, however, ended up rejecting Noë's constitutivist thesis. Before looking into his argument, I would like to survey the empirical data which Noë took as supporting his constitutive thesis, as well as Jesse Prinz's criticism about the relevance of this data.

11 Jacob (2006), p. 2

12 Noë (2004), pp. 182–4

13 Clark (2008), pp. 172–7

14 Zombie is a kind of hypothetical being that appears in thought experiment in the philosophy of mind. It is indistinguishable from normal man except that it lacks consciousness or qualia. Hypothetically, it behaves completely like us when poked with a needle, while it doesn't feel any pain.

3 The Empirical Basis for the Enactive Approach

So far I have focused on depicting the main claims of Noë's enactive approach and disregarded how he justified these claims. Noë adduced several empirical results to support his thesis. These can be divided into two types. The first seems to demonstrate that one will inevitably suffer from a form of blindness in case one suffers from lack of relevant sensorimotor knowledge, even if her visual apparatus remains intact. Noë called this kind of blindness "experiential blindness," which is distinguished from blindness caused by disruption of the sensitive apparatus.[15] He contended that the enactive view of perception predicts there is such a thing as experiential blindness. The second type of data seems to demonstrate that when one acquires a new sensorimotor knowledge, it will bring her a new type of perceptual experience relevant to that knowledge. I shall contend that both these kinds of data can be interpreted in a different way, such that they fail to support Noë's constitutivist thesis, if not to demonstrate its fallacy. In what follows I would like to closely examine Noë's empirical examples.

3-1 Inverting Lenses

Noë took up the case of adaptation to inverting lenses as support for his constitutivist thesis.[16] When subjects wear prism lenses which invert their visual field from left to right, they initially experience difficulty to successfully grasp objects, avoid obstacles, and otherwise interact with what they see. However, after continuously wearing these lenses and having some training, they adapt to them and succeed in coping with surrounding objects. Noë regarded the visual disorder caused by such lenses as an instance of experiential blindness, although one that is limited to aspects of spatial content of perception. Noë interpreted the adaptation by motor practice as evidence that visual content is constituted by visuomotor skills.

Prinz rejected Noë's interpretation.[17] He argued that, first, it is highly doubtful that subjects wearing inverting lenses suffer experiential blindness. For subjects *do* experience the visual world when they stand still. They have normal although inverted visual experience, just like looking in a mirror. Surely they suffer visual disorder when moving around. But Prinz explained these distortions as follows. When viewing a dynamic scene, we usually form expectations about what will happen by generating visual images of the next moment. When wearing inverting lenses, all our visual expectations systematically miss. That would lead us to experience distorting unstable scenes.

Moreover, if it is true that visual experience undergoes changes when adapting to inverting lenses, the change can be interpreted two ways. The first is that the recovering perceptual experience is *constituted* by the sensorimotor knowledge that is newly acquired. The second is that the perceptual change is merely *causally effected* by the sensorimotor knowledge. If the second interpretation is possible, then we cannot immediately conclude that the case of adapting to inverting lenses supports Noë's constitutivist thesis.

15 Noë (2004), p. 4
16 Ibid., pp. 7–11
17 Prinz (2006), pp. 5–7

3-2 Sensory Fatigue

In normal perceivers, the eyes constantly keep moving, engaging in saccades and micro saccades. If the eyes were immobilized, perceivers would lose their sight. In fact, images that are stabilized on the retina disappear after a period of time. When one continues to receive a visual stimulus at the same place on the retina, the receptivity of the vision gradually decreases and finally vanishes. This phenomenon is called *sensory fatigue*. To avoid sensory fatigue, sensory organs need to refresh stimuli by constantly moving. For instance, by saccadic movements in the visual system. Noë claimed that the case of sensory fatigue gives strong evidence of his enactive approach.[18] It proves that action, however minimal, is necessary for perception.

This is not convincing. Prinz claimed that what the case of sensory fatigue really suggests is that action is *causally* (but not *constitutively*) necessary for perception.[19] We continually update incoming stimuli to bring about changes in perceptual states. We avoid sensory fatigue thanks to these updating movements. What happens here is a mere causal contribution of bodily action, not a constitutive one. From here, we can admit that it is necessary for perception to be embedded in the context of action. It is another thing, however, to claim that it is also necessary for perception to be constituted by motor skills.

3-3 Developmental Study

Noë also referred to Held and Hein's developmental study from 1963.[20] Held and Hein raised two kittens in darkness and harnessed them to a carousel in an illuminated room for couple of hours a day. One kitten was allowed to walk voluntarily around the carousal on its feet. The other kitten was suspended above the ground in a cradle so as to prevent it from controlling its movement. Held and Hein designed the setup to force the two kittens to receive identical visual stimulations. After raising them in this way, the experimenters released both kittens. While the mobile kitten had normal visual abilities, the immobile one had impaired abilities. It was unable to locate its paw successfully and to discern visual cliffs guided by vision. Noë insisted that these results show that visual experience necessarily involves understanding motor responses coordinated with visual stimulations.

Prinz argued that Noë's interpretation is disputable.[21] First, when it was freed, the immobile kitten was able to walk around and responded to objects, although in a clumsy way. Therefore, we cannot say that it lost normal vision and underwent experiential blindness. Secondly, its failure to visually-guide its paw's location and the avoidance of a visual cliff might also occur if its visual experience had been intact, in case it lacked the relevant training to map its visual stimulation onto motor control, Prinz guessed that the real story is something like this. It is far from obvious, therefore, whether the result of this experiment supports the constitutivist thesis or not.

18 Noë (2004), p. 13
19 Prinz (2006), p. 7
20 Noë (2004), p. 13: Held and Hein (1963)
21 Prinz (2006), p. 9–10

3-4 TVSS

Bach-y-Rita developed a visual prosthetic system for blind people known as tactile-vision substitution system (TVSS). Optical stimulations received by a head-mounted camera are transduced to activate an array of vibrators on the torso or thigh. These vibrators are spatially arranged like a video monitor, and after becoming proficient in this apparatus, blind subjects learn to make motor responses to distal objects as if they ware actually seeing. Noë took blind subjects' mastery of TVSS as a concrete case of establishing a new vision-like sensory modality thanks to the acquisition of relevant sensorimotor skills.[22] He thus concluded that the case provides strong evidence for his constitutivist thesis.

There are doubts, however, whether perception using TVSS can be recognized as qualitatively visual.[23] Although TVSS surely conveys information about distal objects that are out of contact with our body, this characteristic is also involved in usual tactual perception. When tapping the texture of the ground with a cane, feeling the wind pressure of a fan, or sensing the heat of a fireplace, we discern information from objects that are out of direct contact with our body. In each of these cases, we tactually, not visually, experience the features of the object. Noë emphasized that we experience the phenomenon of occlusion when wearing TVSS, but occlusion is not peculiar to vision. It is a trans-modal phenomenon which also occurs in auditory and olfactory experiences. Doubtlessly, there is *sensorimotor isomorphism* between normal vision and tactile vision to some extent. It is, however, question-beginning to conclude from this isomorphism that there is a *qualitative resemblance* between them. Therefore, Noë's argument about TVSS does not seem so convincing.

3-5 Amodal Completion

The last example is the phenomenon of amodal completion. When we see a partially occluded object, we perceive the object continuing beneath the obstacle. When we see a tomato, we see it as a whole tomato; not only having its facing surface, but also its hidden backside. These cases are examples of *amodal completion*.[24] Amodal completion is a perceptual phenomenon. We not only *judge* that the object continues beneath the obstacle but also *see* it so. The visual system somehow makes up these absent elements. Noë claimed that these completed elements are the part of our phenomenology, and that amodal completion is achieved by the exercise of sensorimotor skills.[25]

Prinz responded that amodal completion is not experienced at the perceptual level but at the judgment level, because it occurs as a result of implicit expectations.[26] He thus quickly rejected Noë's insight. However, I think we should treat it more attentively. It cannot be denied that amodal completion is a perceptual phenomenon: we cannot erase our amodal completion of an object even when we judge it otherwise.

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22 Noë (2004), pp. 26–7

23 Prinz (2006), pp. 4–5

24 The most typical case of amodal completion is "filling-in" on the blind spot of the retina. Although we don't receive sensory stimulation on a blind spot, we nevertheless don't perceive the lack of stimulation. About filling-in, see Noë (2004), pp. 38–9.

25 Noë (2004), pp. 67–9

26 Prinz (2006), p. 8

According to Noë, the hidden aspects of a perceived object are involved in perceptual content, since we grasp these aspects as immediately *accessible* with our bodily movement.[27] We can easily access these aspects by moving our body relative to the object. These hidden aspects are part of our phenomenology, not as *actual* content, but as *virtual* content. They are grasped as accessible thanks to our sensorimotor knowledge. It can be concluded from this that our perceptual content is at least partly constituted by sensorimotor knowledge. Based on recent studies about change blindness and inattentional blindness,[28] Noë claimed that, in the visual field, all the peripheral parts that fall out of our attention are also grasped as virtual content.[29] This view was extended to the phenomenon of perceptual constancy regarding shape, color, size, etc. Noë's view about actual and virtual content seems to drive us to radically rethink what the content of perception is.

In Noë's view, however, we can at most derive the claim that sensorimotor knowledge constitutes *virtual* rather than *actual* content of perception. It is highly controversial whether our perceptual content phenomenologically involves virtual content or not. Although there is no controversy in the case of actual content, from Noë's above view we cannot affirm the constitutive thesis about actual content. It is, therefore, far from obvious whether the case of amodal completion supports his constitutivist thesis or not.

As mentioned above, all of these empirical evidence fail to demonstrate the correctness of Noë's constitutivist thesis, because they can be interpreted differently. However, we cannot yet say that they demonstrate the *fallacy* of his thesis. In the next section, I consider "the dual stream model" proposed by Milner and Goodale. I shall argue that this model reveals a genuine problem in Noë's view.

4 The Sensorimotor Model vs. The Dual Stream Model

"The dual stream model" of the visual system was proposed by two neuroscientists, Milner and Goodale.[30] Andy Clark used this model to criticize Noë's view. Before considering his criticism, let's take up another problem in Noë's approach pointed by Clark, namely "sensorimotor chauvinism."[31]

According to Clark, this problem is exhibited, for instance, in the following sentences from Noë's *Action in Perception*.

> [I]t turns out that there is good reason to believe that the sensorimotor dependences are themselves determined by low-level details of the physical systems on which our sensory systems depend. The eye and the visual parts of the brain form a most subtle instrument indeed, and thanks to this instrument, sensory stimulation varies in response to movement

27 Noë (2004), pp. 49–50

28 About change blindness and inattentional blindness, see Simons and Rensink (2005) and Mack and Rock (1998).

29 Noë (2004), pp. 52–9

30 Goodale and Milner (2004): Milner and Goodale (2006)

31 Clark (2002), pp. 190–4: Clark (2008), p. 177

> in precise ways. To see *as we do*, you must then have a sensory organ and a body like ours (italic in original).[32]

According to Clark, this view is chauvinistic in that it confines the possibility of having a sensory system to beings that have a body or motor skills like ours. Such chauvinism eliminates *a priori* the possibility that a creature, or a robot, which has a different physical make-up than ours can perceive anything. That is, it eliminates what Clark called the "multiple realizability of sensory systems." Noë responded to this criticism by appealing to the case of TVSS.[33] The enactive approach affirms that tactile vision is vision-like to the extent that there is sensorimotor isomorphism between tactile vision and normal vision. In this way, the approach approves *weak* multiple realizability among differently embodied beings. As we have seen in the preceding section, there is serious doubt whether TVSS is indeed visual. Therefore we can doubt whether Noë's response to Clark is valid as well.

Next, let's consider another problem of Noë's approach pointed to by Clark, namely "sensorimotor hypersensitivity."[34] This is the view, to borrow Clark's words, that "the full glory of normal human visual experience depends on a gross sensorimotor profile that very sensitively tracks the fine details of human embodiment."[35] In other words, it is the view that "every difference in fine-grained patterns of sensorimotor dependence will potentially impact any associated perceptual experience."[36] Noë's enactive approach requires that the content of perceptual experience would be rigorously sensitive to sensorimotor skills, or to the physical basis of these skills.

Against Noë's view, a recent, but already classical, achievement of neuroscientific research of vision, shows that there is a kind of *sensorimotor insensitivity* in our visual system. This is the dual stream model proposed by Milner and Goodale. According to this model, there are two distinct neural streams in our visual system. The one is *the dorsal stream* (going from the striate to the posterior parietal cortex) for motor control and the other is *the ventral stream* (going from the striate to the inferotemporal cortex) for visual judgment.

This model was inspired by and gained support from neurological disorders of vision. Patients of *optic ataxia* are unable to use their visual content to guide bodily movement. They have trouble reaching their arm to the correct position of an object, to grasp an object according to its width, or to adjust the orientation of their hand to that of an object. However they have no trouble reporting about their features based on visual experience. In contrast, patients of *visual agnosia* are unable to recognize an object, or to judge its size, shape and orientation, while their motor control is largely intact. The former patients suffer damage to the dorsal stream, losing their visuomotor skills without losing visual awareness. The latter patients suffer damage to the ventral stream, losing their visual awareness without losing visuomotor skills. For example, the famous subject D.F. lost her visual experience, except with respect to an object's color and texture.[37] She could grasp an object successfully according to its width

32 Noë (2004), p. 112
33 Ibid., pp. 26–27
34 Clark (2008), pp. 177–80
35 Ibid., p. 178
36 Ibid.
37 Goodale and Milner (2004), chap. 1 and 2

and orientation, and even hike on a mountain trail without any trouble. Damage to the ventral stream deprives perceptual experience while sensorimotor knowledge remains intact. In contrast, damage to the dorsal stream deprives sensorimotor knowledge while perceptual experience remains intact.

The dual stream model poses a critical challenge to Noë's constitutivist thesis. For this model shows that possessing sensorimotor knowledge does not warrant having perceptual experience, and that having perceptual experience does not depend on possessing sensorimotor knowledge. The content of perceptual experience is only indirectly connected with motor control, and is directly connected with judgment and reasoning. Contentful perception, therefore, has a kind of "sensorimotor insensitivity," and thus obtains at a certain distance from sensorimotor skills. For only stimulations thorough the ventral stream is relevant to contentful perception. Noë's sensorimotor model does have the virtue of simplicity. But this virtue becomes a vice in the face of the fine structure of perception that recent cognitive neuroscience of vision reveals.

5 Criticizing Noë's Conceptualism

In chapter 6 of *Action in perception*, Noë defended a sort of conceptualism of perceptual content. Conceptualism was first advocated by John McDowell.[38] According to conceptualism, the content of perceptual experience is "conceptual" all the way down. McDowell's aim in proposing conceptualism was to warrant the idea that our belief-system is externally constrained by the world through experience. As Quine's term "the tribunal of experience" shows, our belief-system should be vulnerable to pressure for revision from experience. Otherwise we cannot recognize that empirical thoughts represent how things are. McDowell insists that this constraint should not only be *causal* but also *rational*. That is, our experiences must be able to form reason-giving relations with thoughts through their contents, and thereby to revise our belief-system. He insisted that to form a *reason-giving relation*, the two relata must be conceptually structured. McDowell inherited this thesis from Davidson and Sellars. With this thesis as a premise, he claimed that conceptual capacities are already actualized in experience, and they co-operate with our sensitivity in order to shape the content of our experience.

McDowell characterized conceptual capacity by the notion of "the responsiveness to reasons."[39] In other words, a term is qualified as conceptual when it can form reason-giving relations with other terms. Noë agreed with this characterization and wrote:

> [J]udgment and experiences can diverge and even contradict one another. But to say that they *can* be in conflict is to say that they *can* be in accord; and this would seem to show that they have the same sort of content. The content of perceptual experience is conceptual not in the sense that it *is* judged, but in the sense that it *can be* judged (italic in original).[40]

38 McDowell (1996): To overview the debate between conceptualism and nonconceptualism, see Gunther (2003): Oguchi (2008).

39 McDowell (2005), p. 4

40 Noë (2004), p. 189

To say that the content of perception and that of judgment can be in conflict is to say that they can form reason-giving relations. The content of perception, therefore, can be qualified as conceptual in light of McDowell's notion of what is a concept.

In addition to this argument, Noë defended conceptualism in terms of the following two claims. The first claim is that perceptual content is constituted by sensorimotor knowledge. The second is that sensorimotor skills can be recognized as a kind of "proto-conceptual" skills. These two claims, if successful, imply a sort of conceptualism of perceptual content. It is Noë's constitutivist thesis and his emphasis of sensorimotor knowledge that give originality to his version of conceptualism. Noë wrote: "Mere sensory stimulation *becomes* experience with world-presenting content *thanks to* the perceiver's possession of sensorimotor skills (italic in original)."[41] Noë thought that these skills are primitively conceptual and that they can undertake the roles that full-fledged conceptual capacities play. As pointed out in section 2, even infants and animals without language can possess sensorimotor skills. In Noë's view, the conceptual and the nonconceptual may be continuous, without a clear-cut distinction between them.[42]

If, however, based on what we have argued so far, Noë's constitutivist thesis cannot stand in its original form, then his conceptualism goes down as well. The dual stream model suggests that perception has a kind of insensitivity toward sensorimotor skills. If so, even if we admit that sensorimotor skills are proto-conceptual, such skills cannot contribute to the formation of perceptual experience.

In addition to this, there is serious doubt about the claim that sensorimotor skills can be recognized as a kind of conceptual skills. It seems that sensorimotor skills cannot satisfy any dominant suggestion about the condition of conceptual capacity. For instance, Brandom claimed that something is conceptual only when it is inferentially articulated. In other words, something is conceptual only when it can serve as a premise or a consequence of other items.[43] Sensorimotor skills seem to be insufficient in Brandom's definition. Even if these skills constitute perception, the content of perceptual experience cannot perform an inferential role. It is the content of perceptual *judgment* that serves as a premise for further reasoning. Sensorimotor skills thus fail to suffice Brandom's condition.

Prinz claimed that something is conceptual only when it can be tokened endogenously, under the control of an organism.[44] He thought that only items under our voluntary control deserve to be recognized as conceptual. On this view too, sensorimotor skills seem to be insufficient. In perceptual experience we cannot spontaneously exercise sensorimotor skills. For example, we cannot refrain from seeing an apple as a voluminous three-dimensional object. Thus, sensorimotor skills fail Prinz's test of conceptuality too.

Nor do they satisfy another condition for conceptuality, stipulated by Evans.[45] According to Evans, conceptual capacities have to be governed by the Generality Constraint: we cannot acknowledge something as a conceptual capacity if we can exercise it only in one occasion, that is, if

41 Ibid., p. 183
42 Ibid., p. 31
43 Brandom (2000)
44 Prinz (2002)
45 Evans (1982)

it lacks proper generality. Concerning generality, Noë argued that, for example, the capacity of a monkey to recognize its status in the group can be admitted to have generality.[46] However, it is far from obvious that such capacities are to the result of sensorimotor skills rather than some other, higher cognitive skills. To summarize this point, even if Noë's constitutivist thesis is correct, there are serious doubts whether it leads to conceptualism about perceptual content.

6 Constitutivism and Conceptualism Revised

I claim, however, that the dual stream model suggests that there is a possibility of promoting a different notion of conceptualism than that of Noë's. As we have seen, this model says that there are two distinct neural streams in our visual system: the dorsal stream for motor control and the ventral stream for visual judgment.

Sensory stimulations which go thorough the dorsal stream are not to be described as *un*conscious but as *a*conscious. In other words, it is impossible for them to become conscious states. In this sense, these stimulations cannot constitute perceptual *experiences* and thus cannot contribute to the formation of perceptual *contents*. Let's take the phenomenon of *blindsight* for instance.[47] Patients of blindsight, who suffer damage to the ventral stream, are perceptually blind in a certain area of their visual field. They say that they can see *nothing* in that area. Nevertheless, they demonstrate some response to visual stimuli, without any qualitative experience. If perceptual content is phenomenological, stimulations to which a perceiver cannot be aware will never be able to constitute her experience, even if they are informationally available to the perceiver in action. It is only sensory stimulations which go thorough the ventral stream that constitute contentful visual experience.

The patient D.F., who suffers damage to the ventral stream without damage to the dorsal stream, can successfully grasp objects with her hands, although not in the way normal people usually do.[48] That is, she cannot grasp it in the way suitable to the object's function. For example, the patient can grasp the grip of a screwdriver, although in an unnatural way. This is because the damage deprived her of the capacity to classify perceptual objects according to their functional meaning, and to deliver this meaning to the motor system. Such a patient has not lost sensorimotor skills, but lost *cognitive* skills in her visual system. We already have seen that such damage causes lack not only of conscious perception but also of unconscious perception. If so, possessing cognitive skills may be necessary for forming perceptual experience, and thus for acquiring perceptual content, whether conscious or unconscious. What the dual stream model suggests is another possibility of the constitutivist thesis: the content of perceptual experience is constituted not by sensorimotor skills but by *cognitive* skills.

In our reasoning system, cognitive skills are dedicated to various tasks such as separation, classification, selection, re-identification, recollection, and comparison. A characteristic feature of cognitive skills is that they pertain to *type*s of objects rather than to particular objects. In this sense,

46 Noë (2004), p. 185

47 Goodale and Milner (2004), chap. 5

48 Ibid., chap. 7

cognitive skills work at the general level. In other words, they are applicable to objects of the same type in various contexts. Moreover, they include the possibility of *mis*application, that is, we can apply these skills both *correctly* and *erroneously*. In this respect, they can be recognized as possessing *normativity*. These aspects (generality, normativity, and context independence) are widely regarded as distinctive features of conceptual capacity.

In perception, however, an organism cannot exercise these skills freely. If I see a cat in front of me *as a cat*, it is extremely difficult to see it otherwise voluntarily. In this respect, perception still remains passive. The content of perception is ultimately beyond the reach of our free activity. We cannot select our perceptual contents freely. Therefore, if we accept Prinz's definition of concept, we inevitably accept that the content of perception is nonconceptual. For, as we have seen, Prinz claims that something is conceptual only when it can be freely tokened under the control of an organism.

To handle this problem, McDowell distinguished "active exercise" of conceptual capacities in thought from "passive actualization" of these in perception.[49] When working in perception, cognitive skills are not actively exercised but passively actualized.

It is not so difficult to admit that these passive skills are just the same ones that we spontaneously exercise in reasoning. It would be an extra burden on the architecture of an organism to equip them with two distinct mechanisms for reasoning and perception. For these skills are dedicated to the same functions. It is more reasonable for the organism to share the same mechanism between reasoning and perception.

Moreover, if perception and reasoning share these same skills, the content of perception satisfies Brandom's definition. Brandom claimed that something is conceptual only when it is inferentially articulated. If the content of perception is constituted by cognitive skills, these skills antecedently articulate and shape it for perceptual judgment.

7 Conclusion

The stipulation explicated above shows the possibility of a different constitutivist thesis than that of Noë's. The content of perception is constituted by cognitive skills which are a sort of conceptual capacities. This proposal requires both further empirical and theoretical investigation. On the empirical side, for example, this revised thesis would predict that there is another type of empirical blindness, caused by lack of relevant cognitive skills. If we can successfully find actual cases of this sort of empirical blindness, constitutivism and conceptualism about perceptual content would gain empirical support. On the theoretical side, the future task is to develop the notion of conceptualism and to open up the possibility of using this framework in solid empirical investigations.

49 McDowell (2000), pp. 11–2

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