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The range of perceptual content in action-oriented perception

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Abstract

In this paper we investigate the contents of object representations in action-oriented perception. We propose a view whereby perceivers represent the egocentric relationship that they have with potential perceptual objects, rendering those objects actionable for the perceiver. Further, we argue that the perceptual content associated with this actionable object representation stands apart from other standard forms of perceptual representation or experience. The actionability of perceptual objects is neither a kind of thin content (relating to bare sensory properties), nor is the content necessarily high-level (relating to personal-level cognitive conceptualization). Accordingly, we argue that the action-oriented content of perceptual experience is rich, but not so rich that it necessitates high-level representation. To draw the distinction between rich content and high-level content in object perception, we argue that high-level content is neither necessary nor sufficient for action-oriented perception. We support this claim by surveying empirical cases of optic aphasia and ideomotor apraxia.

Keywords: Perceptual content; perceptual representation; action; perceptual objects; low-level and high-level properties; admissible contents; rich content; thin content

Introduction

There is a controversy in the field of philosophy of perception concerning what types of properties may be represented in our perceptual experience. This controversy, known as "the admissible contents debate", relates to the range of perceptual content that can enter perceptual experience. By features or properties admissible into the contents of perception, we do not mean properties directly, but rather the properties that constitute the content of perceptual experience within what is given to perceivers in representation. To emphasize the main point of the controversy, let us compare *perceptual experiences* to *thoughts* in regard to what properties these two types of mental states can represent objects as having. Our thoughts can represent any property; we are able to think about anything, even non-existing objects like unicorns or round squares. In contrast, perceptual experiences can only represent a restricted range of properties.

Determining which properties can be represented in perceptual experience may shed light on the upper limit of perceptual processing. This is reflected by the issue regarding how much perception and cognition overlap and whether a distinction between these two fundamental mental capacities has any theoretical importance. So, for example, imagine looking at the knight on a chessboard. Is the resulting perceptual experience just of a certain arrangement of raw visual properties: its color, shape, or size? Or is it somewhat richer: the experience of *seeing a knight*? Or is it richer still: the experience includes the fact that this is a chess piece whose movement looks like the letter "L"? Some may suggest that our seeing the chess piece as a knight, not permitted to move in a straight line, relies on an integration between the sensory input and knowing about chess knights.

Irrespective of whether there is a continuity between perception and cognition (Clark, 2013; Hohwy, 2013, 2016; Vetter & Newen, 2014) or rather a principled difference and a "joint in nature" (Block, 2016, 2023; Firestone & Scholl, 2016; Green, 2020), our experiences of the world are shaped by cognitive-sensory interactions. Traditionally it has been assumed, especially in conservative theories, that perceptual representations are lacking, or are independent of, the information that might be contained in thoughts, beliefs, or judgements. However, recent scientific evidence and new theoretical approaches to mental architecture such as the cognitive penetrability of perception, Bayesianism, and predictive processing question the rigid perception-cognition divide (Clark, 2013; Hohwy, 2012, 2016; Smith & Muckli, 2010; Newen, Marchi, & Broessel, 2017; Vetter, Sanders & Muckli, 2014; Lupyan & Clark, 2015; Metzinger & Wiese, 2017; Ivy & Mroczko-Wąsowicz, 2025a). The paradigm shifts proposed by these approaches assign to cognition an essential role in the functioning of perception. They suggest the existence of pervasive knowledge-based influences on perception including attentional effects that flexibly control the balance between top-down prediction and bottom-up sensory evidence (Bastos et al., 2012; Clark, 2016ab; Hohwy, 2013). Acknowledging these accounts invites a rather liberal view of the perception-cognition interaction, envisioning the rich content of perceptual experience as dependent on contextual knowledge and information already existing in the perceptual system.

In what follows we track this debate between rich and thin views regarding the contents of perceptual experience in order to eventually make sense of the kind of content associated with action-oriented object perception. We argue that the perceptual content of action-oriented object-representations is neither entirely high- nor low-level. Rather, the content shares some of the qualities of both. We conclude that this distinctive kind of content is best characterized as "rich, but not high-level."

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The admissible contents debate

The thin content view of perceptual experience

According to the thin contents view, perceptual experiences represent only the low-level sensory properties of objects. In vision, these properties are limited to color, shape, texture, size, illumination, location, and motion. Hence, our visual perceptual experiences are assumed only to represent colored shapes with their spatial location. The conception of perceptual experience as thin holds that perceptual experiences are not of objects but are of arrays of simple sensory features (say spatially arranged colored shapes). Such experiences cause us to believe that there are objects instantiating these properties, without these experiences fully representing these objects. In other words, we do not perceive familiar everyday objects *as* such but only form perceptual beliefs about their presence on the basis of perceiving properties such as color, shape, size, and texture (cf., Burge, 2010).

The thin contents of perceptual experience understood as "an arrangement, a spatial structured array of colored shapes" or "grouping stimuli into thin gestalt categories" are certainly not the most rudimentary low-level perceptual representations. This implies that there can be versions of the thin view of various strengths. There could be a radical version of the thin view, comparable to a "bottom-up" view describing only the sensory input and explaining our perceptual experiences purely in terms of physical stimulus characteristics. But such a view would be incapable of accommodating low-level representations of color because the actual wavelengths of light cannot explain our experience of color, color constancy, or color contrast effects. In color constancy different wavelengths of light result in the same perceptual experience, and in color contrast the same wavelengths of light result in different perceptual experiences (Kentridge et al., 2007; Gegenfurtner et al., 2024; Davies, 2022). These phenomena are clear illustrations that seeing color is not only a property of the sensory input; it is already an interaction that goes beyond the wavelengths of light coming into the perceptual system. Color perception at the lowest level therefore already requires that the incoming input is interpreted in some way.

To summarize, the main suppositions of the thin view are that (1) perceptual experience represents objects as having only low-level properties and (2) its content is limited to the output of sensory modules so that (3) we do not perceptually experience high-level features. Nevertheless, if there were evidence that rich perceptual experiences involving high-level properties were possible in perception, these suppositions would be challenged. This challenge is discussed in the following subsection.

The rich content view of perceptual experience

In contrast to the thin conception of perceptual experience, a more generous approach allows various non-low-level properties to be consciously represented in perceptual phenomenology (Siegel, 2006, 2010, 2017; Bayne, 2009, 2016; Toribio, 2015; Newen, 2016). On the rich conception, the contents of perceptual experience can involve more complex, higher-level properties. How far we expand the range of what counts as perceptual content depends on which kinds of properties are considered to be represented (Lyons, 2005). As a very beginning, this can be done by extending the list of the basic sensory features and allowing that perceptual experiences can represent low-level features that are a little more intricate. These might include features such as orientations, discontinuities, surface boundaries, and constancies of color, size, and shape, as well as complexes of low-level properties assembled into thin categories (e.g., shape-size-color grouping in a thin "Coca-Cola bottle gestalt"). The question is, at which point do the complexities of sensory properties become so complex that they may no longer be classified as low-level properties?

Since the rich conception allows additional computation and inferred information to contribute to the contents of perceptual experiences, perceptual processing is seen as going beyond the representation of direct sensory inputs. This is contrasted with the limited perceptual processing that is postulated by the thin conception. Accordingly, several other kinds of properties may be represented in visual experiences. One example of these are, for instance, simple properties like 3D convexity or sphericity. A slightly more intricate example includes properties of "ensemble perception," like the mean orientation, size, or motion direction of an array of items information about scene gist (Alvarez & Oliva, 2008; Haberman & Whitney, 2012; Sweeny et al., 2012; Chong & Treisman, 2013; Thornton et al., 2014; Ward et al., 2016).

A more complex example is associated with categorical perception's properties that rely on the resemblance of similar objects to one another (e.g., everyone's fingerprint is unique, but we recognize all fingerprints as such (Lyons, 2005)). According to such views, it is possible to perceptually *experience* natural and artificial kinds and thus *being a pine tree or being a stethoscope* is part of perceptual phenomenology (Siegel, 2006; Bayne, 2009, 2016). In addition, it has been proposed that perceptual experiences can represent culturally-specific categorical information such as "this is a teacup" or "this is a CD case", identities and social features of individuals ("this is John Malkovich; this is an actor"), or possibilities of action surrounding cultural categories like Christmas trees (Siegel, 2010, 2016).

Importantly, the main claim of the rich content view, that perceptual experience represents both low- and high-level properties, does not mean that the rich content of perceptual experience has to be conceptual content (see Block, 2014). Rich perceptual experiences do not have to involve conceptualization but may rather involve high-level properties in addition to low-level ones. The high-level properties are just those that are not on the list of low-level sensory properties like color, shape, size, illumination, and spatial location. Within the rich content view, we encounter proposals that perceptual experiences may be thought of as including not only recognition-based sortal properties, but also uses for a perceiver (affordances), causal relations, intentions, and facial expressions of emotion (Siegel, 2006, 2010; Bayne, 2009; Nanay, 2015; Pacherie, 2005; Rutherford & Kuhlmeier, 2013; Block, 2014; Butterfill, 2015; Newen, 2016).

We agree with views that perception can be rich without the need for conceptual content. Specifically, the contents of action-oriented perceptual object representations can be rich with properties that go beyond the standard list of low-level sensory properties. To make sense of this, we now turn to the nature of action-oriented object perception.

Action-orientation in object perception

Motor system contributions to interactive perception

In order to classify action-oriented perceptual content along the foregoing lines, we ought first to ask: What is the relationship between action and perception? To begin, the motor and perceptual systems are closely intertwined and often share processing capacities with one another for the sake of successful interaction with the world (Briscoe, 2015; Rauschecker et al., 2011; Goodale et al., 2005). For the sake of the present argument, we understand ‘action-orientation’ to be the capacity for a perceptual object (Mroczko-Wąsowicz & Grush, 2023) to facilitate or incite action. That is, the object may be used interactively, and the object’s sensory features are bound together with relevance for action. The specifics of this rather broad definition, i.e., what the content and structure of action-oriented perception amounts to, has been interpreted in many ways.

Some of the most recent work on action-oriented perception takes a middle ground, sharing in some of the distinctive qualities of both high- and low-level content. According to such accounts of the action-perception interface (Alsmith, 2017; Skrzypulec, 2022; Nanay, 2024; Ivy & Mroczko-Wąsowicz, 2025b), perceptual objects can afford particular “egocentric” properties alongside their typical sensory features. Egocentric properties concern how perceptual objects are ordinally related to their perceivers and may serve as the basis for action-oriented perception. An object’s being to our left or right is an essential feature to represent if we mean to interact with that object (Skrzypulec, 2022). Likewise, whether an object is within our grasp, or within the appropriate space that we might be able to interact with it (e.g., if a tennis ball is on our side of the court or the opponent’s), we represent the action-orientation of those perceptual objects differently. A tennis ball that is moving towards me on my own side of the court has a property that the ball moving away from me or that is on the opponent’s side of the court lacks. When the ball is near, I can hit it. That is, the relation between the ball and myself is recognized by the perceptual system, and as Nanay (2011) argues, simultaneously gives a property of what he calls “Q-ability” - in this case, hit-ability. On this account, an egocentric relation would be a pre-requisite to Q-ability. In other words, a perceptual object is action-oriented for a perceiver when it has some feature Q for which they could instantiate a verb, and interact with the object in a Q-able way, e.g., edibility, climb-ability, hit-ability, grasp-ability, etc.

Generally, the claims about the contents of perception concern how the world is presented to us in perceptual experience. Traditionally, it is assumed that perception presents the world to us in a neutral way with respect to the actions we may perform towards the objects perceived. Nevertheless, along with other proponents of action-oriented perception, we claim that action-orientation can be presented to us in the contents of perception. Perceiving the world as affording a certain action may be interpreted that we perceive the possibilities for actions that we are capable of performing. One could also claim that action-oriented perceptual content presents the world to us in a way that solicits us to act in a certain way. Perceiving action-oriented properties could also demand a particular action. However, affordances are not the only way to understand action-oriented object perception. Egocentric relations given in object perception for the sake of action may explain the action-oriented nature of perceptual content in a more plausible and less theory-laden way.

For the present purposes, we take the notion of action-oriented perceptual content to include the egocentric phenomenal character of perception as represented by perceivers interacting with the material world. Accordingly, we suggest that action-oriented perceptual experience consists in a subject perceptually representing objects as being a certain actionable way, or at least that the subject is poised with an egocentric relation towards perceptual objects.

Peripersonal space as an example of action-oriented perceptual content

There is a component of object perception that is more than what is merely sensory – a kind of content that implicates action and interaction with what is perceived. In this section of the paper, we describe the way in which peripersonal space (PPS) is action-oriented in the egocentric “Q-able” way described by Nanay and others. PPS is the area directly surrounding the body; typically, up to about 50cm. The brain represents this space near the agent’s body differently than the extrapersonal space which is further away from the agent. (de Vignemont et al., 2021). This spatial representation can code objects which are either close to one’s own or to someone else’s body, depending on who is the acting agent. It is implemented by multisensory neurons from premotor, parietal, and subcortical areas which integrate proprioceptive and tactile stimuli from the agent’s body with visual or auditory stimuli presented within a limited distance from them (Noel et al. 2020; de Vignemont et al., 2021).

PPS constitutes a dynamic sensorimotor interface between the moving subject and their environment. The literature highlights that motor interactions between the body and the surrounding objects enhance multisensory integration within PPS (Noel et al., 2015). Action planning and motor execution may trigger a dynamic reorganization of PPS around an object when the object becomes the target of subjects’ movement (Brozzoli et al., 2010; Berger, Neumann & Gail, 2019; Patané et al., 2018). Hence, motor action may impact the scope of PPS. PPS may expand to include external objects that one is acting upon or the space within which these actions are performed; it may also contract when active attention is located elsewhere. Such a mechanism allows for a dynamic representation as a function of the interaction between an acting body and its surrounding objects (Brozzoli et al., 2014). Therefore, representations of objects in PPS include motoric information related to potential actions that one may undertake towards these objects (Mroczko-Wąsowicz et al., 2024).

PPS, as a perception-to-action interface, provides a spatial framework for avoiding or approaching body-objects interactions (Brozzoli et al., 2011). Evidence shows that fronto-parietal regions respond to bodily actions in PPS related to both protective avoidance behaviors and goal-directed approaching (Graziano & Cooke, 2006; Clery et al., 2015; Rizzolatti et al., 1997). In addition, these findings demonstrate that PPS represents objects in the environment as centered around particular body parts. Thus, representations in PPS contribute to the guidance of voluntary, appetitive actions such as grasping an object and can be remapped by these voluntary object-oriented actions (Brozzoli et al., 2009; 2010). This makes the multisensory coding of the space around the parts of our bodies directly relevant to object perception for action. Namely, objects in this space are coded in a multisensory and motoric way to support proper behavior by each of our independently functioning body parts (Patané et al., 2021).

Such action-oriented perceptual objects instantiate different non-necessary features for different perceivers depending on the possibilities of interaction that are available to the acting perceiver. Furthermore, there may be distinct object representations centered on different body parts, e.g., hand-centered PPS, feet-centered PPS, face-centered PPS, and torso-centered PPS. These different egocentric representations enable specialized processing of manipulable objects relative to specific body parts and thus lead to different perceptual object representations (de Vignemont et al., 2021). On the whole, representations of objects in PPS exhibit significant egocentricity since they differ from other spatial representations with respect to their multisensory nature, body-part specificity, dynamic flexibility, and tight coupling with the action system.

In the next section we turn our attention towards answering the following question: how ought we to classify the dynamic and distinctive form of action-oriented perception in the context of these foregoing views regarding perceptual content?

Action-oriented perceptual content and high-level properties

Action-oriented perception egocentrically implicates direct interaction with an acting perceiver's environment. Especially in PPS, sensory stimulation and potential interaction are unified for the sake of tool use, bodily awareness, and other significant coordination-based skills required for managing our bodies in a complex and ever-changing environment. There is also an experiential content involved with this distinctive form of action-oriented perception - a phenomenal content that differs on a perceiver-by-perceiver basis. For instance, think of the way in which a geriatric looks at an urban handrail versus the traceur (someone who performs parkour). To the geriatric, the handrail exhibits graspable properties, is sought out for the sake of safety, and perhaps affords the direction out of the building they should take. In contrast, the traceur's perception of the handrail affords a host of different opportunities for creatively moving through an urban landscape; they see a pivot point, a place to vault and balance, or an obstacle to avoid along their path of movement. Accordingly, while both of the very different perceivers have an action-oriented perception of the handrail, the content of their perceptual experience substantially differs on the basis of *how* that rail is action-oriented to each of them.

On its face, high-level properties seem well-suited to explain differences in the geriatric and traceur's afforded action-oriented perceptual content. The geriatric knows that they are likely to fall without support and so infers upon seeing the handrail that the support they require is at hand. Likewise, the way in which a traceur conceives of a handrail in an urban environment is creative, often involved in complex choreographies and movement plans, so seeing a handrail may just be seeing the rail *as* a tool for the sake of creatively complex movement. Yet, to what degree such protective or creative thinking counts as genuinely perceptual rather than post perceptually cognitive is an open question. For the present purposes, we will sidestep this question and argue that high-level perceptual properties (in addition to post perceptual cognition) is neither necessary nor sufficient to explain the difference in content between the traceur's and the geriatric's perceptual experience. Thus, while post perceptual cognition certainly has a role to play in action-oriented perception, we will make the case that there are some components of the content of such perceptual experiences that are genuinely perceptual, though not high-level.

High-level properties are not necessary for action-oriented perceptual content

Action-oriented perception is possible without the instantiation of high-level properties in perceptual experience. For one, the 'action' part of action-oriented perception can occur automatically and simultaneously with sensory experience, immediately inciting motor actions associated with the appropriate sensory stimuli. Further still, perceptual behavior is deployed differently for perceptual experts than for novices. The way in which a tennis expert gazes at the ball, their opponent, and the court itself is drastically different from the gaze patterns of novices (Runswick et al., 2018; Murphy et al., 2016; Roca et al., 2021). These differences in gaze behavior are neither post perceptual nor cognitively driven. They are automatic and internalized perceptual behaviors that persist for the expert even when they engage in search tasks outside of their domain of expertise (Ivy et al., 2023).

The expert does not need to think to themselves, "focus more on the periphery" in order that their eyes flick about a display with greater amplitude, their eyes simply do so. Accordingly, seeing-as, on such an account, would serve as the basis for action-oriented perception in the immediacy of expertise. As such, the cricket batsman or tennis player would not need to post perceptually conceptualize their perceptual experience "as such and such a ball" but rather they would merely see the ball with its features as a high-level, action-oriented kind property - "being an actionable ball" or simply "actionable ball-hood". Even so, there is good reason to think that in the absence of these high-level properties, action-oriented perception is still possible.

Optic aphasia is a rare condition for which patients are unable to name objects despite having an intact visual experience of those objects. Aphasic visual experience includes an accurate representation of objects' features and compositional structure yet seems to lack any semantic content associated with those objects' names (Riddoch & Humphreys, 1987). Further, unlike other forms of agnosia, aphasic patients retain the ability to draw the objects that they cannot name, act out how those objects would be used, and mime gestures associated with those objects (Beauvois, 1982). Take, for example, patient J.F. who was remarked upon in the following way:

> Quite often in a test, although [J.F.] misnamed an object, he correctly mimed its use. For instance, when shown a boot, he correctly mimed a man pulling on his boot and said 'this is a kind of balaclava'; also when shown a comb he correctly pretended to use a comb and said it was 'a toothbrush'. This seems to show that he really identified the objects that he could not name, or in other words that their visual meaning was accessed (*ibid,* p. 37).

Here we see a patient who cannot name the objects that they see, yet who nevertheless can mime and understand the actions that are associated with those objects. Accordingly, J.F. 's instance of optic aphasia represents a uniquely interesting case in which the action-oriented content of object perception remains intact alongside a simultaneous incapacity to identify those objects as belonging to a specific category. What seems likely is that, at least with respect to vision, J.F. did not in fact see objects as exhibiting high-level kind properties with their associated names (e.g., seeing something called a 'boot' as a boot and not something called a 'balaclava'). Nevertheless, J.F.'s ability to see the structural composition of objects remained intact. Thus, the perceived structural composition of objects is sufficient for action-oriented miming, gesturing, and copying even when high-level kind properties are not accessed.

Citing a different case of aphasia from Schwartz, Marin, and Saffran (1979), Riddoch and Humphreys (1987) argue that "optic aphasia results from a lesion which is both subsequent to the processes involved in accessing structural knowledge about objects, and prior to the semantic system." According to this case, patient WLP could manipulate objects and mime actions associated with how those objects ought to be used. However, WLP could not name those objects even despite accurately miming and gesturing how they ought to be used. Taken altogether, aphasic vision seems unable to represent the appropriate high-level kind properties because the semantic content of the names associated with those objects cannot be accessed. Rather, aphasic vision accurately represents objects' low-level sensory properties and structural composition without high-level semantic content (cf. Mahon & Caramazza, 2009). Moreover, given that the aphasic patients' ability to interact with objects remains intact in the absence of representing high-level semantic content, we can conclude that high-level properties are not necessary for action-oriented perceptual content.

If it were the case that high-level perceptual properties, like kind properties (i.e., recognizing an object as an exemplar of a specific class of objects), are a necessary condition for the possibility of action-oriented perceptual content, then J.F. and WLP would, at the same time as being unable to name objects correctly, be unable to interact with them. Yet, naming objects, and connecting their perceptual representations to high-level kind properties does not seem to have been required to act upon and interact with objects. Inasmuch as the patients could interact with and mime the actions associated with the objects that they perceived, it appears that lacking high-level properties does not undermine the perception of action-oriented content.

High-level properties are not sufficient for action-oriented perceptual content

Just as high-level properties are not necessary for action-oriented perceptual content, neither are they sufficient for that content. Take, for instance, the case of ideomotor apraxia. This condition is a neurological disorder wherein patients experience difficulty in producing particular actions upon command (Liepmann, 1906; Goldenberg & Spatt, 2008). So, for instance, when asked to pick up a telephone, give the sign of the cross, or peel a banana, the apractic patient will certainly understand the command, but be unable to perform the requested behavior (Heilman & Rothi, 1993). Here is a case in which a perceiver has an entire arsenal of high-level, conceptual properties presented to them in the form of requests to interact with the world in such and such a way. The apractic understands the meaning of the command, what the command's conceptual content would refer to in sensory experience, and can communicate back that meaning; yet, when it comes to performing the proper action upon the object before them, they fail to be able to do so (Mahon & Caramazza, 2009). Therefore, for the ideomotor apraxia, having a conceptual representation of high-level properties does not translate to having an action-oriented perceptual representation whereby they might interact in the appropriate way with the associated objects.

Interestingly, when apractics are *not* asked to perform a coordinated motor behavior but are rather in the natural environment in which such motor behaviors would be relevant, they *can* perform them. That is, an apractic cannot manage to give the sign of the cross when they are asked to do so; however, should they walk into a church and choose their pew, they will have no trouble whatsoever moving their hand in the respectful fashion (Buxbaum et al., 1997; *see also* Pavese 2021 for an in-depth review of this effect). Thus, ideomotor apraxia presents a circumstance in which action-oriented perceptual experience (e.g., seeing a pew you intend to sit in and giving the sign of the cross) seems possible precisely when not representing high-level properties. Action and perception proceed in unison under the right circumstances, but if those circumstances also include conceptual, cognitively inferential, and otherwise high-level content, the apractic loses motor coordination.

Conclusion

In the foregoing section we learned that high-level content is neither necessary nor sufficient for the action-orientation of perceptual objects. If this is so, then one may wonder whether action-orientation is a low-level property. Yet, due to the non-exclusively sensory nature of action-oriented content, this form of content is not reducible to low-level sensory properties. Here, we claim that the content of action-oriented object perception is neither high- nor low-level. This leads us to conclude that action-oriented perceptual content is rich but not high-level.

For one, action-oriented perceptual content can be considered as rich by virtue of not being strictly low-level, i.e., not representing exclusively low-level sensory properties but also other properties. The thin content view does not appropriately explain action-oriented perceptual content since the view assumes that all perceptual content includes exclusively low-level sensory properties. Inasmuch as action-oriented properties include more than basic sensory properties (e.g., egocentric relations), they are not low-level properties, and therefore not, strictly speaking, thin contents. The rich content view allows more than low-level perceptual properties that enter the content of perceptual experience. However, though rich, the content of action-oriented object perception is not necessarily high-level conceptual content in the sense that action-orientation does not have to include conceptualization or conceptually laden seeing-as ability.

As we have shown in the previous section, high-level perceptual properties, like kind properties, are neither necessary nor sufficient for the perceptual experience of objects to be action-oriented. To this end, we agree with liberal accounts that promote the rich content view by stating that the perceptual experience of an object (e.g., seeing a black square) involves interpreting that object as something (e.g., seeing a black square as food, danger, or a toy). What is more, our approach to the contents of perceptual objects emphasizes the associated action-oriented aspects in object perception and recognition. For instance, the content of the perceptual experience of a car may differ even between those who perceive the object *as* a car. This means, the object representation differs between those who can drive and those who cannot. Hence, we acknowledge the importance of the ability of seeing-*as* but we do not think that this requires conceptualization. Rather, perceiving objects' kind properties involves the ability to properly interact with the objects. All of this leads us to conclude that action-oriented content in object perception does not fit cleanly in either the high- or low-level categories.

Although non-standard, as far as the admissible contents of perception debate goes, we do not suspect that action-oriented perceptual content is unique in being rich but not high-level. Other kinds of perceptual, though not strictly sensory properties may also fall into this category. For instance, aesthetic properties given by perception may not be high-level but rather much like action-oriented contents. After all, it seems unlikely that one must understand a particularly technical Kantian notion of The Sublime or Beautiful in order to be awed by nature of great works of art. One's appreciation for a particularly beautiful sunset may be as simple as being engrossed in the fullness of its perceptual content. Nor are aesthetic properties entirely reducible to low-level sensory properties. Though beauty may supervene on low-level properties, beauty is neither identical to those properties nor does any low-level property guarantee the affectation of beauty (Sibley, 1959; Zangwill, 2001). As such, the aesthetic properties of perceptual experience appear to be a strong candidate for the category of rich-but-not-high-level contents.

Abstracting from the perception of aesthetic properties to a more general phenomenon, perception is often valenced (Carruthers, 2018; de Vignemont, 2023). This means that perception can be affective, giving positively or negatively oriented content (Aydede & Fulkerson, 2014). Accounts of perception's affectivity vary, but often include qualities like the motivational capacities of perception (Strick et al., 2011), hedonic tone (Ayedede & Fulkerson, 2014), sexual orientation (Jiang et al., 2006), and possibly even love (Nehemas, 2007). In being affectively valenced, these foregoing forms of perceptual experience may share in affording a kind of content that is neither dependent on high-level properties, nor reducible to low-level properties. The attractive and repellent drives of the sensory system's interaction with objects seem often to be more a power of perception than high-level conception or cognitive inference.

In summation, by expanding the limits of the admissible contents to include the category of rich but not high-level content, we can more reliably characterize rich, intermodal, and nonstandard perceptual experiences given by the functions of the perceptual system.

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