CAN WE SEE NATURAL KIND PROPERTIES?

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Which properties can we visually experience? Some authors hold that we can experience only low-level properties such as color, illumination, shape, spatial location, and motion. Others believe that we can also experience high-level properties, such as *being a dog* or *being a pine tree*. On the basis of her method of phenomenal contrast, Susanna Siegel has recently defended the latter view. One of her central claims is that we can best account for certain phenomenal contrasts if we assume that we can visually experience natural kind properties. In this paper, I argue that certain kinds of low-level properties, namely shape-gestalt properties, can explain these phenomenal contrasts just as well as high-level properties. If successful, this is a modest, but nevertheless significant result. Even though it does not prove the falsity of Siegel's proposal, it nevertheless secures the existence of a plausible alternative.

Key words: Perceptual experience, sensory phenomenology, cognitive phenomenology, perceptual contents.

1. Introduction

Suppose you look at a dog. You see its color, shape, and location. But do you also see it as *being a dog*? Many philosophers hold that we can visually experience only low-level properties such as color, illumination, shape, spatial location, and motion. On this view – the *low-level view* – the property *being a dog* is not an aspect of your visual experience.[1] Others believe that we can also experience high-level properties, such as *being a dog* or *being a pine tree*. On this view – the *high-level view* – the property *being a dog* is an aspect of your visual experience.[2]

Susanna Siegel has recently presented a powerful defense of the high-level view based on her method of phenomenal contrast.[3] This method – an inference to the best explanation – takes a suitable phenomenal contrast between two experiences as explanandum and then argues that this contrast is best explained in terms of the

[1] It is difficult to draw the distinction between low-level properties and high-level properties in a precise way. For the argument in this paper, I will assume that color, shape, motion, location, and illumination properties belong into the former category and properties like *being a dog* into the latter. Versions of the low-level view can be found, for example, in Byrne (2009), Carruthers and Veillet (2011), Dretske (1995), Lyons (2005), Price (2006), Pautz (2009; 2010), Prinz (2006), Smith (2002), and Tye (1995). Lyons and Bayne call the low-level view the *conservative view*.

[2] Siegel calls the high-level view the *rich content view* and Lyons and Bayne call it the *liberal view*. Versions of the high-level view have been defended, for example, in Bayne (2009), Fish (2009), Johnston (2004; 2006), Masrour (2011), McDowell (1994), Nanay (2011), Searle (1983), Siegel (2006, 2007, 2010), and Siewert (1998).

[3] See: Siegel (2006, 2007, 2010). For a reply to criticisms of her argument, see: Siegel (2013).

high-level view. Using this method, Siegel has argued that viewers can visually experience a broad range of high-level properties, including natural kind properties (e.g., *being an apple*, *being a pine tree*), artificial kind properties (e.g., *being a cup, being a telephone*), semantic properties (word meanings), and emotional properties (e.g., *being angry*, *being concerned*). [4] A number of authors have attempted to reject Siegel's argument by presenting alternative explanations of the relevant phenomenal contrasts in terms of low-level properties.[5] Yet, since Siegel's argument is an inference to the best explanation, her critics can succeed in this only if they also show that their alternatives explain the relevant phenomenal contrasts at least as well as Siegel's high-level view.[6] This, in my view, is one of the most significant challenges posed by Siegel's argument.

In this paper, I will take up this challenge for certain phenomenal contrasts, namely those that, according to Siegel, are best explained in terms of the viewer's visual experience of natural kind properties.[7] I will first develop an alternative explanation of these phenomenal contrasts in terms of certain low-level properties, namely shape-gestalt properties. Siegel discusses and rejects this alternative (Siegel, 2006: 499–500; 2010: 110–113). But, as I will show, her arguments against this alternative are not conclusive. I will then argue that shape-gestalt properties can explain the phenomenal contrasts just as well as natural kind properties. If successful, this is a modest, but nevertheless significant result. Even though it does not prove the falsity of the high-level view with regard to natural kind properties, it nevertheless secures the existence of a plausible alternative.

The paper is organized as follows. In section 2, I clarify the low-level and the high-level view. In section 3, I explicate Siegel's method of phenomenal contrast and show that her arguments against explanations in terms of shape-gestalt properties are not conclusive. In section 4, I develop the shape-gestalt proposal in greater detail. The purpose of this section is to clarify the notion of a shape-gestalt property and to show that the shape-gestalt proposal is plausible from an empirical point of view. In section 5, I argue that shape-gestalt properties can explain the relevant phenomenal contrasts just as well as natural kind properties.

[4] Nanay (2011; 2012) has argued that the rich content view is false for natural and artificial kind properties, but true for dispositional properties such as *being climeable*, *being edible*, or *being Q-able* in general. I will not discuss his view in this paper.

[5] See, for example, Price (2009) and Prinz (2013). Related criticisms can be found in Logue (2013), Brogaard (2013), Pautz (2009), and Nanay (2011).

[6] Ideally, they would have to show that their explanations are better than Siegel's. Siegel writes, for example: "An abductive inference cannot be rebutted merely by the existence of alternative explanations. To rebut an abductive argument, the alternatives have to be put forward as being better than the explanation they are alternatives to" (Siegel, 2013: 854). However, in this paper, I will be concerned only with the more modest task. The reason for this will emerge in section 5 of this paper.

[7] Note that that some low-level properties, such a color properties, might be construed as natural kind properties. In this paper, I will therefore define the high-level view in terms of natural kind properties that are not plausibly also low-level properties.

2. The low-level view and the high-level view

We can formulate the two opposing views – the high-level view and the low-level view – more precisely by appeal to three distinctions. The first distinction concerns the nature of perceptual mental states. Many philosophers, including Siegel, argue that perceptual states have representational contents, that is, they represent the world as being a certain way. On this view – the *content view* – to see the dog's color is to represent the dog as *being brown*.[8] Other philosophers reject the idea that perceptual states have contents. On this view – the *relational view* – to see a property is to stand in a specific relation to that property, for example, the relation of *being sensitive to* or *presenting* the property.[9] The distinction between the low-level view and the high-level view can be formulated in both frameworks. But, for the purpose of this paper, I will follow Siegel and adopt the content view.

The second distinction concerns the notion of phenomenal character. I use the expression *phenomenal character* in the sense originally introduced by Nagel: to say that a mental state has phenomenal character is to say that there is something it is like for the subject to be in that state.[10] Various authors believe that it is helpful to distinguish between sensory and cognitive phenomenal character. Although there is no agreement on a set of criteria that would allow us to decide whether a specific phenomenal character is sensory or cognitive, we can get a rough idea by looking at examples. When you see the dog's color, your experience has a brownish sensory phenomenal character. In contrast, when you merely think that the dog is brown without seeing or imagining its color, your experience is missing this brownish sensory phenomenal character. Yet, this does not mean that your thought lacks any phenomenal character. Rather, as some have argued, occurrent thoughts may have cognitive phenomenal character.[11] According to them, there is something it is like for a thinker to engage in the activity of thinking, or there is something it is like for a thinker to entertain a certain proposition.

The third distinction concerns the difference between perceptual and non-perceptual states. The latter include feelings, beliefs, desires, judgments, and so on. There are different ways in which this distinction can be drawn. Some have argued that perceptual states differ from other types of

[8] The content view has been defended, for example, in Peacocke (1992), Crane (2006), Siegel (2010), Pautz (2009, 2010), and Schellenberg (2011).

[9] The relational view has been defended, for example, in Campbell (2002), Travis (2004), Martin (2004), and Brewer (2006).

[10] Nagel (1974).

[11] See, for example, Strawson (1994, 2011), Siewert (1998, 2011), Horgan and Tienson (2002), Tienson (2011), and Pitt (2004, 2011). For discussion of cognitive phenomenal character, see Siegel (2006, 492–497; 2010, 91–94, 102–108).

mental states in virtue of their specific phenomenology. Others have argued that perceptual states differ from non-perceptual states in terms of their function. For the purpose of this paper, I will follow Lyons (2005) who defines perceptual states in a non-phenomenological manner as output states of dedicated perceptual systems. For example, a visual perceptual state is an output state of the visual system. According to Lyons, such output states are typically complex states that contain sensations and experiential states. In addition, they might also contain non-experiential states, that is, high-level categorizations, such as representations of objects as having certain properties (Lyons 2005, 242).[12]

With these three distinctions in place, we can now formulate the low- and the high-level view in a more precise way. Let us say that a *visual experience* is that component of a visual perceptual state that is determined by its sensory phenomenal character. Let us also say that the *sensory phenomenal content* of a visual experience is that aspect of its representational content that supervenes on its phenomenal character. We can then formulate the low- and the high-level view with regard to visually recognizable natural kind properties as follows:

Low-level view	*Only low-level properties (e.g., color, shape, and location properties) enter into the sensory phenomenal contents of visual experiences.*
High-level view	Sometimes, at least some natural kind properties (e.g., being a dog, being a pine tree) enter into the sensory phenomenal contents of visual experiences.[13]

Formulated in this way, the issue at hand is about the scope of the sensory phenomenal contents of visual experiences.

Before turning to Siegel's argument, I want to make the following comment. It might turn out that visual representations are distributed representations that bridge areas of the visual system with higher cortical areas. Since this would plausibly undermine the distinction between visual experiences and other mental states, it would then no longer make sense to ask

[12] This has an important consequence. It is possible that visual perceptual states have both sensory and cognitive phenomenal character. Indeed, this kind of view has been defended in Reiland (2014).

[13] Without the restriction to natural kind properties, we would have to define the high-level view as follows: Sometimes, at least some high-level properties enter into the sensory phenomenal content of visual experiences. Siegel is sometimes interpreted as holding a different view. For example, Bayne and Montague suggest that Siegel claims that high-level properties are represented by non-sensory, cognitive phenomenal aspects of perceptual states. See, for example, Bayne and Montague (2011: 22). But this does not seem to be a correct interpretation of her argument. When explaining her version of the high-level view, which she calls "Thesis K," Siegel writes, for example: "Thesis K amounts to this: in whatever sense the representation of color and shape properties can have an associated sensory phenomenology, the representation of K-properties [high-level properties] can too (Siegel, 2006: 485).

which properties can be represented by the former. For the argument in this paper, I will assume that this is not the case.

3. Siegel's argument for the high-level view

How can we decide whether the low- or the high-level view is correct? One might think that the best way to do so is through introspection. If the property *being a dog* were part of the sensory phenomenal content of your experience, there would be a difference between what it would be like for you to undergo this experience and what it would be like for you to undergo an experience of a dog replica, that is, an experience of something that has the same shape and color as a dog, but is not represented in the experience as such. Moreover, if the two experiences differed in phenomenal character because one, but not the other, represented the property *being a dog*, introspection should be able to tell you that this was the case. Yet, pure introspection, that is, introspection unaided by argument, has proven to be a very unreliable guide to the contents of perceptual experiences.[14] Even in the case of properties such as shape and color, introspection often does not yield decisive results. Consider, for example, the famous question of whether a coin seen from an angle looks round or elliptical. As the ongoing debate among philosophers shows introspection is not able to yield a satisfactory consensus on this question.[15]

In order to circumvent the problem resulting from the unreliable character of introspection, Siegel construes the method of phenomenal contrast as an inference to the best explanation. Such an inference proceeds in two steps. The first step presents two experiences that are such that subjects who undergo them typically agree that they differ in phenomenal character. The purpose of this step is to provide a noncontroversial, minimal phenomenal contrast that can serve as a suitable explanandum for the second step of the method. The second step then shows that the difference in phenomenal character is best explained by assuming that some natural kind property enters into the sensory phenomenal content of one experience, but not into the sensory phenomenal content of the other.

Siegel provides a number of phenomenal contrasts. In this paper, I will focus on her well-known pine tree example because it concerns natural kind properties.[16] Suppose you are given the task of cutting down all the

[14] For critical assessments of pure introspection, see, for example, Prinz (2006), Kriegel (2007), Schwitzgebel (2008), and Bayne (2009).

[15] Some philosophers have argued that the coin looks elliptical, some have argued that it looks round, and others again have argued that it looks both round and elliptical. For two classical versions of the first two views, see Russell (1912) and Austin (1962). An important defense of the third view can be found in Noë (2004).

[16] For this example, see: Siegel (2006: 491; 2010: 100).

pine trees in a forest. At first, you are unable to distinguish the pine trees from other similar looking trees. But, after repeated observations, you acquire the disposition to recognize a pine tree when you see one. Now consider two experiences, *O*1 and *O*2. *O*1 is your overall experience when you look at the pine tree before you acquire the recognitional disposition and *O*2 is your overall experience after you acquire the recognitional disposition. We will stipulate that you look at the tree from the same point of view and under the same conditions of illumination. In this case, there is a wide consensus that *O*1 and *O*2 differ in their overall phenomenal character.

Let me emphasize two things about this phenomenal contrast. First, *O*1 and *O*2 are the overall experiences you have on the two occasions. They are temporally extended slices of your stream of consciousness. *O*1 and *O*2 will include as parts two visual experiences of the tree, call them *V*1 (your visual experience of the tree before you acquire the recognitional disposition) and *V*2 (your visual experience of the tree after you acquire the recognitional disposition). But *O*1 and *O*2 will also include other mental states. For example, *O*2 might include a recognitional state, perhaps the belief that the object in front of you is a pine tree.

Second, according to Siegel, we can rely on introspection to tell us that *O*1 and *O*2 differ in their overall phenomenal character, but we cannot rely on introspection to say anything more specific about the nature of this difference. Introspection does not tell us whether this is a contrast in sensory or cognitive phenomenology. And it also does not tell us whether the contrast concerns the spatial phenomenology of the two experiences.[17]

*O*1 and *O*2 provide a suitable phenomenal contrast for the first step of the method. It is antecedently plausible that the two visual experiences contained in them – *V*1 and *V*2 – represent identical low-level properties. At least initially, there is little reason to think that they represent the pine tree as instantiating different color and shape properties.[18] Moreover, the two experiences differ in such a way that one, but not the other, allows you to recognize that the perceived object instantiates a natural kind property, namely the property *being a pine tree*. Thus, unless there is a better explanation, it is plausible that the phenomenal difference between *O*1 and *O*2 is due to the fact that the property *being a pine tree* enters into the sensory phenomenal content of *V*2, but not into the sensory phenomenal content of *V*1.

The task of the second step of the method of phenomenal contrast is to show that an explanation of the phenomenal contrast between *O*1 and *O*2 in terms of natural kind properties is better than its low-level alternatives. In order to do so, Siegel rejects three alternative low-level explanations. The third alternative appeals to shape-gestalt properties and is therefore central to this paper. Nonetheless, it will be helpful to at least briefly characterize the other two alternatives.

[17] See Siegel (2007: 130; 2010: 80–83).

[18] Yet, as we will see in the next section of this paper, this assumption is most likely false.

The first low-level alternative is to insist that *V*1 and *V*2 have identical sensory phenomenal character and try to explain the phenomenal difference between *O*1 and *O*2 in terms of some kind of non-sensory phenomenal character of other mental states contained in *O*1 and *O*2. There are a number of options here. One option is that the phenomenal difference between *O*1 and *O*2 is a result of the fact that the latter, but not the former, contains a recognitional state with its own distinct cognitive phenomenology. Another option is that the difference is a difference in background phenomenology, say, for example, a difference in mood.[19] The second low-level alternative is to admit that *V*1 and *V*2 differ in phenomenal character, but maintain that this is not a difference in their representational contents. Here there are many possible options. One option is that *V*2, but not *V*1, involves a nonrepresentational feeling of familiarity. For the purpose of this paper, I will grant that Siegel's arguments against these alternatives are successful.

Let us now turn to the third alternative. The proponent of the low-level view could say that *O*1 and *O*2 differ in phenomenal character because *V*1 and *V*2 represent different low-level properties. Siegel thinks that an explanation in terms of shape-gestalt properties is the most plausible way of cashing out this alternative: "When you learn to recognize pine trees by sight, your experience comes to represent a complex of shapes – leaf shape, trunk shape, branch shape, and overall pine-tree shape. This complex is an overall pine-tree gestalt" (Siegel, 2010: 111). According to this proposal, *V*1 and *V*2 differ in phenomenal character because the latter, but not the former, represents a complex shape property, namely a pine-tree shape-gestalt. Since such a property is plausibly a low-level property, there is no need to appeal to natural kind properties in order to explain the phenomenal contrast.

Siegel puts forward two arguments against this low-level proposal.[20] The first argument is contained in the following passage:

> [S]hape-gestalts that are abstract enough to remain invariant across pine trees will be invariant across other objects as well. For instance, a typical handgun, a drill, and a hair drier share the same shape-gestalt. The more abstract the shape-gestalt is, the less reason there is to think that experience fails to represent it prior to one's gaining a recognitional disposition. And if it is represented in experience prior to gaining the recognitional disposition, then it cannot explain the phenomenal contrast (Siegel, 2010: 111–112).

[19] As I pointed out above, it is possible that perceptual states contain cognitive states. In this case, Siegel would also have to show that the difference between *O*1 and *O*2 could not be explained in terms of the cognitive phenomenal character of a possible recognitional state *contained* in *V*2, but not *V*1.

[20] Note, however, that Siegel does not consider these arguments to be decisive [Siegel, 2010: 111].

This argument has the following two premises: (i) shape-gestalt properties that are abstract enough to remain invariant across pine trees will be invariant across other objects as well, and (ii) shape-gestalt properties that are abstract enough to remain invariant across pine trees are represented in experience prior to one's gaining a recognitional disposition. I have worries about both of these premises. As we will see later on, shape-gestalt properties can be very specific. This raises problems for the first premise. But I also think that the second premise is possibly false. It is plausible that one can acquire the disposition to visually recognize pine trees only together with the disposition to detect the corresponding shape-gestalt property. So, even if a given shape-gestalt property were instantiated in different objects, say, in a handgun, a drill, and a hair drier, this would not imply that viewers could detect this property prior to being able to recognize these objects. Siegel would have to exclude this option.[21]

Siegel's second argument is that the strategy of invoking representations of shape-gestalts is not generally available to the proponent of the low-level view. In order to make this case, she considers the phenomenal contrast between two experiences of a face that expresses doubt. One experience takes place before and the other after one learns that this particular facial expression expresses doubt. The proponent of the high-level view would say that the two experiences differ in phenomenal character because they represent different emotional properties. In order to respond to this, the proponent of the gestalt-proposal would have to show that the two experiences represent different gestalt-properties. But Siegel rejects this. She holds that "in this sort of case, it seems implausible to suppose that there must be a change in which color and shape properties are represented" (Siegel, 2010: 112).

Yet, as it stands, this example is not a conclusive response to the shape-gestalt proposal for at least three reasons. First, once one considers actual, rather than imagined, experiences, one might *discover* that there is indeed a phenomenal difference between the two experiences of the face, a difference that is due to the fact that they represent different shape-gestalts. Second, one might argue that if there is no difference with respect to low-level properties, there might simply not be a difference in sensory phenomenal character at all. It is possible that the two overall experiences differ in cognitive or emotional phenomenal character. Finally, even if emotional properties enter into the sensory phenomenal contents of visual experiences, it does not follow that natural kind properties do so too. To show that her argument is conclusive, Siegel would have to exclude these three possibilities.

[21] For other criticisms of this part of Siegel's argument; see Price (2009), Nanay (2011), Logue (2013), and Prinz (2013).

4. The shape-gestalt proposal

As we have seen, there are no conclusive reasons for dismissing the shape-gestalt proposal. I will now develop the shape-gestalt proposal in greater detail. The main goal here is to get a better understanding of the notion of a shape-gestalt and to show that the shape-gestalt proposal is plausible from an empirical point of view. The notion of a shape-gestalt derives in part from observations of gestalt-switches afforded by ambiguous figures. Considering certain types of ambiguous figures therefore provides a suitable point of departure.

Ambiguous, or reversible, figures can be categorized in terms of the types of features that reverse. The duck/rabbit figure (Fig.1) can be seen as a duck and as a rabbit and is thus *content reversible*.[22] The Necker-cube (Fig. 2) can be seen from two different perspectives and is thus *perspective reversible*. Rubin's vase (Fig. 3) is *figure/ground reversible*. I will consider the *chef/dog figure* (Fig. 4), which, like the duck/rabbit figure, is exclusively content reversible, but, unlike the duck/rabbit figure, does not contain any parts that can be recognized independently of the entire figure. Note that the chef/dog figure is not one of a kind. Fig. 5 shows a similar figure, the so-called *whale/kangaroo*.

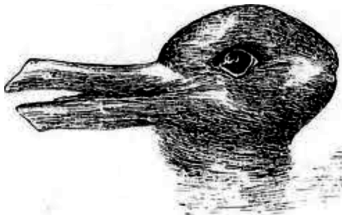

Fig. 1. Duck/rabbit figure

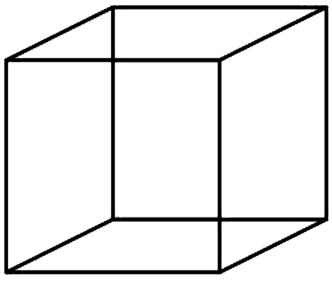

Fig. 2. Necker-cube

[22] A viewer who is familiar with both ducks and rabbits will experience the figure either as a duck or as a rabbit. Moreover, if the viewer knows that the figure can be seen in two different ways, her experience will reverse, more or less automatically, from one to the other. There is quite a bit of empirical evidence that perceptual reversal usually requires knowledge that the figure is reversible. See, for example, Rock and Mitchener (1992), Rock, Gopnik, Hall (1994), and Gopnik and Rosati (2001).

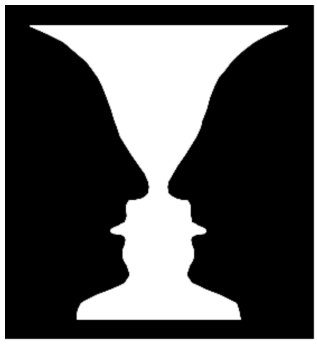

Fig. 3. Rubin's Vase

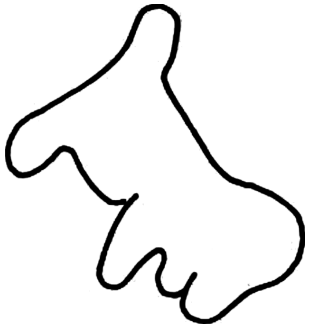

Fig. 4. Chef/dog figure

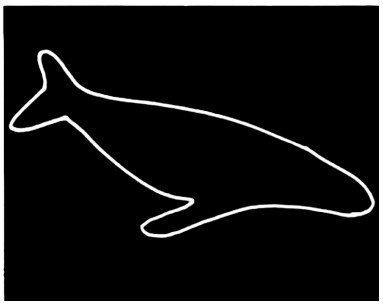

Fig. 5. Whale/kangaroo figure

The visual experiences elicited by the chef/dog figure can serve as explanandum for the first step of the method of phenomenal contrast. There is a clear phenomenal difference between your visual experience of the chef/dog figure as a chef (call this Vc) and your experience of the figure as a dog (call this Vd). The proponent of the high-level view could argue that Vc and Vd represent the same low level-properties, the same colors and shapes, and account for the phenomenal difference by saying that Vd represents the figure as instantiating the natural kind property *being a dog* and

Vc represents the figure as instantiating the natural kind property *being a chef*.[23]

The proponent of the low-level view could respond by saying that Vc and Vd differ in phenomenal character because they represent different shape-gestalt properties. But before we can understand how this might work, we need to look more closely at two features of the gestalt-switch. First, Vc and Vd organize the figure into two different part-whole structures. This becomes particularly obvious when we consider the relationship between parts and subparts. Consider, for example, the part that comes to be seen as the chef's hat. Whereas Vc represents the hat as one single part of the figure with a complex shape, Vd represents it as consisting of three subparts: leg, tail, and part of the dog's trunk. Similarly, when your experience switches from Vc to Vd, the same protrusion is first seen as a nose, that is, as a subpart of the chef's face, and then as leg, that is, as a subpart of the dog's trunk.

Second, the gestalt-switch is holistic. When you see the figure as a dog, you see all of its parts as parts of a dog (as dog-head, dog-leg, dog-tail, and so on) and when you see the figure as a chef you see all of its parts as parts of a chef (as chef-head, chef-nose, chef-chin, and so on). The important point for us is that you cannot see the parts of the figure as parts of a dog or a chef without seeing the figure as a whole as a dog or a chef. Consider, for example, the protrusions that come to be seen as the dog's legs. If you look at them in isolation, you cannot recognize them as being leg-shaped. This holds for the entire figure – all of its parts are strongly underdetermined.

The proponent of the low-level view has to construe the respective shape-gestalt properties in such a way that they can account for these two features. The obvious way to do so is to construe shape-gestalt properties as complex properties that specify both abstract part-whole structures and abstract outline shapes of the whole and its parts. If we conceive of shape-gestalt properties in this way, it is no longer plausible to say that "a typical handgun, a drill, and a hair drier share the same shape-gestalt," as Siegel suggested [Siegel, 2010: 111]. Perhaps, there is a sense in which these objects all share an abstract outline shape. But they plausibly differ with regard to both their part-whole structures and the outline shapes of their parts.

Is the shape-gestalt proposal plausible from an empirical point of view? The figure is just an outline. Thus, in order to be able to see it as instantiating one of the two shape-gestalt properties, your visual system has to organize it into the respective part-whole structure in a segmentation process that uses stored information about the object's structure.[24] In other

[23] Strictly speaking, the natural kind property would be *being a human being*. But for simplicity, I will talk about the property *being a chef*. Some high-level theorists have used ambiguous figures as evidence for their view. See, for example, Searle (1983).

[24] In the literature on perceptual organization, this process is often called *perceptual parsing*, that is, the segmentation of an object into parts.

words, the proposal requires both that information about an object's likely gestalt is stored in memory and that this information can travel down from higher-level memory processes to the lower-level segmentation processes that organize the perceptual image. This is indeed consistent with recent research about perceptual organization. Many vision scientists believe that the visual system uses memories of object structure in the process of perceptual organization.[25] The existence of back projection fibers from higher levels of the visual pathway to lower levels that would make this possible is well established.[26] And it has also been shown that information travels back from areas in the inferior temporal cortex – an area usually associated with memory representations – to prestriate areas – that is, to areas where mental images are formed.[27]

Can the shape-gestalt proposal plausibly be extended to examples like Siegel's pine tree? One worry derives from the following asymmetry. In the case of the chef/dog figure, the viewer switches back and forth between the two contrasting visual experiences with the recognitional dispositions already in place. In the case of the pine tree, the viewer's experience changes over time as she acquires the recognitional disposition. In my view it is plausible to assume that viewers acquire the information that allows them to detect the relevant shape-gestalt properties of objects in a piecemeal fashion through repeated observation. After all, trees have relatively many parts that differ from those of other, similar looking trees in subtle details. Once this information has been acquired and stored in memory as a single representation, it can then travel downwards to low-level segregation processes, thus making it possible to detect the relevant shape-gestalt property.[28]

A second worry derives from the fact that experiences of ambiguous figures are experiences of pictures of objects rather than experiences of objects in the viewer's environment. I want to concede that when one sees the chef/dog figure, say, as a dog, one usually undergoes a visual experience that is specific to pictures. Such an experience might involve one's awareness that one is looking at a picture of a dog, rather than at a real dog, and it might also involve one's awareness of various features of the picture surface as surface properties. Nonetheless, many philosophers have argued that an experience as of an object in a picture resembles, in important respects, a face-to-face experience of the object represented in

[25] Helpful overviews of the relevant literature can be found in Kimchi, et al. (2003). The papers by Palmer, Peterson, Kimchi, and Kellman are particularly relevant here.

[26] See, for example, Lamme and Roelfsema (2000).

[27] See, for example, Kosslyn (1994).

[28] One can support this proposal with examples from perceptual training. One example can be found in Gauthier and Tarr (1997). For their experiments, Gauthier and Tarr trained subjects to become experts at recognizing novel objects called *greebles*. Greebles are unfamiliar complex visual objects that have typical distinctive parts that allow subjects to distinguish between different individual greebles, and to categorize them according to gender and family. The important point for us here is that the training process was very arduous.

the picture.[29] If this is correct, it is also plausible to assume that pictorial experiences employ, at least in part, the very same perceptual mechanisms as ordinary face-to-face experiences.

A third worry derives from the fact that some authors have urged that we distinguish seeing from seeing-as.[30] I think here we can admit that a visual experience of a gestalt-switch differs phenomenally from an ordinary experience of, say, a pine tree. In contrast to the latter, the former involves a change from one visual interpretation to another. However, this is entirely consistent with the claim that seeing a pine tree is similar to seeing, say, the chef/dog figure as a dog, in that both involve the detection of a specific shape-gestalt property. In my view, the best way to realize this is by appeal to three-dimensional versions of ambiguous figures. Consider, for example, a three-dimensional version of the duck/rabbit. If you look at such a figure, your experience will switch between two different face-to-face experiences of an ordinary three-dimensional object in your environment. Here, I think, it is very plausible to assume that each of these two experiences is an ordinary recognitional experience with the same structure as a recognitional experience of a pine tree.

Does the shape-gestalt proposal present a distinct alternative to the high-level view? It seems plausible that we sometimes sort objects into types according to their appearances. The proponent of the high-level view could therefore suggest that the relevant natural kind properties are 'qualitatively pure' in the sense that they are defined in terms of a distinct look, say, for example, a pine tree-like appearance. She could further suggest that that we define such appearances in terms of shape-gestalt properties. In this case, there would be no difference between a visual experience that attributes a qualitatively pure natural kind property (e.g., *being a pine tree*) to an object and a visual experience that attributes the corresponding shape-gestalt property (e.g., *having a pine tree shape-gestalt*) to that object, that is, there would be no difference between the high-level view and the shape-gestalt proposal. But, as Brogaard has pointed out, purely qualitative kinds are defined by their low-level properties and thus "are not really high-level properties and hence not really natural kind properties of the sort we are interested in here" [Brogaard, 2013: 40].

Is the shape-gestalt proposal plausible from a phenomenological point of view? The proponent of the high-level view might argue that the shape-gestalt proposal fails to account for a number of obvious phenomenal contrasts.[31] Consider the following scenario. As you are walking though a forest, you see a snake in front of you. Let us call the overall expe-

[29] For different views along these lines, see Gombrich (1960), Schier (1986), and Lopes (2006).

[30] In the context of his version of the low-level view, Prinz has insisted on this distinction. See: Prinz (2006: 436–437).

[31] Thanks to Igor Gasparov for pressing this point and for the following example.

rience at that time Os and the visual experience of the snake contained in it *V*s. After the initial shock, you notice that there is no snake in front of you, but rather a longish inanimate object with a snake-gestalt. Let us call your overall experience at that time Oi and the visual experience contained in it Vi. In this scenario, it is plausible that the two overall experiences differ in phenomenal character. Given this, the proponent of the high-level view could adapt some of Siegel's arguments in order to show that it is not possible to explain the phenomenal difference between Os and Oi either in terms of the non-sensory phenomenal character of the non-visual states contained in them or in terms of some kind of background phenomenology. Since *V*s and *V*i attribute the same shape-gestalt property to the object, it then seems to follow that the shape-gestalt proposal is unable to account for the phenomenal difference between *O*s and *O*i.

Yet, the shape-gestalt proposal can account for this phenomenal difference in the following way. According to the framework outlined in the second section of this paper, the two visual experiences Vs and Vi are components of visual perceptual states that might also contain non-experiential categorizations. The perceptual state contained in Os could categorize the object as a snake and the perceptual state contained in Oi could categorize it as an inanimate object. Moreover, it is possible that these categorizations differ in cognitive phenomenal character. In this case, *O*s and *O*i would differ in phenomenal character because the visual perceptual states contained in them would differ in cognitive phenomenology.[32]

5. Explaining the phenomenal contrasts in terms of shape-gestalts

In this section, I argue that shape-gestalt properties can explain the relevant phenomenal contrasts just as well as natural kind properties. But before doing this, I would like to clarify the task at hand in a bit more detail.

Inferences to the best explanation require criteria that allow us to assess how well different possible explanations account for the phenomena in question. Scientific explanations are often compared with regard to their predictive power, their ability to unify a large number of different phenomena, and their simplicity. But these criteria are not applicable to the present situation. The high-level view and the low-level view are not formulated as scientific theories that make empirically testable predictions. More-

[32] Scenarios like this one could threaten the shape-gestalt proposal only if there was a clear difference in sensory phenomenal character between the two visual experiences contained in them. In section five of this paper, I will discuss a similar scenario, the salamander-scenario, in order to show that there is no obvious difference in sensory phenomenal character between the two visual experiences involves in this scenario and I will give reasons for thinking that this holds in general.

over, both views claim to be able to account for the same range of phenomena, and it is hardly plausible to discount one of them because of its lack of simplicity. I will therefore not discuss how well the shape-gestalt proposal satisfies a given set of criteria. Rather, I will compare the explanatory power of the shape-gestalt proposal with that of the high-level view in a more direct way.

For this purpose, I will proceed in two steps. I first argue that we can provide explanations in terms of shape-gestalt properties for all those phenomenal contrasts that can plausibly be explained by appeal to natural kind properties. The purpose of this step is to secure the existence of appropriate low-level explanations. I then argue that shape-gestalt properties can explain these phenomenal contrasts just as well as natural kind properties. The purpose of this second step is to show that explanations in terms of shape-gestalt properties are phenomenally adequate.

How can we secure the existence of explanations in terms of shape-gestalt properties for all those phenomenal contrasts that can plausibly be explained by appeal to natural kind properties? The phenomenal contrasts that are cited in support of Siegel's thesis all involve the actualization of a recognitional disposition. We can therefore approach this question by considering different possible ways in which the relevant recognitional dispositions might be actualized. I will consider three different proposals.

First, it is intuitively plausible that we often recognize objects by recognizing their shape-gestalts. In this case, you would recognize something, say, as a pine tree, because you recognize it as having a pine tree shape-gestalt.[33] Now, since we do not have a conclusive scientific account of object-recognition, we do not know whether we ever recognize objects in this way. But if object recognition does work in this way, it follows that any actualization of a recognitional disposition involves the detection of a corresponding shape-gestalt property. And this ensures the existence of an appropriate low-level explanation in these cases of object-recognition.

Second, it is intuitively plausible that we often recognize objects by recognizing a single low-level property or a set of low-level properties.[34] In such cases, one would recognize, say, a familiar person in the dark by his outline shape or a certain bird by its color. But, in my view, these situations

[33] Some influential vision scientists hold that the visual system identifies objects based on three-dimensional shape-representations. This would lend support to the claim that we sometimes recognize objects by recognizing their shape-gestalts. Marr (1982) and Biederman (1987) both have suggested that object recognition is based on three-dimensional shape-representations. Both construed these shape-representations as arrangements of volume-based primitives. Whereas Marr used generalized cylinders as his primitives, Biederman used so-called *geons*. There are many alternative theories of object recognition that are not based on volume-based primitives. One, non-exclusive, alternative is that object-recognition is mediated through representations of two-dimensional object views. For such an account, see Bulthöff and Edelman (1992) and Bulthöff and Wallis (2002).

[34] One low-level property that has received much attention in the empirical literature is motion. See, for example, Johansson (1973) and Mather and Murdoch (1994).

do not generate phenomenal contrasts that can serve as explananda in the first step of the method of phenomenal contrast and, thus, do not need to be explained by the shape-gestalt proposal. The reason for this is that there is no clear difference in sensory phenomenal character between two visual experiences that attribute identical low-level properties, other than shape-gestalt properties, and different natural kind properties to their respective objects. In order to illustrate this, I will now consider two such contrast scenarios.

My first scenario consists of two visual experiences of a red cardinal. Let us say that you know that cardinals are the only red birds in your neighborhood. But you are not able distinguish cardinals from other red birds by looking, that is, you have not yet acquired the relevant recognitional disposition. As you are walking though the forest, you see a small a red dot far off in one of the trees. You cannot make out its shape, but you recognize a number of low-level properties, such as its red color, its location, and its relative size. From these low-level properties together with your background knowledge, you infer that you are looking at a red cardinal. Subsequently, you acquire the ability to recognize cardinals visually. Again, as you are walking through the forest, you see a red dot far off in one of the trees. Suppose also that, in this context, recognizing the object's color, location, and relative size suffices to actualize your recognitional disposition so that you see the object as a cardinal. In this scenario, it seems impossible to tell with any degree of confidence that the two experiences differ in sensory phenomenal character. If this is true, the two experiences of the cardinal do not provide a contrast in sensory phenomenal character that can serve as an explanandum in the first step of the method of phenomenal contrast and, thus, do not need to be explained by the proponent of the low-level view.

In response, the proponent of the high-level view could concede that scenarios of the kind described in the previous paragraph may be conceivable, but deny that they are actually possible. I simply stipulated that, in the second experience, the recognitional disposition is activated by low-level properties, such as color, location, and relative size. But activation of the relevant recognitional disposition might require the experience of other low-level properties. So what we need is a case in which it is more plausible that the recognitional disposition is actualized during the experience. The following scenario is more likely to satisfy this condition.

This scenario consists again of two visual experiences of a red cardinal. The first experience takes place before you acquire the ability to recognize cardinals. You look at a red cardinal that slowly disappears behind a screen and then stops moving. This screen has a small hole in it so that you see only one small part of the cardinal through it. Let us say that you just see a red dot without recognizing any details, such as individual feathers or their texture. The second experience is similar but takes place after you have acquired the disposition to recognize cardinals visually. In this scenario, it is plausible that, in the first experience, you see the dot through the hole

as part of a red bird, and, in the second experience, you see the dot as part of a red cardinal.[35] The two experiences attribute identical low-level properties and different natural kind properties to the cardinal. And, yet, it still seems implausible that you could tell with any degree of confidence that the two experiences differ in sensory phenomenal character. Again, the two experiences do not provide a suitable contrast in sensory phenomenal character for the first step of the method of phenomenal contrast.

The proponent of the high-level view could still deny that such scenarios involve the actualization of the relevant recognitional dispositions. Moreover, she could point out that one can accept my conclusions only if one shares my intuitions about the sensory phenomenal character of these imagined scenarios, which are contentious. I admit that both objections are viable. But, at this point in the dialectic, it does not actually matter whether my examples are conclusive. As long as the proponent of the high-level view does not show that putative cases in which we recognize an object by recognizing one or more low-level properties provide clear contrasts in sensory phenomenal character that can serve as explananda in the first step of the method of phenomenal contrast, the shape-gestalt proposal is not threatened.

Third, the proponent of the high-level view could argue that, at least in some cases, object recognition is based on the recognition of natural kind properties. In these cases, recognizing an object as, say, a pine tree, would be nothing other than seeing it as instantiating the natural kind property *being a pine tree*.[36]

I admit that this is a plausible account of object recognition.[37] But this account leads to a problem for the high-level view. Consider again the two experiences of the cardinal behind the screen. According to the high-level view, both experiences would attribute different natural kind properties to the cardinal, namely the property *being a bird* and the property *being a cardinal*. Since, on the high-level view, these properties enter into the sensory phenomenal contents of the two visual experiences, these experiences should clearly differ in their sensory phenomenal character.[38] But, as we have seen, this does not seem to be true. Thus, in order to raise a problem for the shape-gestalt proposal, the proponent of the high-level view would have to explain the absence of a clear difference in sensory phenomenal

[35] One might admit this, but still object that this is not a genuine example of a case where object recognition is necessarily based on the recognition of low-level properties other than shape-gestalt properties. In response, I want to point out that even if the recognitional disposition is originally activated by the viewer's recognition of the cardinal's shape-gestalt, it remains activated after the bird has disappeared behind the screen because the viewer sees a red dot. This might be enough to establish my point.

[36] Siegel indicates that the truth of the high-level view would imply this third notion of object recognition when she writes: "Part of what's at stake about Thesis K [her label for the high-level view] is whether visual experience is an input to such processes of recognition or an output" [Siegel, 2006: 499].

[37] A proposal along these lines has been developed by Prinz. See: Prinz (2006).

[38] The salamander example to be presented later in this paper reinforces this conclusion.

character in the cardinal cases and also present appropriate contrast scenarios that involve a clear difference in sensory phenomenal character.[39]

I have argued that we can provide explanations in terms of shape-gestalt properties for all those phenomenal contrasts that can plausibly be explained in terms of natural kind properties. The proponent of the high-level view could still object that the former explanations do not account for the phenomenal contrast as well as the latter, that is, that they are not phenomenally adequate.[40] However, in order to substantiate this objection, she would have to present contrast scenarios consisting of two visual experiences that satisfy the following conditions: (i) the two experiences attribute identical low-level properties, *including* shape-gestalt properties, to their respective objects, (ii) the two experiences attribute different natural kind properties to their respective objects, and (iii) the two experiences clearly differ in sensory phenomenal character. Yet, I do not think that scenarios that satisfy conditions (i) and (ii) also satisfy condition (iii). As a consequence, we have no reason to believe that explanations in terms of shape-gestalts are phenomenally inadequate. I will first illustrate this with a scenario that is based on an actual case and then argue that this also holds for all possible scenarios that could plausibly be explained in terms of natural kind properties. [41]

The following scenario is based on an actual case of cryptic speciation.[42] Consider a zoologist who is an expert on salamanders. Up to a certain time, she believed that certain salamanders that occur in eastern Mexi-

[39] One might argue that the difference in sensory phenomenal character between seeing something as a bird and seeing something as a cardinal is just too small to be detected because the concepts are closely related to each other. But I do not think that this is a satisfactory response. The reason for this is that one can design scenarios in which the properties attributed by the experiences differ as much as possible.

[40] In fact, Siegel's first argument against the shape-gestalt proposal indicates that she thinks that appeal to shape-gestalt properties does not suffice to explain the phenomenal difference between *V*1 and *V*2.

[41] I proceed here by generalization from scenarios based on actual cases. An alternative procedure would be to use twin-Earth scenarios. One could argue as follows. Consider the following twin-Earth scenario. You look at an object here on Earth and see it as being a pine tree. Simultaneously, your twin on twin-Earth looks at an object and sees it as being a twin-pine. A twin-pine looks just like a pine, but has a different genetic make up. That's the only difference between Earth and twin-Earth. In this case, it is implausible that your experience and your twin's experience differ in sensory phenomenal character. Moreover, this seems to be generally true because we can imagine analogous scenarios for any natural kind property. However, twin-Earth scenarios incur a number of problems. For example, twin-Earth scenarios would fail if phenomenal character would supervene on wide content. Various authors have used twin-Earth scenarios to argue for the low-level view, see for example, Price (2006), Brogaard (2013), Prinz (2013). For some problems with these scenarios: see, Siegel (2013) and Logue (2013).

[42] Cryptic speciation is a biological process that results in a group of species (which, by definition, cannot interbreed) that contain individuals that are morphologically identical to each other but belong to different species. For the following example, see, for example, Parra-Olea and Wake (2001). It has recently been argued that there might be different species of giraffes. See, for example, Brown, et al (2007). For evidence of cryptic speciation in maritime organisms, see Cornils and Held (2014).

co belong to the same species as certain identical looking salamanders that occur in southern Mexico. DNA testing then showed that the salamanders belong to two different species. Now suppose that the zoologist looks at a terrarium with two compartments. The salamander in the left compartment belongs to the species occurring in eastern Mexico and the salamander in the right compartment belongs to the species occurring in southern Mexico. Suppose also that when the zoologist looks at the two salamanders, the respective recognitional dispositions are actualized. I think that this scenario plausibly satisfies the first two conditions outlined in the previous paragraph. It involves two visual experiences that attribute identical low-level properties, including shape-gestalts, and different natural kind properties to their respective objects. And, yet, it is implausible that the third condition is also satisfied, that is, it is implausible that the two experiences clearly differ in sensory phenomenal character.

I think that it is plausible that the same is true for all possible contrast scenarios that could be explained in terms of natural kind properties. My argument here is simple. We can certainly imagine scenarios of the kind described in the previous paragraph for every natural kind property. And when we do so, we do not notice a clear phenomenal difference between the two imagined visual experiences. Now, there are many cases of cryptic speciation, and, hence, many scenarios of the kind described in the previous paragraph. Given this, it is plausible to assume that imaginability here is evidence for possibility.[43] If this is correct, these kinds of scenarios satisfy conditions (i) and (ii), but fail to satisfy condition (iii). Thus, these scenarios do not present counterexamples to the phenomenal adequacy of the shape-gestalt proposal. We can conclude that the shape-gestalt proposal explains the relevant phenomenal contrasts just as well as appeal to natural kind properties.

One might try to resist my conclusion for a number of reasons. First, one could point out that, like the cardinal scenario, the salamander scenario relies on possibly unreliable intuitions. This might be true. But, again, at this point in the dialectic, this puts the onus on the proponent of the high-level view to provide a phenomenal contrast scenario that satisfies conditions (i) to (iii). Lacking such a scenario, we have no reason for thinking that the shape-gestalt proposal is phenomenally inadequate.

Second, the proponent of the high-level view could point out that the two visual experiences in the salamander case represent the two different natural kind properties by identical sensory phenomenal characters.[44] Thus, even if my description of this scenario is correct, it does not follow that these properties do not enter into the sensory phenomenal contents of

[43] Note that this is not the kind of imaginability involved in twin-Earth scenarios. In contrast to twin-Earth scenarios, I imagine scenarios based on experiences had by the same subject in the actual world.

[44] Siegel brings up this option in her response to Prinz. See: Siegel (2013: 851).

the two experiences. In order to show this, one would have to prove that there is no difference in sensory phenomenal character between a visual experience of the salamander that lacks the recognitional element and one that represents it as a salamander.

I do not think that this objection is valid, however. According to the proponent of the high-level view, different natural kind properties are typically represented by different sensory phenomenal contents. We would thus need a reason for why this is different in the salamander scenario. Moreover, we can construe scenarios in which one of the salamanders turns out to be a bizarre atmospheric disturbance, a strange type of moving plant, a strange looking elephant, or whatever. Thus, even if the proponent of the high-level view could give us an explanation in the original salamander case, it is implausible that this explanation would cover all the other cases.

6. Conclusion

My goal in this paper was to show that the shape-gestalt proposal provides a viable low-level alternative to Siegel's high-level view. I proceeded roughly in three steps. I first showed that Siegel's arguments against the shape-gestalt proposal are not conclusive. I then developed the shape-gestalt proposal in greater detail. Finally, I argued that the shape-gestalt proposal allows us to explain the relevant phenomenal contrasts just as well as Siegel's high-level view. The argument for this latter claim proceeded in two steps. I first showed that we can provide explanations in terms of shape-gestalt properties for all those phenomenal contrasts that can plausibly be explained in terms of natural kind properties. I then argued that explanations in terms of shape-gestalt properties are phenomenally adequate. My argument does not show that Siegel's proposal is false. But, if correct, it establishes the existence of a plausible low-level alternative.

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