

Nonconceptual Content, Richness, and Fineness of Grain

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As I view the scene before my eyes, there is a way the world looks to me. If the world is that way, my visual experience is accurate; if not, my experience is inaccurate. My visual experience, then, has correctness conditions: it is correct or accurate in certain circumstances; incorrect or inaccurate in others. Visual experiences, like beliefs, are *representations* of how things are. Accordingly, visual experiences have representational content.

It is often said that the representational content of visual experience is *rich*. Another common claim is that there is a *fineness of grain* to visual experience. A third view, also quite widely accepted, is that the representational content of visual experience is *nonconceptual*. Notwithstanding the popularity of these views, it is still not fully clear what is being claimed nor how exactly the three views are connected.

The purpose of this essay is threefold. First, I want to present a clarification and partial defense of the thesis that visual experiences have nonconceptual contents.¹ Second, I want to explain and defend the view that visual experience is representationally rich. This necessitates a discussion of several psychological experiments, the results of which bear upon the view. Finally, I want to discuss how the thesis of richness relates to the thesis of fineness of grain (held most often in connection with our experiences of shades of color); and I want to spell out carefully how both theses relate to the thesis of nonconceptual content.

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¹ For a fuller defense that brings in considerations lying beyond the scope of this essay and having nothing to do with visual experience in particular, see Tye (forthcoming).

The chapter is divided into six sections. In Section I, I address some preliminary terminological matters and I take up the question of what it is for an experience to have a nonconceptual content. Here I suggest that the standard way of understanding nonconceptual content is unsatisfactory and I make a proposal of my own. In Section II, I turn to a discussion of Sperling's classic experiment (1960) on *sensory memory*. This is used to motivate on empirical grounds the thesis that visual experience has a rich content. Section III considers whether recent change blindness experiments in psychology show that richness is an illusion. In Section IV, I elucidate the familiar claim that there is a fineness of grain to the content of visual experience (notably color shade experience) and I relate it both to the thesis of nonconceptual content and to the thesis of richness. Section V addresses various responses that are available to the content conceptualist in connection with the issue of fineness of grain in visual experience. Section VI discusses an example that may seem to create serious difficulty for my proposal about nonconceptual content.

I NONCONCEPTUAL CONTENT, THOUGHT CONTENT, AND CONCEPT POSSESSION

Before we can take up the question of what it is for an experience to have a nonconceptual content, some preliminary remarks are necessary on how I shall be using the terms "concept" and "thought content" in this essay. The content of a thought, as I shall understand it, is what is thought and intuitively what is thought individuates in a fine-grained way. Consider the case of the thought that coriander is a spice. Intuitively, what I think when I have this thought is not what I think, when I think that cilantro is a spice. The two thoughts play different roles in rationalizing explanations. This is why it is possible for me to *discover* that coriander is cilantro. The concepts *coriander* and *cilantro* have the same referent, but the way in which the referent is presented in the two cases is different. One who thinks of coriander (cilantro) as coriander thinks of it under a different guise or in a different way from one who thinks of it as cilantro. So, the content of the one thought is different from the content of the other.

In general, I take thought contents to be indicated by the "that"-clauses used to attribute thoughts. Moreover, in the first-person case, I take the content attributed via the "that"-clause to be the content of the thought, assuming that the thought ascription is true.² In the third-person case, the situation is more complicated. Here the thought ascription is sometimes counted as true even if the content of the thought is not the same as the content attributed, so long as

² This is to oversimplify a little. A further assumption is that the thought ascribed is a present thought. (We have privileged access to the contents of our present thoughts, not to the contents of our past ones. See here McLaughlin and Tye (1998)).

there is sufficient similarity between the two. Accordingly, I take the “that”-clause in such a case to indicate that the thought has a content that, in the given context, is sufficiently similar to the content of the sentence embedded in the “that”-clause.

As I use the term “concept,” concepts are not linguistic terms in a public language. They are mental representations of a sort that can occur in thought.³ Thoughts are composed of concepts and the contents of concepts individuate in a fine-grained way. As illustrated in the case above of the concepts *cilantro* and *coriander*, concepts that refer to the same entities can differ in their content. Indeed, concepts can differ in their content even if they refer to the same entity in all possible worlds. For example, the concept *Hesperus* has a different content from the concept *Phosphorus*, even though they both refer to the planet Venus in all possible worlds. This is why the thought that Hesperus is a planet is a different thought from the thought that Phosphorus is a planet. Similar comments apply to the concept *four* and the concept *two times two*. A small child who can count to four has the former concept; but she may not yet have learned how to multiply and thus may lack the latter concept. Such a child can think the thought that four is greater than three without being able to think the thought that two times two is greater than three. Likewise, in my view, the concept *fortnight* has a different content from the concept *fourteen days*. One might be misinformed and believe that a fortnight is ten days without thereby believing that fourteen days is ten days. Concepts of which one has a partial understanding are still concepts one may exercise in belief and thought.

So far I have not said anything directly about concept possession. This too merits some brief preliminary discussion. What is it for a given concept to be a concept of *mine*? What is it for me to *possess* a concept? A straightforward answer is just this: I possess a given concept *C* if and only if I am able to exercise *C* in my thoughts. This answer is not very informative, however; for under what conditions can I exercise a concept in my thoughts? Given the phenomenon of partial understanding, the ability to exercise a concept in thought does not require full mastery of the concept. But this ability surely does require at least partial understanding of the concept. And once one has at least a partial understanding, one can employ the concept in thought. So, another answer to the above question is: I possess the concept *C* if and only if I have at least a partial understanding of *C*. On this intuitively attractive view, one cannot possess the concept *fortnight*, for example, unless one grasps that a fortnight is a period of time. Similarly, one cannot possess the ordinary concept *red* unless one grasps that red is a color.

A stronger requirement on concept possession is given by Gareth Evans’s Generality Constraint (1982). A simple way to state the constraint, idealizing

³ For other uses of the term “concept,” and a helpful discussion of nonconceptual content, see Byrne (2005).

away from limitations imposed by short-term memory and attention, is as follows: for any concepts a thinker possesses, the thinker can think any thought that can be formed from those concepts. This constraint places a necessary condition on concept possession and it is compatible with the above proposals, so long as I am capable of exercising a concept *C* in my thoughts only if I am capable of thinking any thoughts that can be formed from combining *C* with other concepts I possess. Those who hold that thought is systematic and productive will happily grant this; but not everyone will accede to such a requirement.

It might be objected that I can possess concepts that are available *only* for use in experience (on a conceptualist view of experience), so that not all my concepts need be ones that I am capable of exercising in thought. But if experience is conceptual, it must be capable of standing as a reason for belief and the subject of each experience must be capable of appreciating its justificatory role, of inferring the content of the belief from the content of the experience. So, the subject must be capable of exercising concepts in thought that are deployed in experience after all.

With these largely terminological matters out of the way, we are now ready to take up the thesis of nonconceptual content for experiences. On the usual understanding of this thesis, a visual experience *E* has a *nonconceptual* content if and only if (i) *E* has correctness conditions; (ii) the subject of *E* need not possess the concepts used in a canonical specification of *E*'s correctness conditions.

The first point to note here is that the thesis, as just stated, does not preclude the nonconceptual content of a visual experience from being the content of a thought of another subject. For what makes the content nonconceptual for subject *S* is simply the fact that *S* need not herself have the relevant concepts and thus need not herself be in a position to form the relevant thought. Moreover, the nonconceptual content of an experience *E* of a subject *S* can even be the content of a thought of *S*, given the above thesis. All that is required in such a case is that *S* need not possess the pertinent concepts to undergo the experience: thus, were *S* to lose the concepts and with them the capacity to have such a thought, that would not preclude her from having the experience, if the content of the experience is nonconceptual.

It appears, then, that, given the usual understanding of the thesis of nonconceptual content, *as far as the nature of content itself goes*, there need be no distinction between conceptual and nonconceptual content. All the thesis, as usually stated, requires is that visual experiences be contentful *nonconceptual states*, where a contentful nonconceptual state is a contentful state, the tokening of which does not involve the exercise of concepts.

We see therefore that the original thesis of nonconceptual content for visual experiences leaves open three possibilities: 1) such experiences are nonconceptual states having conceptual contents (and thus are the same as thoughts along the content dimension only); 2) such experiences are nonconceptual states having fine-grained nonconceptual contents (and thus are similar to thoughts along the

content dimension); 3) such experiences are nonconceptual states having coarse-grained contents (*robustly* nonconceptual contents, as I shall call them).

Since conceptual contents have fine-grained individuation conditions, those philosophers who embrace nonconceptualism for visual experience and who opt for alternative (1) above face the following very awkward question: how can an experience *E* of a subject *S* have a fine-grained content without being built from concepts? Those philosophers who embrace nonconceptualism and who opt for alternative (2) face the same awkward question and a further one, namely: how can an experience *E* of a subject *S* have a fine-grained content without that content being conceptual?⁴ Perhaps these questions can be answered adequately, but I am skeptical. Accordingly, in my view, the advocate of nonconceptual content should embrace alternative (3) (or, better, a slightly more cautious formulation of alternative (3), namely, that visual experiences have contents that are robustly nonconceptual and, *insofar as* they have such contents, they are nonconceptual states). For the remainder of the chapter, this is the alternative I shall endorse.

But what is the robustly nonconceptual content of an experience? One answer is that such a content is a set of possible worlds. Another answer is that each robustly nonconceptual content is a possible state of affairs built out of worldly entities. Of these two answers, I accept the second, since it fits best with my views on the transparency of experience (Tye 1995, 2000, 2003). But for the purposes of the rest of this chapter it will not matter whether the former unstructured account of content is preferred to the latter structured one.

On the structured account, it is plausible to break down the relevant possible states of affairs into two basic types: 1) structured complexes of specific particular items, properties, and relations; and 2) structured existential states of affairs involving properties and relations (and plausibly the subject of the experience). Suppose, for example, I see the facing surface *S* of an object *O* and it looks red to me. My visual experience intuitively represents *S* as having the property of being red. At this level, my experience is accurate if and only if *S* is red. But my experience also has something important in common with certain other visual experiences not directed at *S*. Suppose, for example, that *O* is replaced with another object *O'* that looks just like *O* or that I am hallucinating a red surface so that phenomenally it is for me just as it is in seeing *S*. Intuitively, in all three cases, it seems to me that *there is* a red surface before me. At this phenomenal level, my experience is accurate if and only if there is a red surface before me.⁵ This content is existential, not involving *S*, though it does also include the subject of the experience.

The structured account delivers *coarse-grained* contents in that representations with such contents (unlike representations having conceptual contents) cannot

⁴ Relatedly, why *couldn't* such a fine-grained content be the content of some thought?

⁵ In reality, of course, things will be much more complex than is indicated in this statement of correctness conditions. The existential content for the case in which I see surface *S* will involve not just red but a determinate shade of red, a surface orientation, distance away of the apparent surface, 2-D location relative to the viewer, etc.

represent the same particulars, properties, and relations arranged in the same possible object-involving states of affairs or the same properties and relations involved in the same possible existential states of affairs and yet differ in content. On the unstructured account, coarseness of grain follows from the fact that sameness of content is guaranteed by sameness of correctness conditions in all possible worlds. The two accounts do not yield the same degree of coarseness of grain in robustly nonconceptual contents. For one thing, some may wish to deny that necessarily co-instantiated properties (and relations) are identical. For another, on the structured view, some necessarily co-obtaining states of affairs can differ even if necessarily co-instantiated properties (and relations) are identical. Consider, for example, the object-involving state of affairs of X 's being red and the necessarily co-obtaining state of affairs of there being exactly one actual F that is red, where "actual" is understood as a rigidifier and X is the actual F . These states of affairs differ in their structure and thus are different states of affairs, on the structured account, but there is no difference in content on the unstructured alternative. The upshot is that the unstructured account is more coarse-grained than the structured one.

The issue of whether the thesis that visual experiences have coarse-grained contents conflicts with the claim accepted by nonconceptualists that our experiences of shades of color are *fine-grained* is one I shall take up in Section IV. In the next section, I want to turn to another related topic, that of the richness of visual experience.

II SPERLING'S EXPERIMENT AND THE THESIS OF RICHNESS

There is empirical evidence that supports the view that visual experience has a *rich* content. One important piece of evidence is provided by Sperling's well-known experiment on sensory memory. The relevance of this experiment to the thesis of richness will be brought out in due course. I begin with a general discussion of the experiment and other related effects.

Subjects were shown an array of letters, composed of three rows with four letters in each (see Figure 1). The array was presented for 50 mseconds in the center of the subjects' field of view, followed by a blank field.

The subjects were asked to report what they saw, under two different sets of conditions. In condition 1, subjects were asked to identify as many letters as possible. In condition 2, subjects were asked to identify letters in a single row. The chosen row was identified by a tone (high for the top row, medium for the middle row, and low for the bottom row), the use of which had been explained to the subjects in advance. The tone was not played until *immediately after* the display was extinguished.

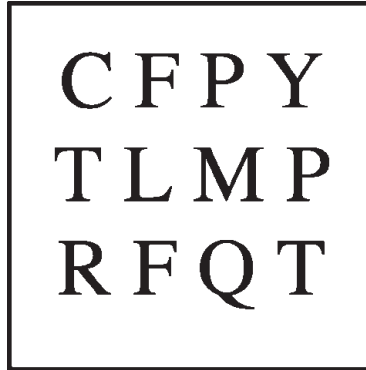


Fig. 1. The set of letters shown in Sperling's experiments.

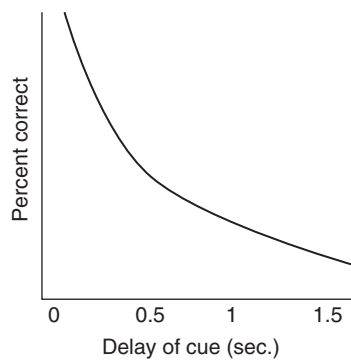


Fig. 2. Partial report accuracy when the cue is delayed by various intervals.

Sperling found that in condition 1, subjects were only able to identify at most one-third of the twelve letters. In condition 2, however, subjects were typically able to report correctly at least three out of the four. The accuracy of the subjects' reports about the contents of the row in the latter condition diminished if the time of presentation of the tone from the disappearance of the array was delayed. As the time delay increased, the accuracy decreased, as shown in the graph above, (Figure 2).

How are these facts best explained? Sperling hypothesized that there is a visual *sensory memory* that fades away very quickly. In the case of the subjects in condition 1, the act of reporting all the letters takes too long: the sensory memory fades by the time that the subjects have reported one-quarter or one-third of the letters, with the result that they cannot report the remainder. In the case of the subjects in condition 2, when the tone sounds, the sensory memory is still available and it persists long enough for the subjects to report three or four of the

letters in the relevant row of four. Since in condition 2 the subjects do not know until the tone sounds which row to report on and the tone does not occur until after the array display is turned off, the fact that the subjects successfully report at least three of the four letters in the appropriate row shows that the sensory memory preserves information about the letter shapes in *all* the rows.

In saying that the sensory memory fades very quickly, Sperling is best understood as making a remark about visual information. Initially, all twelve letter shapes are represented; less information is available through time and very quickly no information remains. Of course, the time at which the sensory memory is formed need not be the same as the time at which the array is displayed or the time at which it disappears. In general, represented time need not be the same as time represented, and this case is no different.⁶

What Sperling and other psychologists call in the above case the “visual sensory memory” is what we would call in ordinary life the look or the appearance of the array. According to Sperling, after the array has been extinguished, it *appears* still to be displayed.

It may be wondered why we should accept that the sensory memory itself operates at the phenomenal level. Why should we agree that the memory trace is a visual appearance? Sperling tested for this by varying the brightness of the field in which the array was displayed immediately after the array disappeared. He found that with a bright post-target field, the success rates at identifying letters were significantly worse, just as they would be were we asked to read what is projected on a screen in a room that gets more and more brightly illuminated. The interference effect in the latter case is at the level of experience: the screen appears more blurry (and thus less easy to read) as the lighting condition changes. So too in the former.

Other experiments support Sperling’s position. For example, when subjects are shown two brief random dot presentations, one after the other, such that when superimposed they form single letters, the subjects accurately report the letters, provided that the time gap between the presentations is 300 mseconds or less (Eriksen and Collins 1967). Evidently, the initial display appears to last longer than it really does by some 300 mseconds; the result is that the letters appear to “pop out” of the dot patterns, according to the subjects.

That the visual sensory memory system operates at the level of visual appearance is also shown by the experience of lightning during a storm. Suppose you see a single flash of lightning in the sky, lasting about $\frac{1}{2}$ second. In reality, the flash is made up of three or four very brief flashes, each lasting only 2 mseconds. You experience a persisting flash for $\frac{1}{2}$ second, however, rather than three or four very brief separate flashes, because of visual sensory memory: before the first very brief flash fades in your experience, the second one occurs, and likewise for the third and fourth, with the result that it looks to you as if there is single, continuing flash.

⁶ For more on this topic, see Tye (2003).



Fig. 3. The saccades produced while viewing a picture.

Further facts about human vision support the view that visual sensory memories are representations whose contents are directly involved in the contents of everyday visual experiences. Consider the phenomenon of eye saccades. As we view a picture or read a book, our eyes move around in a quick, jerky way. These movements or saccades last from 25 to 200 mseconds. Above is an illustration of the saccades produced while viewing a picture (Figure 3).

It is well known that sensitivity to visual input is shut down during saccades. Visual information is processed only during eye fixations (the pauses when the eye is not moving), which each last 100–200 mseconds.⁷ Our *experience* of the picture in figure 3 does not have black-out periods or blank intervals, however. Why is this? If our eyes are moving around with no information getting in during the periods of movement, why isn't our experience like that we would get were we to view the results of filming a scene through a moving video camera that had been turned on and off during filming?

One plausible answer is that the visual sensory memories generated during fixations carry information about the parts of the picture fixated on, even after the fixations have ceased, and do so moreover until the next fixation. Given this

⁷ Rayner et al. (1981) showed that only the first 50 mseconds of each fixation are used to extract information when reading.

hypothesis, if the memories operate at the level of appearances, there will be no black-outs in viewing the picture.

The proposal I am making, then, is that at any given time visual experiences represent whatever the visual sensory memories represent at that time, whether the experiences occur in situations in which stimuli are only briefly visually presented or in situations in which the stimuli are continuing. This is not to say that the experiences represent *only* what the visual sensory memories represent. For example, there are facts about change, continuity, and succession that are represented in visual experiences and that are not captured in sensory memories.⁸ My point is that at each moment, the visual experiences humans undergo are at least as rich representationally as the sensory memories. And what Sperling's results strongly suggest is that the sensory memories are rich not only in that they represent more than their subjects actually judge to be present, but also in that (typically) they represent more than their subjects are *capable* of judging to be present.

Normal humans are unable to *identify* many of the letters in the Sperling experiment. They do not *notice* which letter shapes are apparently present in the rows not corresponding to the tone that is played and thus they form no beliefs as to which letters those rows contain. Even so, the letters to which the subjects are not attending appear in ways that *would* have enabled the subjects to identify them, *had* their attention been directed differently. This claim, it is worth noting, is also in keeping with the beliefs of the subjects about their experiences. Presented with a briefly displayed Sperling array, subjects believe that there are twelve *letters* in the array and indeed that they see all twelve. They also believe that the letters are all equally well-defined. Their inability to identify many of the letter shapes, even though the information needed for such identifications is present in their visual experiences, derives from how rapidly the sensory memories fade: there is simply not enough time for the subjects to process cognitively the information about more than three or four letter shapes.

I should emphasize that the points above do not assume that information about the identities of the unattended letters is itself coded in the subjects' visual experiences. Indeed, I am making no strong claim about the level of information contained in the experiences about unattended regions of the Sperling array. I find it plausible to suppose that non-local information about shapes is encoded⁹ (even though this is not the standard view in psychology on the matter); but this does not matter for present purposes. So long as information is present about the contents of the unattended rows on the basis of which shape and letter identifications could have been made, had attention been directed differently, the relevant visual experiences are representationally rich.

⁸ For a detailed discussion of the experience of change, continuity, and succession, see Tye (2003).

⁹ This too is the view of Ned Block (1995: 244).

III THE ILLUSION OF RICHNESS

Some psychologists and philosophers have claimed recently that we are under an *illusion* that we experience more than we consciously notice (O'Regan and Noë 2001). Our visual awareness, they say, is really sparse, instead of being detailed and rich. We are subject to the illusion of richness because as soon as we ask ourselves whether we are experiencing something in the field of view, our eyes go to it and it is then available for cognitive processing.

Kevin O'Regan (2000) calls this "the refrigerator light illusion." Every time we open the fridge door, the light is on. This might lead someone to believe that the light is on all the time. Analogously, every time we turn our attention to something, we are conscious of it. This fosters the illusion that visual consciousness of things is present even when we are not attending to them. In reality, things in the field of view to which we are not attending do not *look* any way to us. We do not experience those things. They are only *potentially* within our phenomenal experience.

Recent work in psychology on change blindness has been held to support this view (O'Regan 2000). Where two complicated images are shown to subjects in short succession, and the images are the same except for one change, the change is extremely difficult to discern, provided it is not part of the subjects' conception of what the picture is about. For example, when subjects are shown a picture of a man eating lunch with a woman, followed quickly by the same picture with a shift in the location of the railing right behind where the couple are seated, subjects typically do not notice any difference. And this effect often persists even if the two pictures are shown to subjects one after the other, several times in a row (Figure 4).

Why should this be? If visual experience is itself sparse in its representational content—if its content extends no further than what is consciously noticed—then the answer is obvious.

Another equally good explanation, however, is that the subjects do not notice any difference because they do not *attend* to the position of the railing. Studies of eye movements in subjects who fail to notice a difference in the two pictures show that their search for a change is largely focused on the man, the woman, and the contents of the table. Had the subjects been given the additional instruction to focus on the railing, they would have noticed the change easily enough. But without that instruction, the alteration in the position of the railing is missed.¹⁰ This is perfectly compatible with supposing that the subjects do see the railing and that it appears in different positions in the two pictures.

¹⁰ The same is true in the case of the woman wearing a gorilla suit who dances a jig on a basketball court while two teams are passing a ball around. Since the subjects viewing a tape of the game are given the task of counting carefully how many times the ball changes hands, their eyes are glued to the ball and they fail to notice the "gorilla".



Fig. 4. Example of change blindness.

Moreover, the claim that the subjects do not see any difference in the position of the railing is consistent with the railing's appearing to the subject in different positions; for, as ordinarily understood, this claim would be counted as true only if the subjects do not see *that* there is any difference in the position of the railing and the railing can appear in different positions without that difference being noticed.

Perhaps it will be replied that the temptation to think that we *see* unattended regions in the field of view and thus that they *appear* to us in certain ways derives from the mistaken thought that if there are regions in the field of view that are not seen, then our experience will be unacceptably "gappy." Consider, for



Fig. 5. “Blind spots” in visual fields.

example, the so-called “blind spots” in our visual fields corresponding to the places on our retinas where the optic nerve leaves the eyeball. Close your left eye and look at the cross in Figure 5 above.

As you move the book away from your eyes, at about 6 inches away, you will cease to notice the disk on the right. This is your blind spot for the open eye. With the book in this position, you do not see the disk on the right. But there is no “gap” in your experience. For phenomenologically what happens is that initially you have an experience of a black disk in the relevant region of your field of view, and then later you cease to get information from that region about any surface and your brain then “fills in” the region so that the right half of figure 5 appears to you to be a continuous white surface. Thus, for example, were the color of the page as a whole changed from white to yellow, while your right eye remained close, the right half of figure 5 would change in its appearance from one of a uniform white surface to one of a uniform yellow one. The experience you undergo in such a case is in error: it *misinforms* you that the surface to the right of the cross is white throughout initially, and then a continuous yellow, when in reality it contains a black disk surrounded by a uniform white or yellow. So, although you do not see the black disk, you have an experience as of a filled region where the disk is in fact located.

The phenomenon of “filling in” occurs also in the case, discussed by Dennett (1991: 354), of the Marilyn Monroe wallpaper. You walk into a room and immediately have a visual experience as of a wall full of identical photographic portraits of Marilyn Monroe. For you to identify a picture as being of Marilyn Monroe, it has to fall within the scope of the high resolution foveal part of the retina. Parafoveal vision is much weaker. For example, if five differently colored pencils are held at arm’s length on the right side of the visual field but nowhere near the periphery, as you look straight ahead, you won’t be able to identify their colors correctly. So, how is it that you *immediately* have an experience that represents hundreds of Marilyn Monroe pictures? You certainly do not foveate on each of them in the time it takes for you to have the experience. Your eyes saccade only four or five times each second, so foveation on each picture is impossible.

The explanation is that you foveate on several Marilyn Monroe pictures and your brain then generalizes to the others, since it receives no contrary shape information. So, you have a visual experience as of hundreds of Marilyn Monroes.

Imagine now that, as you walk into the room, things are as above, except that many of the photographic pictures of Marilyn Monroe, lying in your parafoveal

vision, are replaced by ones of Madonna (during her Marilyn Monroe period). Your brain “fills in” as before, so again you have a visual experience as of hundreds of Marilyn Monroes. This time, your experience is in error.

The situation just envisaged would be difficult to realize physically, given that your eyes saccade often and the regions of your field of view that fall under parafoveal vision change correspondingly. But it would not be impossible. Indeed, there are actual cases of “filling in” of this sort. Consider, for example, the results of an experiment in which subjects were asked to read a story on a screen. Using a computer program, words lying in the parafoveal regions of vision were changed to sequences of nonsense characters, so that as each subject’s eyes moved across the screen in the process of reading, different words were altered. The subjects noticed nothing awry. It did not seem to the subjects that the screen contained a mixture of words and nonsense sequences. It seemed to the subjects that the screen was filled with words. Indeed the effect was so complete and surprising to the psychologist who designed the experiment (Grimes 1996) that, when he tried the experiment on himself, he thought that the equipment was malfunctioning!

Filling in, then, is a common phenomenon. And it may well be that in at least some cases of change blindness, objects on which the subjects are not foveating are *not* seen, any more than is the cross in the blindspot of the visual field. But at least where things lie *within* the scope of foveal vision, as in the case of the railing in the picture of the man and the woman eating lunch, there is reason to think that the relevant regions of the visual field are seen and that our visual experiences contain information about them whether or not we notice that information. This follows from the results of the Sperling experiment.¹¹ In that experiment, the tone has the effect of focusing the subjects’ attention on one particular part of the array that apparently is still before them. Since the sensory memory carries information about the contents of the various cells of the top, middle, and bottom rows of the array (all of which lie within foveal vision)—even though there is room for dispute about just how high-level this information is—and the sensory memory is a phenomenal representation, the results of the change-blindness experiments do not undermine the thesis of richness for visual experience. Indeed, the opposite seems to be the case. The Sperling experiment provides reason to believe that at least in some contexts we experience *more* than we notice; thus, the view, supposedly supported by the change-blindness data, that consciousness is *restricted* to what we notice is in trouble.¹²

¹¹ A referee notes that this also follows from other psychological work on change blindness in which there are shown to be implicit effects of the objects to which the subjects are supposedly blind. See here Henderson (1997); Hayhoe et al. (1998); Fernandez-Duque and Thornton (2000); Williams and Simons (2000); Hollingworth et al. (2001).

¹² See Cohen (2002) for further discussion of change blindness in a similar spirit (brought to my attention by a referee).

IV FINENESS OF GRAIN

One reply that might be made to Sperling's experiment is that, even though sensory memories are involved in everyday visual experience, still the results, properly generalized, show only that visual experiences *often* or *typically* contain more information than their subjects are able to extract cognitively. But what of the case in which the content of the visual experience remains unchanged through time? Suppose, for example, that the array is *not* extinguished in Sperling's experiment. Then, by suitable shifts in their acts of attention, the subjects *can* identify all the letters. Even so, it might well be insisted, there is a determinacy of detail in the letter shapes (and also for that matter in the background color shade of the array) that goes beyond the subjects' conceptual repertoires. This needs further elucidation.

The claim that there is a fineness of grain in visual experience that cannot be captured by the concepts possessed by the subject of the experience (or at least any ordinary subject) dates back to Gareth Evans in *The Varieties of Reference* (1982: 229). John McDowell (1994: 56) puts Evans's underlying thought this way: think of ordinary color concepts such as those expressed in "red," "green," "blue" as concepts of bands on the spectrum. Evans's point is then that color experiences present properties that correspond to something like lines on the spectrum, namely, minimal shades of red, blue, green, etc. (where a minimal shade is one for which there is no other shade that is a shade of it).

Here are some further representative quotations from those on Evans's side of the fence. First, Chris Peacocke:

If you are looking at a range of mountains, it may be correct to say that you see some of them as rounded, some as jagged. But the content of your visual experience in respect of the shape of the mountains is far more specific than that description indicates. The description involving the concepts round and jagged would cover many different fine-grained contents which your experience could have, contents which are discriminably different from one another. (1992: 111)

More recently, Richard Heck has commented:

Before me now, for example, are arranged various objects with various shapes and colors, of which, it might seem, I have no concept. My desk exhibits a whole host of shades of brown, for which I have no names. The speakers to the sides of my computer are not quite flat, but have curved faces; I could not begin to describe their shape in anything like adequate terms. The leaves on the tree outside my window are fluttering back and forth, randomly, as it seems to me, as the wind passes over them—Yet my experience of these things represents them far more precisely than that, far more distinctively, it would seem, than any characterization I could hope to formulate, for myself or for others, in terms of the concepts I presently possess. The problem is not lack of time, but lack of descriptive resources, that is, lack of the appropriate concepts. (2000: 489–90)

Let us, then, distinguish three different claims about visual experience. First, in typical cases, visual experiences are rich. This is to be understood as the thesis that typically visual experiences contain more information than their subjects are able to extract cognitively (in belief or judgment). Second, visual experiences are fine-grained. This is usually formulated as the thesis that visual experiences represent the world with a determinacy of detail that goes beyond the concepts possessed by the subjects of those experiences. However, there is a problem with this formulation. For the fineness-of-grain thesis is surely not supposed to conflict with the view that we can use demonstrative concepts in *judgments or beliefs* based on experience to pick out experienced details. What the thesis of fineness of grain demands is that visual experiences represent the world with a determinacy of detail that is not capturable conceptually *in the experiences themselves*. From here on, this is how I shall understand fineness of grain. Finally, visual experiences have robustly nonconceptual contents.

How are these three claims related? Sperling's experiment supports richness, but visual experiences could be rich, as revealed in that experiment, without having a nonconceptual content. For the thesis of richness alone does not rule out the possibility that visual experiences are conceptual states whose conceptual contents contain more information than the belief-forming processes can handle under certain constrained circumstances (such as those in the Sperling experiment). Nor does richness entail fineness of grain. Consistent with the thesis of richness, it could be that to the extent that details are represented in experiences, they are represented conceptually. Fineness of grain, moreover, does not entail richness, since, if visual experience is detailed in a way that is not capturable by concepts employed in the experiences, it does not follow that the subject will not be able to bring the experienced details under concepts (including demonstrative ones) that the subject is capable of exercising in *judgments or beliefs* based on those experiences (as noted above). Finally, fineness of grain does entail that visual experiences have nonconceptual contents, as the latter thesis is usually understood. So, if, as I suggested in Section I, the most plausible version of the thesis that visual experiences have such contents is that they have robustly nonconceptual contents, then fineness of grain certainly supports the robustly nonconceptual thesis.

To suppose otherwise, indeed to suppose more strongly that there is actually a conflict between the proposal I am making about the content of visual experience and the above claim of fineness of grain on the grounds that robustly nonconceptual content is coarse-grained, is to confuse different notions of grain. To say that the content of an experience of a shade of color is coarse-grained (in the sense relevant to the thesis of robustly nonconceptual content) is to say something about how its individuation conditions are fixed by sets of possible worlds or by arrangements of properties and relations in possible states of affairs. It is not to say anything about the kinds of properties (or relations) represented. Patently, experiences having contents with such coarse-grained individuation

conditions can nonetheless differ by virtue of representing different, minimal shades of color.

So, richness is not something that the advocate of nonconceptual content can appeal to on behalf of her view (at least in any direct way); but fineness of grain is—provided that it really is the case that our visual experiences represent the world with a determinacy of detail that is not capturable conceptually in the experiences. This is the focus of the next section.

V REPLIES BY THE CONCEPTUALIST

Some philosophers claim that the determinacy of detail in visual experience *can* be captured by concepts at play in the experiences. They thus reject the thesis of fineness of grain, as presented above. The onus is upon such philosophers to spell out how the determinacy of detail in visual experience is represented conceptually.

What is needed, according to the first view I shall consider, is simply the acknowledgment, in the case of color experience, that some of our color concepts pick out minimal shades of color. This is one view adopted by McDowell in *Mind and World*.¹³ He comments: “What is in play here is a recognitional capacity, possibly quite short-lived” (1998: 57). McDowell’s thought, elucidated more clearly in a subsequent symposium on *Mind and World*,¹⁴ is that there is a recognitional capacity that persists for a little while *after* an experience of the shade recognized and thus a recognitional concept is exercised. More specifically, according to McDowell, the conceptual content

This is colored (with) *S*

is in the content of the experience, where *S* is a general recognitional concept of a fine-sliced shade.

This is not convincing. Human memory is limited. We abstract away from details to avoid information overload. We have recognitional concepts such as *red*, *green*, *blue*, and more specific ones such as *scarlet*, and *bright scarlet*. But we do not have recognitional concepts for minimal shades. The recognitional capacities to which McDowell adverts simply do not exist. The ordinary person cannot recognize red₂₇, even after having just seen it. People who are shown a patch of color and then very shortly afterwards are asked whether a second patch has the same shade of color or a minimally different one do not do well at the task.¹⁵ Of course, if the original patch is re-presented *before* the original

¹³ I say one view here, since there seem to be two different views on offer in *Mind and World*, the second of which will occupy us shortly.

¹⁴ In *Philosophy and Phenomenological Research* (1998).

¹⁵ See here Hurvich (1981); Halsey and Chapanis (1951); and Raffman (1996).

experience is over—and that will not be until roughly one-third of a second or so after the original patches are removed, given Sperling's data—then the match will be made successfully. But this does not show a recognitional capacity. For that requires the capacity to recognize the given hue when it comes again *after* the initial experience ends.¹⁶

A second reply the conceptualist might make to the alleged fineness of grain in visual experience is to allow that the subject of an experience of a minimal shade lacks a general recognitional concept of that shade, but to insist that it does not follow that the experience has a nonconceptual content, since the subject can conceptualize the given shade in the experience via a general, fine-grained perceptual concept that the subject is hard-wired to exercise in the given situation.

Such a "concept" is one that never enters memory. The subject possesses the concept, on one natural way of understanding the above proposal, by having a hard-wired disposition to exercise the concept in certain circumstances. This, however, seems very implausible. In general, the disposition to exercise a concept in certain circumstances does not confer the ability to exercise the concept in one's thoughts. For example, Frank Jackson's Mary, while in her black-and-white room, does not possess *phenomenal* concepts of a sort the rest of us exercise in our introspective awareness of experiences of the various hues, since she does not know what it is like to experience the hues. And, not knowing this, she does not have any understanding of the relevant phenomenal concepts. So, she is not capable of thinking thoughts into which such phenomenal concepts enter. But Mary in her room *does* have the disposition to exercise those concepts in classifications she makes of how objects appear to her if and when she sees objects with the various hues.

One way to try to handle this difficulty is to insist that the relevant, general, fine-grained concepts are possessed only at the times of their exercise. They are automatically manufactured on the spot, as the subject undergoes the experiences; the concepts are then lost as soon as the experiences are over. The obvious trouble with this view is that if such concepts occur in the subject's experiences then they must be concepts the subject possesses and hence concepts that the subject is capable of exercising in thought. But if these concepts can occur in the subject's thoughts as well as in her experiences, and they really are general concepts, then the subject should be able to think thoughts that use the concepts even when the experiences are not present; and this conflicts with the hypothesis that the relevant concepts are lost once the experiences end.

Here is another problem. Suppose that I am viewing a colored patch and that my visual experience conceptually represents this patch as red₂₅. Suppose further that my experience is not fleeting: I am staring at the patch for a considerable

¹⁶ Another objection is that there cannot be recognition for a *first-time* experience of a property; but that experience still has a specific representational content: the world still appears a certain way to the subject of the experience (Peacocke 2001).

length of time. While my experience lasts, can I think to myself a thought which exercises this concept, for example, the thought that I am seeing something with shade red₂₅? It seems to me that the only thoughts I can form at such a time about red₂₅ have a demonstrative content. I can mentally “point” at the shade I am experiencing. I can think of it as that shade or that shade of red or perhaps just that. But, if my thoughts here *seem* to me to have a demonstrative content, then, given that I have privileged access to the contents of my thoughts (that I can know via introspection alone what I am thinking),¹⁷ they do have such content. It seems, then, that I cannot think the thought that I am seeing red₂₅, from which it follows that I do not possess the general concept red₂₅. And, if I do not possess this concept, then I cannot exercise it in *my* visual experience.

This brings me to the third reply that the conceptualist might make, namely, to suggest that the concept for a shade employed by visual experience is indeed demonstrative. The obvious immediate question for this reply is: what form does the demonstrative concept in the experience take? McDowell (1994) appeals to the demonstrative *that shade*. To experience a particular shade, red₂₇, say, is to have an experience of something as being of that shade, where the latter is to be understood as involving the application of the concept *that shade* to red₂₇. On this view, seeing a shade is the same as or at least to be modeled on seeing something *as* having that shade.

The difference, then, between seeing red₂₇ and red₂₈ is the difference between applying the concept *that shade* to red₂₇ and applying it to red₂₈. The concept *that shade*, in the context of the one experience, refers to red₂₇; the concept *that shade*, in the context of the other experience, refers to red₂₈. The two experiences thereby have different correctness conditions and thus different contents.

This is problematic, as has been noted by several philosophers (but most forcefully by Peacocke 1998, 2001). First, which concept exactly is exercised in the experience of a particular shade of red? The concept McDowell appeals to is the concept *that shade*. But why not *that shade of red*? Or *that color*? Or *that red*? There seems no non-arbitrary way of deciding between these candidates—they all seem equally eligible—and thus no fact of the matter as to which one is applied in the experience. It appears, then, that the problem of differences of grain between conceptual resources and experience of shades is genuine but opposite to that envisaged by Evans. For now we have too many available concepts for each shade rather than too many shade experiences for each available concept.

Second, McDowell’s proposal appeals to a demonstrative concept that uses a general sortal, *shade*. The latter is a recognitional concept. The idea that in order to undergo an experience of a particular shade of red, something a very small child can do, from a very early age, one must possess the concept *shade*, is absurd.

¹⁷ Assuming my faculty of introspection is working properly. For more on privileged access, see McLaughlin and Tye (1998).

To possess the concept *shade*, one must possess a cognitive grasp of the difference between a shade and a color that is not a shade, classifying red₂₇ as a shade, for example, and red as not. It seems to me quite likely that some high schoolers do not grasp the concept *shade*!

One way to handle these problems is to appeal to a pure demonstrative *that*. In connection with this possibility, Peacocke comments:

Someone could be introduced to the general concept timbre, applicable to sounds, by his first having an experience leading him to judge, "That's beautiful", referring specifically to the timbre of, say, a clarinet. It may be that our listener only later applies the concept timbre to the instance he had already perceived and thought about. ("That sound" could be too unspecific to capture what he experienced as beautiful.) (2001: 246)

But what is the referent of the demonstrative in the color case? The obvious answer is: the particular shade. *Which* shade? Suppose I am viewing a color patch with the shade red₁₈. Pointing at the patch and the shade, on the basis of my experience, I say, "That has that shade." Should we suppose that the concept *that*, exercised in the experience with respect to a shade, refers via a sample of the shade, namely, the shade of the patch the subject is viewing? Then, on the sample view, both my remark and my experience are accurate. However, if I am *mis*-perceiving the patch and experiencing it as having a shade different from the one it actually has, then my experience will not represent the patch as having *that*, understood as the actual shade of the patch, at all. So, the content of my experience cannot be demonstrative.

The conceptualist might respond that, whatever may be the case for the demonstrative *expression*, "that shade," the demonstrative concept exercised in the *experience* is a concept of the shade the given surface *appears* to have. But, now, in the case of misperception, there is no sample of the color in the world. So, how is the referent of the concept fixed? The obvious reply is that it is fixed by the content of the subject's experience: the concept refers to the shade the given experience represents the surface as having. However, this reply is not available to the conceptualist about the content of visual experience; for the content of the demonstrative concept is supposed to be *part* of the content of the experience and so the concept cannot have its referent fixed by that content (Heck 2000: 496).¹⁸

There is a further problem. Consider the case of shape. Suppose you and I are both viewing the same shape. The concept *that*, in this case, refers to the shape. But suppose you experience it as a square and I experience it as a regular diamond, so that there is a difference in how things appear, in the contents of our experiences. That difference hasn't been captured by appeal to the demonstrative

¹⁸ One nonconceptualist, Chris Peacocke, does not notice this problem. As a result, in a recent essay he comments, "Since these unsupplemented perceptual-demonstratives exist, and can pick out fine-grained properties, the anti-conceptualist should not try to rest his case on fineness of grain" (1998: 610). This concession seems to me too hasty.

here. Peacocke says:

We will not do justice to the . . . phenomenology of experience if we restrict ourselves to those contents which can be built up by referring to the properties and relations which the perceived objects are represented by the experiences as possessing. We must, in describing the fine-grained phenomenology, make use of the notion of the *way* in which some property or relation is given in the experience. (2001: 240)

He continues:

The same shape can be perceived in two different ways, and the same holds for shape properties, if we regard them as within the representational content of experience. Mach's example of one and the same shape that can be perceived either as a square or as a regular diamond is a familiar example . . . an object can be perceived either as a square, or as a diamond, in either of the standard orientations relative to the perceiver. (2001: 241)

Now Peacocke himself is a nonconceptualist about the content of experience. But his comments above suggest another possible reply the *conceptualist* might make to the problem of accounting for the determinacy of detail in our visual experiences, namely, that each such detail is represented via the exercise of a demonstrative concept *that way*, which refers to a way a property is presented—in the case of shape experience, to the way a shape is presented.

However, suppose the case is one of misperception so that the presented shape isn't actually the given way. Then the concept *that way* exercised in the experience picks out the way the shape appears in the experience—that is, the way the shape is represented in the experience. So, the referent of the concept *that way* is fixed by (part of) the content of the subject's experience. But the content of the demonstrative concept is supposed to be *part* of the content of the experience, and thus again the concept cannot have its referent fixed by that content.

Furthermore, does it really make clear sense to talk of the way a shape is presented in experience or the way a color is presented (as Peacocke does)? If it does not, then the claim that the demonstrative concept *that way* picks out such a way is not properly intelligible. We may happily allow, of course, that if something looks red, say, it looks a certain way, namely, red. But the way here is the way the *thing* looks. Redness, the property, is not experienced as being given in a certain way (other than as belonging to the thing).¹⁹ Similarly, I would say,

¹⁹ It might be held that where there is an inverted spectrum, red is given in experience something other than the normal way. However, I deny this. To one who has an inverted spectrum, red things do not appear red. They appear green. So, red itself is not given in experience to the invert in any way. Red things are so given. They are given as green. Of course, this commits me to holding that color inversions are a form of misperception, but this seems to me the correct view (both for the standard inverted spectrum case and for the more recherche versions). For more here, see my 2000: chs 4 and 5. There is another possible account of color inversions worth mentioning, namely, that red things are experienced as red by the invert, but they are also experienced as having another surface quality which makes the redness of those things manifest, and this quality is different from the one that makes redness manifest for normals. On this view, there is no misperception with

for the case of shape. The shape, squareness, viewed as a universal, is not presented in experience in any particular way. Individual squares are so presented.²⁰

Of course, each such square—each particular—is, in one sense, a colored shape. But it is only relative to this use of “shape” that it is uncontroversial that shapes can be presented in different ways in experience. Thus, viewing a figure, I can experience its shape as a regular diamond, say, as Peacocke asserts, and not as a square only insofar as *the figure* is presented to me in experience as regular diamond-shaped (and not as square). The figure, in looking regular diamond-shaped, to me looks a certain way. This way is not a way a shape property looks.

Peacocke’s own position, as noted above, is nonconceptualist. He thus must face the awkward questions I raised earlier for any nonconceptualist who takes the content of experience to individuate in a fine-grained way, namely: if experiences are nonconceptual states, then how can they have fine-grained individuation conditions? Further, how can the contents of such experiences be fine-grained and yet fail to be conceptual? Peacocke, of course, believes that the fine-grained view of nonconceptual content is necessitated by a proper account of examples like the one from Mach of squares and diamonds. Peacocke is mistaken, however, as I shall try to show in the final section.²¹

VI SQUARES AND DIAMONDS

According to Peacocke, the property of being a square is the same as the property of being a regular diamond.²² Thus, the robustly nonconceptual content that *X* is square is the same as the robustly nonconceptual content that *X* is a regular diamond. However, there is a difference between how *X* looks, when *X* looks square, and how *X* looks, when *X* looks regular diamond-shaped (or vice versa). This phenomenological difference, Peacocke believes, is one that cannot be accounted for by appeal to robustly nonconceptual content.

respect to the color of red things. But, equally, there is no need to countenance ways, considered as entities distinct from properties and relations; for the qualities now grounding color inversions are qualities of things.

²⁰ In general, in my view, it is a mistake to model our awareness of qualities on our awareness of particulars. When we see particulars, they look various ways to us but the qualities of which we are conscious in seeing these particulars do not look any way. Our awareness of the relevant qualities is direct. It involves no mode of presentation. To suppose otherwise is to take the first step down the slippery path that leads to the thesis of revelation. And the thesis of revelation is a philosophical thesis (not a thesis of common sense) and one that (by my lights) generates a world view that is clearly unacceptable.

²¹ Again, I want to stress that the above discussion of demonstratives does *not* undercut the view that the fineness of grain in visual experience can be represented conceptually in *demonstrative judgments or thoughts* made on the basis of experience. What I have argued is that the *visual experiences themselves* do not represent details *via* demonstrative concepts.

²² This claim is very plausible and I shall not challenge it in what follows. (I have contested it elsewhere (Tye 2003: 173–4), but I now prefer the response below.)

To see what is wrong with this argument, consider the following parallel argument. The way something looks, when it looks square, is different from the way it looks, when it feels square by touch. The same property—squareness—is represented in both cases. So, the robustly nonconceptual content of the experience of *X*'s looking square is the same as the robustly nonconceptual content of the experience of *X*'s feeling square by touch. So, the phenomenological difference between the way *X* looks and the way *X* feels by touch cannot be captured solely via appeal to robustly nonconceptual content.

The standard way of responding to the second argument is to note that when something looks square, many other properties are represented in addition to squareness—properties not represented when something feels square by touch. For example, the color of the object is represented, its distance away, its two-dimensional location relative to the eyes. In the haptic case, the shape is represented as belonging to a surface with which one is in bodily contact; the temperature of the surface is represented; there is a more detailed representation of the degree of solidity.

In similar fashion, I maintain that when something looks square, certain properties are represented that are not represented when the same thing looks regular diamond-shaped (or vice versa). This can be brought out as follows. Consider first the case in Figure 6 of two different figures, one of which looks square and the other of which looks regular diamond-shaped: Here, it is obvious that there is a difference in the (viewer-relative) properties represented in the two cases. For example, *X* looks to be resting on a side; *Y* does not. *Y* looks to be standing or balanced on a point; *X* does not. *X* looks to have two vertical sides; *Y* does not. *X* looks to have two horizontal sides; *Y* does not. *Y* looks to have inclined sides; *X* does not.

Now consider Figure 7. In this example, the square, *X*, inside the rectangle on the left, can look square. When it does so, it looks different from the figure, *Y*, on the right. Here, again, there is a difference in (viewer-relative) properties represented. When *X* looks square, *X* looks to have an inclined base; *Y* does not. In such circumstances, *X* looks tilted; *Y* does not. *Y* looks upright; *X* does not.

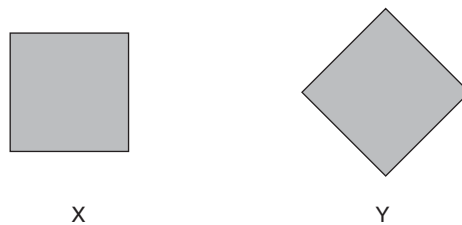


Fig. 6. Example 1: difference in (viewer-relative) properties represented.

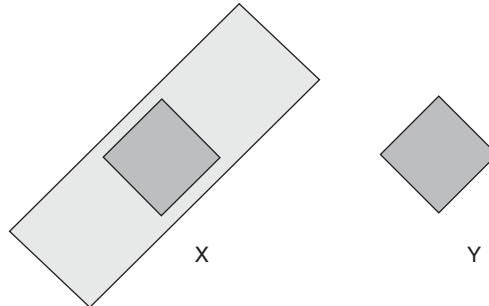


Fig. 7. Example 2: difference in (viewer-relative) properties represented.

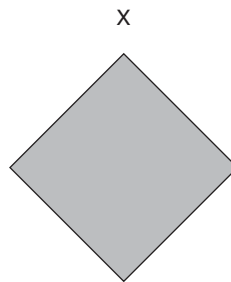


Fig. 8. Example 3: difference in (viewer-relative) properties represented.

In the third example, shown in Figure 8, we have a single figure, X , that can look either square or regular diamond-shaped. If X looks square, X looks to have an inclined base. X then looks tilted. If X looks diamond-shaped, X looks upright. So, when X looks square, X is represented as having the property of being tilted; this property is not represented as belonging to X when X looks diamond-shaped.

Note that when something looks tilted, it can look tilted at a variety of orientations (see Figure 9); but in each such case, the figure is represented as having the property of being tilted.

Chris Peacocke (1998) has objected to this proposal on two grounds. First, figures such as X in example 3 (Figure 8) can sometimes look square without looking tilted, as when one sees an appropriate pattern of floor tiles. Second, the appeal to tilt as a ground of the phenomenal difference between looking square and looking regular diamond-shaped ignores the role symmetry is agreed to play by psychologists in such experiences.

Consider the second point first. For a symmetrical figure such as a square, tilt goes with a certain sort of symmetry, namely symmetry about an axis bisecting two opposite sides. If the figure, X , looks tilted to the left (left), it looks

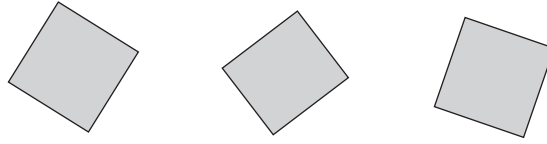


Fig. 9. A tilted figure: various orientations.

symmetrical about an axis inclined 45 degrees to the right (left). It is precisely because there is such an inclined axis of symmetry that *X* looks tilted in the relevant direction. If *X* looks upright, as it does if it looks regular diamond-shaped, it looks symmetrical about a vertical axis of symmetry, one that bisects two opposite angles. In looking tilted, *X* does not thereby look upright, since the visual experience tracks the first symmetry and not the second. Of course, *X* actually has both symmetries, but the property of being symmetrical about an axis bisecting opposite sides is not necessarily co-instantiated with the property of being symmetrical about an axis bisecting opposite angles. In the case of a vase figure, for example, the figure is symmetrical about an axis that bisects the top and bottom sides of the vase but it is not symmetrical about an axis that bisects two opposite angles.

In the case of the pattern of floor tiles, it seems to me that their looking square, say, at least requires that they look to have a certain symmetry, as Peacocke himself would grant, and the relevant symmetry is about an axis the direction of which (relative to the perceiver) intuitively is represented in the experience. But, if this is so, then (on the nonconceptualist view), contra Peacocke, the square will automatically look tilted in a certain direction relative to the perceiver.²³ The conclusion I draw is that the familiar example of squares and diamonds provides no good reason to move away from the view that the nonconceptual content of visual experience is robust.²⁴

²³ It is also worth stressing that the coarse-grained account I am proposing of the nonconceptual content of experience can account for the rational transition from something's looking square to the judgment that it is square (given the right circumstances), since the thing in question will then look to have certain properties it will not look to have in the case it looks regular diamond-shaped. The nonconceptual representation of these properties in the former experience justifies the transition (via a reliable process) to the judgment that a square is present rather than to the judgment concerning a diamond shape.

²⁴ Alex Byrne has suggested to me that although the case of squares and diamonds can be handled in the way I propose, there is another similar case which creates difficulty, namely, that in which I experience nine dots first as making up three rows of three and second as making up three columns of three. Here there is a clear phenomenal difference in how the dots look but not one, according to Byrne, that can be handled in terms of a difference in robust nonconceptual content, since the property of making up three rows of three dots is necessarily co-instantiated with the property of making up three columns of three dots. (Of course, this presents a problem for the view that experiences have structured, robustly nonconceptual contents only on the assumption that necessarily co-instantiated properties are identical.)

My reply unsurprisingly is that there are other represented properties in terms of which the difference in content can be drawn. For example, when the dot pattern looks made up of three rows

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of three dots, it looks divided into three rows. It does not look this way when it looks made up of three columns of three dots. Then it looks divided into three columns. Patently, the property of dividing into three rows is not identical with the property of dividing into three columns (some dot patterns with three rows divide into four columns). Further, in the dot pattern of three rows of three, the bottom three dots appear to compose a row (as do the three dots immediately above them and the three dots immediately above those dots). They do not appear this way when the dot pattern looks made up of columns. Since the property of composing a row is possessed by dots elsewhere that are laid out in a row without there being any columns, it is not the case that the property of composing a row can be redescribed in column terms such that the property, so described, is represented when the dot pattern of nine is experienced as dividing into three columns.

There is a further case mentioned by David Chalmers in this volume which also deserves a quick response. Chalmers asks us to imagine an "El Greco" world in which everything is stretched ten times in one direction but in which structure and dynamics are otherwise the same. In this world, Chalmers says, long, thin rectangles look phenomenally square even though the visual experiences they generate, being normally caused by long, thin rectangles, represent them as having a certain sort of rectangularity. This supposedly creates difficulty for any coarse-grained view of the content of experience. There is no real difficulty, however.

Ask someone in the El Greco world to trace out in space the shape of something that looks square to her. What will this person draw? A long, thin rectangle? I don't think so: kinesthetic feedback will tell her that cannot be right. A square? Again, I don't think so: that won't *look* right. Ask this person to feel out the shape of an object that looks square to her. How will it feel? Will all the sides feel to be the same length? Surely not. In general, touch corrects vision. The stick that looks bent in water no longer looks bent once its shape is felt by hand. So, it is unlikely that the thin rectangle will continue to look square. Why? Obvious answer: because the case is one of shape illusion (or normal misperception and in this respect like the Müller Lyer). Accordingly, long, thin rectangles are *not* represented in visual experience in the El Greco world as thin rectangles. They are represented as square.

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