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Is Visual Experience Rich Or Poor?

I

Is our ordinary visual experience of our surroundings rich and detailed, or is it, contrary to appearance, surprisingly 'sparse' and 'gappy'? A number of psychologists and philosophers advocate the latter, 'poverty' answer — provocatively put by saying that the visual world is an 'illusion' (Blackmore *et al*., 1995; Dennett, 1991; O'Regan, 1992; Rensink, 2000).[1] In support of this perspective, they appeal to experimental studies in which it is found that we are remarkably 'change blind'; that is, unaware of changes occurring right before our eyes. For under appropriate conditions — interruptions, intervening stimuli — rather big changes in the scene with which we are presented can pass entirely unnoticed by us. From our failure to detect these changes it is inferred that our experience of the scenes is dramatically poorer in content than (in some sense) it seems. Studies of so-called 'inattentional blindness' present related results (Mack & Rock, 1998). For example, when subjects focus their attention on some task involving a figure (such as a cross) on a screen presented in their visual fields, they often fail to report the appearance of an unattended stimulus (e.g., a small square) flashed elsewhere on the screen. From such findings it is concluded that our experience extends no further than our focus of attention.

But does psychology really call for some radical revision in our appraisal of experiential wealth? This is controversial. For example, some oppose the 'poverty theorists' by arguing that the change and inattentional blindness research does not banish experiential richness, it just teaches us to locate this rather differently than would traditional approaches to explaining vision (Noë *et al*., 2000; Noë, 2002). They agree that experimental studies suggest that no *detailed internal representation* lies at the terminus of a visual process, but reject the notion that this implies we do not visually experience a detailed world. They conclude that what makes for the wealth of visual experience is not the intricate detail of an internal model, but rather the fact that we act and can act in many specifically visual ways, subtly responsive to our environment. The lesson they draw then, is

[1] The basic idea has been forcefully expressed by Kevin O'Regan: '. . .[W]e have the subjective impression of great richness and 'presence' of the visual world: But this richness and presence are actually an illusion. . . ' (1992, p. 484).

Journal of Consciousness Studies, **9**, No. 5–6, 2002, pp. 131–40

that the richness of visual detail is not to be found *represented in our heads* — but *out in the world*.

Evidently a lot is at stake here. One interpretation of the evidence purports to massively discredit the kind of first-person awareness we readily take ourselves to have of our experience. An alternative view leads to a radical questioning of the premises that have often guided projects for vision science. But while the stakes appear high, the debate sometimes suffers from a lack of clarity regarding the central claims at issue. Just what does it mean to say that we have a 'subjective impression' of great 'richness' in the 'visual world'?

I will argue that, once certain crucial distinctions are acknowledged, and the issues interpreted in their light, we will have reason to reject 'grand illusion' interpretations of change and inattentional blindness research. Further, as a result of this critique, we are led to question the assumption sometimes made that our visual *experiences* are only as *rich* as our internal visual *representations* (i.e., descriptions or images formed in our heads) are *detailed*. My conclusions thus provide additional support for some important aspects of the Noë–Pessoa–Thompson perspective mentioned earlier.

II

In my view, we need to start by acknowledging distinctions among:

1. Differences in how some area *looks* to someone — how he or she *visually experiences* it, or how it *visually appears*;
2. Differences in how someone *believe*s this area looks to him or her, on the basis of first-person reflection;[2] and
3. Differences in what visible spatial characteristics *actually belong* to entities in this area.

[2] I will take it that the 'subjective impression' whose accuracy is here in question must be some sort of *belief* that we hold or *judgment* we make about visual appearances — about how things look to us. The impression at issue cannot be *visual appearance* itself: If *that* were grandly illusory the world itself would have to be substantially poorer in spatial detail than it appears to us — and clearly that is not what is being alleged. (For similar reasons, the illusion cannot consist in our holding a lot of false beliefs about the spatial environment.) And since I do not think that our experiences themselves appear to us some way — as distinct from our believing or judging them to be some way — there seems nowhere left to search for the alleged illusion but in our beliefs or judgment about how it visually appears to us.

Further, I assume not just *any* beliefs about one's experience are at issue, but specifically the 'subjective' ones; those suggested to us by the 'experience of seeing'. I can see no way to make out what this amounts to, other than to say they are those formed *on the basis of first-person reflection*. What do I mean by this? I assume that we take ourselves to have a warrant for first-person judgments about experience that differs in kind from that had for judgments about other people's experience: you think you sometimes know how things look, feel and (generally) appear to you in a way that no one else does. And where we take ourselves to have this first-person sort of warrant, or know in this first-person way, we do not think this requires us to justify the claims in question by inferring their truth from others. Where one takes one's first-person judgments about experience in this way to have warrant, or express knowledge, which is in this sense non-inferential, and distinct in kind from that had in the third-person case through observation, I will say they are made 'on the basis of first-person reflection'. The grand illusion hypothesis then will say that what we *think* we know in this special way (or have a special first-person warrant for believing) regarding the richness of our visual experience is really not so at all.

These are, I assume, distinguishable from one another. Differences in how some region *looks* to you may be other than, fewer than, or greater than you *believe them* to be, and either of these may vary independently of differences in what occupies the area before you eyes. Thus we may distinguish: (1) differences in visual appearances of space; (2) differences in what we believe, on a first-person basis, those differences in visual appearance are; and (3) actual spatial differences and relationships. Once this is granted, two basic points are in order.

First, poverty theorists need to show that the actual sorts and number of differences in (1) — differences in the ways some area ordinarily looks to us — are much fewer or of fewer sorts than we are disposed to believe on the basis of first-person reflection. For if the differences in how our surroundings look to us are pretty much as various as first-person reflection takes them to be, then there is no false impression of richness, and no grand illusion. Thus, the argument for experiential poverty requires both an accurate characterization of what first-person reflection seems to tell us, and sound reasoning from the research data to claims about the true (impoverished) character of ordinary experience.

Second, to counter with the claim that experience is not poor, but rich, one needs to say more than that we experience or see a detailed environment. For that may mean no more than:

a. There are many spatial details — differences of type (3) — that characterize an *area that we see* (or an area *of* which we have visual experience).

And this is distinct from claiming:

b. There are many differences and many kinds of difference in *how that area looks* to us, or is experienced by us — differences of type (1).

Claim (a) says only that a certain region of space is rich in spatial differences (thus very spatially detailed), *and* that region is seen or visually experienced by us. Claim (b) says that such rich differentiation characterizes not only this area of space, but *also* our experience of it. The truth of (a) does not entail that of (b). For region R at t_1 may differ in its spatial characteristics from R at t_2, even though the way R *looks to x* at t_1 does *not* differ from the way R looks to x at t_2. The poverty theorists need not quarrel with (a). However, if they can show that (b) is rarely or never correct, though we believe quite otherwise, they will have gained their point.

Now we face the question of whether one can accurately characterize the 'subjective impression' of richness, so as to show its vulnerability before the experimental evidence. So, just what *do* we think on the basis of first-person reflection about how rich our experience ordinarily is? Some characterizations that have been offered: we have a 'subjective impression' or 'feeling' that we usually form 'in our brains' a 'uniformly detailed', 'complete' and 'coherent' 'picture' or 'representation' or 'image' of what is before our eyes.[3]

Noë *et al*. (2000, pp. 102–3) have argued, persuasively, I think, that such ways of portraying our subjective impression of visual richness are unacceptable. I

would add to their case as follows. To begin with, subjective or first-person reflection does not tell us we form *pictures in our brains* — detailed *or* sketchy. For that matter, it does not even tell us we *have brains*. However, quite apart from any study of vision science, such reflection does dispose us to say that detail is *not* equally visually apparent to us throughout the area before our eyes. First-person reflection tells us that we do not attend equally well to all of this, and that we need to look *at* something, to focus attention on it, to perceive much detail in it. Surely most people would regard this as obvious. But this conviction is evidently quite at odds with the notion that we possess a complete and uniformly detailed visual image of what is before us — the notion that, supposedly, we naively endorse on the basis of the subjective experience of seeing.

Now it is sometimes inferred that we must implicitly hold something like the 'detailed picture' view of vision, for otherwise there would be no explaining our surprise when confronted with the experimental demonstrations of how limited our ability to perceive change can be. But this inference is unwarranted. It is true that people are initially surprised by (many of) the change and inattentional blindness demonstrations. And it is also true that we expect to notice large scale changes that happen before our eyes. However, we need to keep in mind the following relevant facts. First, our expectation of being able to detect big changes is rather vague, in that it includes no very definite ideas about what qualifies as a 'big' change. And many who have this expectation would also admit that the claim that they will see big changes before their eyes stands in some need of qualification. For many would agree to this, when reminded of how the stage illusionist's successful sleight of hand depends on our oblivion to rather big changes that happens right in front of us.[4] Finally, our rather vague expectation of being able to detect large changes is *ordinarily correct* — and the studies do not show otherwise.

So, prior to awareness of the change and inattentional blindness studies, we do not know that our capacity to notice change is restricted in the kinds of situations they involve; ordinary experience does not teach us under just what conditions we become oblivious to change through the interruption and direction of attention. And yet we do have the vague expectation of being able to notice big changes. *As a result, we have some tendency to think we can notice more than it turns out we can*. Where one has an expectation of being able to perform a certain

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[3] Blackmore and her colleagues write, for example, 'We believe that we see a complete dynamic picture of a stable, uniformly detailed, and colourful world…' and they refer to '[t]he illusion that we are simultaneously aware of every aspect of the view in front of us' (Blackmore *et al*., 1995, p.1075). And Rensink (2000) asks: 'Why do we feel that somewhere in our brain is a complete coherent representation of the entire scene?'
O'Regan does not assume we think we form 'complete' or 'uniformly detailed' brain pictures, though he does indicate that our subjective beliefs about the richness of experience are to be expressed in terms of the richness of an internal representation: '…[H]umans' internal representation of the visual field is much sparser than the subjective experience of "seeing" suggests' (1999, p. 34). Dennett contrasts the 'apparent continuity' of consciousness with what he considers its actual 'gappiness' (1991, p. 356) and thinks of the apparent richness of conscious experience as an illusion that involves its seeming to us as if we represent in our minds the intricate details of the scene before us (*Ibid*, p. 408).

[4] A point emphasized by Noë *et al*. (2000, p. 103).

task in a very wide (but ill-defined) range of situations, and one is ill-equipped by experience to anticipate the circumstances in which one's competence fails, it is likely that one will overestimate its reach. That is why we are initially surprised and impressed by change and inattentional blindness demonstrations. We need not attribute to ourselves some belief in a complete and uniformly detailed brain picture to explain this.

Of course, some people may start talking about pictures in their heads if asked to speculate about what happens in them to constitute visual experience. Perhaps to modern people like us that will seem a plausible first stab to take at a theory of vision, since our mentality has been so shaped by the Western tradition of pictorial realism and the omnipresence of photographic images in our lives. And some may naively assent to this 'detailed brain picture' notion because they confuse this with the idea that visual appearances are richly varied. However, as we have seen, if change and inattentional blindness studies refute the idea that we form a complete and detailed visual image or brain picture, in this they support the verdict of first-person reflection, they do not overturn it.

III

So, once more: just what is the illusory subjective impression here? Another way to try to confront our first-person belief in an abundance of experience with the reality of its poverty appeals to the concept of *attention*. We normally believe, on the basis of first-person reflection, that we visually experience *more* than we attend to during a given time. But, it is claimed, research shows that this is false. We have absolutely no visual experience of such areas. They look no way to us at all, for we experience nothing in a given time but what we are then attending to. (This way of contrasting visual phenomenology with the outcome of vision science (to the former's detriment) can be found in Churchland *et al*., 1994; Mack & Rock, 1998; O'Regan *et al*., 1999; and Rensink, 1997.)[5]

This time we do seem to have a fair statement of the deliverances of first-person reflection. For if I consider what I am disposed to say about my experience, relying on the kind of warrant available to first-person judgment without appeal to observation and theory, I find something like this. Though I am not, at a given time, directing my attention to part of the area before me, often it still looks some way to me, and it looks some way to me before I turn my attention to it. Further, the way it looks is not entirely uniform. There is variation — spatial variation — visually apparent in that area. And it is not just *some sort of spatial*

[5] Rensink writes '. . . [T]he visual perception of change in a scene occurs only when focussed attention is given to the part being changed', 1997, p.368) According to Patricia Churchland *et al*. (1994, pp. 26–7): 'Although unattended objects may be represented in some minimal fashion (sufficient to guide attention shifts and eye movements, for example), they are not literally seen in the sense of being "visually experienced".' Mack & Rock (1998, p. 227) conclude '. . . [t]here is no conscious perception at all in the absence of attention. . . '. And O'Regan *et al*. (1999, p. 34) ask: 'If only attended parts of the environment are represented in the brain, how can we have the impression of such richness and completeness in the visual world outside us?' Clearly he regards the antecedent as true, the problem being how to account for the illusory impression of the consequent.

variation or other. At different times (as I move my eyes or body, as things before me move) the way the unattended background looks varies.

But is *this* 'subjective impression' refuted by experimental results? Perhaps we should say that, in the right circumstances, lack of attention (and change blindness interruptions) keep us from *remembering* our experiences well enough to judge that they are different. Nevertheless, varying experiences of unattended stimuli do occur. So perhaps there is *change* blindness without *inattentional* blindness. The issues raised by this challenge are not trivial, but for present purposes they can be waived — I now want to focus on something else.

Let us grant that in a case of change blindness (where the railing of a fence is raised higher without subjects noticing the change), one's experience of the position of the railing in the first picture does not differ from one's experience of the railing in the second: the position of the fence's railing looks no different. And let us grant that in a case of inattentional blindness, one's experience of the region in which the square is flashed is the same regardless of whether the square is flashed: that area looks no different to the subject in the two cases. Still, it is another thing entirely to say that one has no visual experience of those *areas* in which the changed elements (e.g., the railing), or the flashed figures (e.g., the squares) occur. For that stronger conclusion, one must show more than that there are *some* changes in those areas which occur without our being able to detect them. For, as noted earlier, it is compatible with one's having visual experience of a given area during a certain period that real objective changes occur there, though the way the area *looks* to one does not change.

Now, it *would* furnish a reason to doubt subjects' claims to have visual experience of some unattended or (at least partially) change-blind area if it were found that *no* changes that could be made to that portion of the scene were visually detectable by them. However, that is neither found nor alleged by vision researchers. So it seems that the research fails to support the conclusion that we have no experience of those areas of the visual field on which we are not training our attention.

In response to this objection, one might say that those areas in which changes *are* visually noticeable are never really 'unattended'. We devote at least *some* attention to them, so still there is no visual experience of the (completely) unattended. But, then, just what has become of the supposedly counterintuitive thesis? We are now dealing not with the bare claim that only the attended is experienced but with the more qualified view that *some* attention has to be given to an area presented to subjects if it is to visually appear to them. And the dramatic conflict alleged between the experimental data and 'subjective impressions' slips away. Consider: I believe that, when I hold up my hand eighteen inches or so before my face and focus my attention on the lines in my palm, following them with my gaze, still, not only the hand as a whole, but the area beyond my hand looks some way to me. And I experience enough of the scene beyond what I am most attentively examining at the time to redirect my visual attention as need be and notice at least some kind of change that occurs outside my palm. Does this conflict with the claim that the unattended is not experienced?

Apparently not, because I can simply say that at least some *low-level* of visual attention is given to the world beyond my palm — enough to make it the case that it also appears some way to me. So harmony between first-person reflection and experimental studies is found easily enough. Once more we seem hard pressed to get a strong contrast between the actual differences in visual appearance and those merely subjectively believed to occur.

IV

I will consider one final strategy to set our subjective impression of seeing at odds with psychological reality. Regarding the less attended but still (we believe) visually apparent regions before us, we might ask, just what spatial details do we *think* we experience there? Answering this may give us some hope of identifying specific differences in spatial characteristics (shape, position, size, motion) that we subjectively think visually appear to us but which vision science will then show do not really appear to us after all. However, a key problem arises for this approach. We often do not know precisely *what* to say, through reliance on first-person reflection, to specify just what spatial relationships appear to us or how things look to us spatially in regions to which we are attending less. At least, I would say that I am largely helpless to describe just what shapes, positions, etc., are experienced by me there or how it looks to me as if things are situated in that part of my visual field. If I try to describe this very much by redirecting my attention, then that portion of the field is no longer 'relatively unattended', and so I am not even addressing the question at hand. Also, it seems that, whatever pronouncements I make in ordinary circumstances about how it looks as if things are in the less-attended area, these are often likely to be influenced by some *memory* of what I saw there when I attended more to it. Nevertheless, I am inclined to say that there is some fairly highly variable character to the way relatively unattended regions look to me. And I do not think there is just *some variation or other*. I think I can detect the variations and distinguish them in ways that allow me to direct my attention appropriately. However, when I try to *say* just what those specific differences are by describing the apparent shape, size and position of things in that area, I find I cannot do so without altering the character of the visual experience.

I would sum this up by saying that differences in the way things look to me outstrip my power to identify them relative to verbal reports of shapes, positions, etc., visually experienced. I find I cannot specify differences I believe obtain in how it looks to me by means of differentiating contents of sentences I might plug into the 'content clause' of some 'It looks to me as if . . .' locution. Notice further that it appears not to help if I try to specify the differences in experiential character relative to some *non-sentential* means of representation — like maps or pictures. For I will also be unable to identify the differences in how it looks to me by attributing to my visual experience the contents of varying pictures or maps of the area of which I have visual experience.

This suggests two observations, relevant to assessing the implications of change and inattentional blindness. First, we face a considerable obstacle to

using these experimental studies to debunk some 'subjective impression' of visual richness by demonstrating the actual poverty of experience. For again we have a hard time locating the beliefs that will make suitable targets for large-scale debunking. On examination, the 'grand illusion' eludes us.

The second point is this. Suppose *representational* content must be expressible by means of a sentence or image. Suppose further that if experiential differences are specifiable by attributing distinguishing representational contents, such attributions should be available to first-person reflection. Then, first-person reflection (or phenomenology, if you like) yields — not an illusory impression of representational riches — but rather, the idea that the real richness in visual experience is just not specifiable through the richness in detail of a spatial *representation*. That is to say: *the ways in which our environment looks to us are not fully specifiable relative to distinct representational contents*.

Here I seem to be pointing down the road Noë, Pessoa, and Thompson would have us follow — turning the grand illusion controversy into an occasion to challenge the representationalist picture of the visual process. But clearly, we would need to do more to establish the claim that the differences in the way things look to us are not, or not always, to be cashed out in representational (i.e., sentential or pictorial) terms. For one of the above assumptions leading to this conclusion may be fairly questioned — the assumption that if experiential differences are specifiable via representational content differences, they should be thus specifiable through first-person reflection. So we need to inquire whether psychological theory can find a way to fill the gap in representational specification that is left open by first-person reflection. This is not a question to be settled quickly and simply. However, we can get some idea of the nature of the challenge by considering an example that may heighten our awareness of the relevant subtleties.

We can, with first-person reflection, note the contrast between the experience of a figure on which visual attention is focussed and the experience of the relatively unattended background. There is a difference in the way the background looks and the way the more attended figure looks, which makes the one an experience of a *background* and the other an experience of a *focal* figure. Now consider the visual experience one has in redirecting one's attention to something in what had been the background — the experience of losing detail in the way the former focal figures looked as one gains detail in the way the former occupants of the background look. This is a visual experience of gaining (and simultaneously losing) detail but its character is different from that of other experiences that might be similarly described. Compare that case with the experience had in watching a film when a figure in the foreground goes out of focus while one in the background grows sharper. Consider also the experience had in watching a film in which the camera zooms in on a part of the scene to reveal greater detail.[6] Both of these visual experiences of detail simultaneously gained and lost are different in subjective character from that had in directing one's attention in a real setting.

[6] Merleau-Ponty (1962 [1945], p. 68) uses this cinematic example to make a related point.

But how do we identify the difference? In first-person reflection I can identify the experiential character of attention shift in a real setting, and distinguish it from the cinematic cases, only by thinking of it as the experience had in directing my attention in a certain way. ('*This* way', I say to myself as I direct my gaze.) However, perhaps this marks nothing but a limitation of first-person reflection. We need to think about how we might account for the experiential differences here in terms of distinguishing representational contents unavailable to first-person reflection.

It is difficult to see how this is to be done. One is tempted to suppose that the representational content that distinguishes the visual appearance of background from that of the focal figure must lie in some lower level of resolution in the visual representation of the background — some resolution that is heightened or sharpened when attention is shifted. But this seems to wrongly assimilate the experience of attention shift in a real setting to the first of my cinematic examples (where the out-of-focus background suddenly sharpens). Perhaps then we will say that when attention shifts, the extent of the area visually represented (the boundary of the 'visual field') expands or contracts. But then we will have difficulty preserving the experiential contrast between the real-setting visual attention shift and the second of the cinematic examples (the camera-zoom case).

These difficulties suggest that it may be wrong to think of vision as producing something like pictures in our brains (whether high or low resolution, whether detailed or sketchy). And they suggest that the character of visual experience cannot be identified independently of the motor activities involved in experience (e.g., the direction of the gaze). But these are delicate issues that require further thought. I introduce them only to show that it may not be so easy to maintain that our inability to distinguish visual appearances by attributing distinct representational contents to them merely reflects the limits of first-person reflection.

V

Let me close by presenting the challenge here more generally. There are differences, detectable on a first-person basis, in how it looks to us (differences in visual appearance), which, nevertheless we cannot on such a basis distinguish by means of attributing differentiating representational contents to our experiences. To the extent one can capture such experiential differences in first-person reflection, it is by reference to a kind of direction of one's gaze one can identify only in performance using demonstrative concepts. The question, then, is whether we can, by some other, non-phenomenological means, justify a representationalist specification of such differences in the way it looks to subjects. If not, then reflection on questions raised by change and inattentional blindness will have led us to preserve the subjective richness of visual spatial experience, but at the cost of abandoning the idea that this consists in the rich detail of a mental representation. If, on the other hand, theory does supply what first-person reflection cannot, and captures differences in phenomenal experience by attributions of differentiating representational contents, then, again, we will not have revealed our

subjective impression of visual wealth to be illusory but only given it an articulation otherwise unavailable to us.

I conclude that once we take care to formulate accurately what we believe, on a first-person basis, about the richness of our ordinary visual experience, efforts to expose this as erroneous on a grand scale collapse. We find the grand illusion hypothesis does not hold up. This saves us from hastily rejecting first-person reflection and needlessly underrating our experiential wealth, but it leads to another issue regarding the foundations of vision science as well. We come to examine more closely the idea that the richness of experience must find reflection in such content as sentences or images express. What change and inattentional blindness studies ultimately bring into question is not our subjective impression of seeing, but mental representation as traditionally conceived.

Acknowledgements

For helpful comments, suggestions and questions, many thanks to Angela Brandt, Barbara Held, Sean Kelly, Amie Thomasson, and audiences for versions of this paper, delivered at a meeting of the International Society for the Study of Phenomenology (Asilomar, California, June 2001), and at the Tucson Conference 2002 'Toward a Science of Consciousness'.

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