

Wilfrid Sellars, Perceptual Consciousness and Theories of Attention

Abstract

The problem of the richness of visual experience is that of finding principled grounds for claims about how much of the world a person actually sees at any given moment. It is argued that there are suggestive parallels between the two-component analysis of experience defended by Wilfrid Sellars, and certain recently advanced information processing accounts of visual perception. Sellars' later account of experience is examined in detail, and it is argued that there are good reasons in support of the claim that the sensory nonconceptual content of experience can vary independently of conceptual awareness. It is argued that the Sellarsian analysis is not undermined by recent work on change blindness and related phenomena; a model of visual experience developed by Ronald Rensink is shown to be in essential harmony with the framework provided by Sellars, and provides a satisfactory answer to the problem of the richness of visual experience.

1. Introduction.

How much does a person actually perceive at any given moment, in ordinary circumstances? Providing a satisfactory answer to this question is a fundamental problem in perception. The problem is especially acute when we consider the sense of sight.^[1] Normally, in looking at our surroundings, we tend to focus attention on a rather narrow selection of the objects in front of us. We become fully aware of only a little of all that is within our gaze. Yet at the same time we have a sense of being *conscious* of a wider field of view, a sense of an awareness of rich background detail involving items somehow present in experience, even when they are not the focus of attention. This is the problem of *the richness of visual experience*. This is a problem not only for philosophy, but also for cognitive psychology. The question is therefore, in what sense are we conscious of those objects that we do not properly attend to? This is the question I propose to explore in this paper, drawing upon both an important strand of the twentieth century philosophical tradition, and also current psychological theorising.

One response to the problem suggests that the impression of rich background detail results from what is termed 'a Grand Illusion'. On this view, advocated by philosophers such as Daniel Dennett, and psychologists such as Susan Blackmore, it is not in fact true that experience has this rich character; we are somehow under an illusion about its true nature. The supposed richness of visual experience is a product of mistaken belief: there is no background detail.^[2]

A second type of response, advocated by O'Regan and Noë, rejects Dennett's extreme position; they claim that the detail of the perceptual world is present in experience in the sense that we have access to it, an access involving practical knowledge – the possession of a range of sensorimotor skills – of how to bring its features into awareness.^[3] Nevertheless, O'Regan and Noë agree with Dennett on the point that my present visual consciousness does not consist in the concurrent representation of detail about the world around me. For O'Regan and Noë, the richness of experience is not actual, but potential.

A third response, one that agrees with the first two accounts in rejecting the idea of a separate sensory component in experience, accepts the position known as 'intentionalism': on this view, perceptual experience is taken to be a unitary representational episode, a particular way of representing how things are.^[4] According to intentionalism, the phenomenal character of experience is, as Michael Tye expresses it, 'one and the same as a certain sort of intentional content.'^[5] The intentional, or representational, content of experience, on this

alternative view, exhausts the character of experience.[6] There are different versions of intentionalism, but what matters for this paper is that they all oppose the idea that conscious perceptual experience involves a number of distinct components or stages that may vary independently from each other. McDowell expresses the basic point in this way:

‘...we must not suppose that receptivity makes an even notionally separable contribution to its co-operation with spontaneity.[7]

McDowell and Tye differ over the question of whether the representational content of experience is conceptual or nonconceptual; however, they do agree in claiming that there can be no difference in the phenomenal, or sensory character of experiences (the “receptivity”) that is not reflected in their representational contents. The richness of experience on this account is a feature of the representational content of experience, a content that may be indeterminate.

In this paper I argue for a fourth approach to the problem of the richness of visual experience. It differs from all of the above mentioned positions. A version of this approach has been vigorously defended in a number of papers by Ned Block; the form that I shall elaborate has its roots in the two-component analysis of experience defended by Wilfrid Sellars throughout his career.[8] Sellars’ analysis of perceptual experience appeals to two quite distinct kinds of component: *sensings*, or sensory structures, which are thoroughly non-intentional, guide the exercise of low-level (or “proto-”) *conceptual* structures directed onto the external world. On Sellars’ account, the phenomenological richness of our sensory representations is a real feature of experience, and is logically independent of any particular higher level classification and dispositions to act on the world.[9] There are important parallels between Sellars’ core ideas, and certain information processing models of vision advocated by theorists in the tradition of which David Marr was a prominent exponent. Such theories of visual perception can be seen as providing empirically based support for Sellars’ central insight, namely that experience involves two radically different kinds of element which are causally related. One important and potentially fruitful model has been developed recently by Ronald Rensink.[10] His model offers a multi-stage analysis of visual representation. Selected elements of an inner, low-level, map-like representational array are taken up through focussed attention, resulting in a higher-level representation of a unified physical object.

Rensink’s work is informed by experimental work on attention and perception in cognitive psychology; the resulting theory therefore has many detailed features that go considerably beyond any conception of experience derivable from purely a priori theorising. Rensink’s concerns are with the empirical validation of a theory of visual cognition; they are rather different from Sellars’ overall project of providing a unified metaphysical account, one that aims at providing a synoptic view on how consciousness and physical matter are related.[11] Nevertheless, the two positions complement each other, and there are suggestive parallels. Most importantly for my purposes, is the idea common to both accounts that visual experience involves the formation of a first stage – a low-level, map-like array, or a sensory manifold – to which, in a second stage, the subject responds selectively by the employment of higher level representations.

The central aim in this paper is to demonstrate that there are many good reasons for supporting the two-component view. In particular, the idea of an independent sensory component in experience makes sense of both the phenomenology of experience, and of the scientific findings about the underlying processes involved. This analysis of experience, defended on conceptual grounds by Sellars, and on the basis of experimental work by Rensink, offers a view that contrasts with that of the intentionalist.

I shall not try to argue here against the intentionalist account of experience directly. According to Block, the debate between the two-component view and intentionalism is one of the most central in philosophy of mind, perhaps even in the whole of philosophy.[12] The debate is complex, and cannot be decided in one paper alone. My aim is to show that the resonances

between Sellars' analysis and Rensink's information-processing model should make us consider the two-component view very seriously as a means of approaching issues in perception. Adopting the two-component view provides a useful vantage point from which to examine questions about the nature of conscious awareness. It suggests a solution to the problem of the richness of visual experience.

The argument of this paper runs as follows. I shall begin by arguing that there are good conceptual arguments in favour of the two-component analysis advocated by Sellars, especially as clarified in his later work: it should not be rejected on a priori grounds. I turn then to a consideration of the experimental work on attention considered by some critics to cause problems for the two-component view. I here concentrate in particular on showing that certain critical experiments on change and inattention blindness can in fact be accommodated in a very satisfactory manner by the two-component view of experience. They do not undermine the account: it should not be rejected on a posteriori grounds. Thus my overall conclusion is that the two-component view provides a plausible account of what conscious experience is like.

2. Background Assumptions.

The debate between the two-component view and alternative conceptions of experience is largely independent of epistemological questions about the reliability of perceptual knowledge, and of the dispute between direct and indirect realist accounts of perception. Taking up one or other of the positions is often a prelude to arguments over these issues, but is not in itself decisive. Similarly, it is arguable that the debate is independent of ontological questions about the status of phenomenal qualities; while some interpret these along dualist lines, others, like Sellars, see them as compatible with forms of physicalism.[13]

However, in order to get to grips with my main concern, about the extent of conscious perceptual experience, I need to clarify one key assumption I shall make. Through perception, we come into conscious contact with the physical world around us. We have experiences of that world. We can adopt different epistemic perspectives on experience. When we observe *someone else* seeing the objects in her environment, we can adopt an *external*, or *third-person* perspective on perception. Seeing has an objective character, in which a person's visual contact with the world is manifested principally in the way that, by seeing things, she is able to move around the environment and successfully engage with it. Seeing also has a subjective character: reflecting on my own case, I am aware that I see the world from a *first-person* perspective.[14] This viewpoint involves two striking phenomenological features: in normal seeing my attention has a "directedness", in virtue of which I am somehow aware of *other* objects, distinct from myself; and there is also the obvious fact that seeing involves vivid and richly detailed sensory (or phenomenal) experiences of the surrounding scene.[15]

The fact that we have these two perspectives, however, cuts no ontological ice. It is arguable that there is an explanatory gap between a description of the subjective awareness I have of sensory states such as what it is like to have an experience of the colour red, and the objective description of what is involved in neurophysiological terms when I receive physical input from an objectively red object. But, as Joseph Levine has argued, this does not necessarily mean that we cannot identify the subjective state with a type of brain state or functional state.[16] The conceptual gulf between the subjective and objective understanding shows little about the ontological status of the subjective states of mind. Independent considerations about the causal convergence of the roles of the states lend support to the view that they are very closely connected. In what follows I make no essential presuppositions about the ontological status of sensory, or phenomenal, qualities.

I shall assume also that veridical, illusory and hallucinatory experiences can be similar from a subjective, phenomenological standpoint. Where the differences between them do not affect

matters, I shall henceforth use the expression 'perceptual experience' to apply generally to experiences of these general kinds. We now need to examine in detail the reasons for claiming that a version of the two-component structural analysis is true of them.

3. Sellars' Subtraction Argument: Sensory and Conceptual Components of Experience.

Throughout his career, Sellars' writings on perception contain a line of thought that I shall label 'the Subtraction Argument'. In outline, the argument is simple, and has the following schematic form:

1. Perceptual episodes such as seeing something (or merely seeming to see something) when considered as a whole, belong to the framework of representational states, and have *propositional contents* that can be expressed in the form: 'S sees that there is an F in front of her.'
2. For any such perceptual episode there is a matching *pure* propositional episode – a thought or belief - that has the same content, but involves no phenomenal aspect: 'S thinks that there is an F in front of her.'
3. There is an essential difference between *seeing* (or merely *seeming to see*) something and *thinking* the same thing.
4. This difference is accounted for by analysing perceptual episodes as involving, in addition, what Sellars calls the 'descriptive content': a sensory, non-propositional component, that is, a sensory state (a *sense-impression* or "*sensing*"). This component Sellars construes as a state of the perceiver.

A succinct illustration of this argument occurs in "The Structure of Knowledge", where Sellars writes, '...there is all the difference in the world between *seeing* something to be a pink ice cube, and *merely* thinking something to be a pink ice cube.' He goes on to state, 'over and above its *propositional* character...[perceptual] thinking has an additional character by virtue of which it is a *seeing* as contrasted with a *mere thinking*.' [17]

Sellars' conclusion is, like Kant's, that an important distinction should be drawn within visual experience. Experiences contain two components. Firstly, there is a *sensory* or *phenomenal* aspect of consciousness, a "brute reality" – some sort of entity that is actual, even if not necessarily physical. Experience, it is claimed, involves some scene made manifest in a unique and vivid way. [18] As Valberg expresses the point, in experience, something is made *present* to the subject. [19] The sensory aspect that is available in consciousness underpins and guides the higher cognitive processes, and enables successful demonstrative reference to be made. This component Sellars calls, variously, a sense impression, or a *sensing*. I shall refer to it as 'the sensory state'.

Secondly, experience involves some employment of categories on the part of the subject, an intentional awareness of the kind of object to which the mind is directed. This intentional component involves, at a minimum, some sort of *classification*, the employment of *low-level concepts* (or proto-concepts). Such low-level concepts are to be understood, as Sellars spells out in his paper 'Mental Events', as inner episodes that contribute to guiding complex behaviour; their employment may not support inferential connections of a sophisticated kind that the subject is able to rationally assess, but they share some important features with fully fledged concepts. [20] In many respects Sellars' employment of the idea of such low-level concepts comes close to Peacocke's idea of "proto-propositional" content. [21] Underpinning this account is the following claim: for something – an animal, a human being – to constitute a representational system employing low-level concepts, the states of that system must be integrated in 'a form of perceiving – inferring – wanting – acting organism'. To ascribe a state with protopropositional content to the subject helps to explain its guided behaviour over time, in focussing upon an object, even if there are reasons for denying that such states are fully conceptual.

The subtraction argument turns on the fact that there is an essential difference between, on the one hand, mere conceptual activity, even of a low-level form, and on the other, the richer conscious activity involved in perception.[22] In what follows I shall therefore not be concerned with the distinction between low-level and fully fledged concepts, and for ease of exposition shall employ the term 'concept' to cover both forms.

4. *The Third-Person Version of the Subtraction Argument.*

I shall argue that the Subtraction Argument is fundamentally sound. But there are several aspects of the argument that need to be examined before we can embrace its conclusion. Care needs to be taken here over exactly what Sellars means, and also over what is, and what is not essential to the argument's conclusion. In particular we need to clarify the precise nature of the last two steps in the Subtraction Argument, and the specific reasons Sellars has for interpreting perceptual episodes as being very different from mere thinkings.

The central claim here is about the *fact* of a difference between ostensible seeings and mere thinkings, a difference that is independent of conceptual content. Although seeings and thinkings can share the same content, seeings must in some way involve a further component so as to account for this difference.

Sellars consistently argues that we do not discover this component by a direct inspection of our own mental states. This fits with his criticisms of the Myth of the Given. However, he does not always make entirely clear the grounds for the key claim that there is a difference between seeing and thinking, and how this supports the account he wishes to uphold about the nature of the extra component. In places in 'Empiricism and the Philosophy of Mind' he simply asserts that there is a nonconceptual descriptive residue to seeing, which is left over when we subtract both the propositional content (i.e. the conceptual aspects), and also the extent to which the propositional claims in seeing are, or are not, endorsed.[23]

When we carefully examine the exact reasons Sellars offers for asserting the difference, it transpires that Sellars appeals to two independent considerations in his various treatments of the Subtraction Argument. This is a point that is not always appreciated. I shall explore each version of the argument in turn.

A first version of the argument figures prominently in the earlier writings, especially in *Science and Metaphysics*. [24] According to this version, what motivates the introduction of sensory states is the existence of general *conceptual* differences between kinds of mental states. The concepts involved are available to third parties who, from an external perspective, witness the activity of another subject. The idea is that from this standpoint, we come to distinguish between certain representational states that occur in perception (that is, perceptual beliefs), and other kinds of representational state, such as pure belief. One such difference is that perceptual beliefs tend to arise in certain typical ways. Normally they occur in the presence of the objects they are about, and contribute in a direct way to actions, so that the subject is able to freely move around her environment. They tend also to be relatively independent of other beliefs. In order to explain the distinctive nature of perceptual beliefs, we should view them as connected with a further component, a distinct class of inner episodes that (in the normal case) causally mediate between them and physical input from the physical objects we see. These episodes are components of the overall experiences, and we can label them sense-impressions, or sensory states.[25]

But it has to be conceded that this argument for a sensory nonconceptual component is very thin. It is essential to Sellars' conclusion that sensory states are considered as conscious states – as he subsequently makes quite explicit in the third Carus Lecture, 'Is Consciousness Physical':

Consciousness is a many splendoured thing, but as used in the title it refers to sensory consciousness, the sort of consciousness we have in virtue of feeling a pain

or sensing a cube-of-ice-pinkly.[26]

However, the problem on the third person version of the subtraction argument is that sense-impressions, introduced in terms of their causal-explanatory role in the manner described, need not be understood as *conscious* states. Third person objective characterizations will not get us to a grasp of subjective sensory consciousness.[27] McDowell rightly criticises this version of the subtraction argument in his Woodbridge lectures.

He objects:

...it is not clear why we should suppose that our explanatory need can be met only by finding a sameness at the level of visual sensations – items in consciousness – between the members of such a trio [of veridical, illusory and hallucinatory experiences], as opposed to sameness at the level of, say, patterns of light impinging on retinas.

McDowell's conclusion is that nonconceptual sensations (that is, sensory states) 'look like idle wheels'.[28]

The fundamental problem for what I am distinguishing as the first version of Sellars' Subtraction Argument is that third person, objective considerations are not going to deliver any conclusions about the nature of subjective consciousness. This reasoning is of a piece with the reasoning for the existence of an "Explanatory Gap". There do not seem to be any straightforward entailments between descriptions of the physical and behavioural facts about a person, and descriptions of their conscious states. An objective description of what is going on in a person fails to capture the essential aspect of consciousness.[29]

5. Perceptual Experience and Phenomenology.

Nevertheless, there is more to the Sellars' argument for sense-impressions than we have so far uncovered. It is possible to reconstruct from Sellars' writings another, significantly different version of the Subtraction Argument. This second version is articulated more clearly in the later writings, but is already suggested in 'Empiricism and the Philosophy of Mind' when Sellars points out that the evidence for sense-impressions includes the fact that experiences are introspectible inner episodes: *lookings that* such and such is the case.[30] The second version of the Subtraction Argument appeals to subjective, phenomenological considerations, and as such is not open to such criticisms directed at the first version.

It is a familiar point that one central theme of 'Empiricism and the Philosophy of Mind' is the attack Sellars makes on what he characterises as 'The Myth of the Given'. It may therefore come as a surprise to some philosophers that Sellars should appeal in this way to subjective phenomenological considerations about the nature of experience. It will help to provide some chapter and verse.

In his "The Structure of Knowledge" paper, referring to the 'total experience' of seeing, Sellars claims:

Now I think it is clear that, phenomenologically speaking, there is such a non-propositional component.[31]

In the key later paper, 'Some Reflections on Perceptual Consciousness', he argues that phenomenology has an important role to play in the analysis of experience, whilst also acknowledging its limitations:

Sufficient to the occasion is an analysis of the sense in which we see of the pink ice cube its very pinkness. Here, I believe, sheer phenomenology or conceptual analysis takes us part of the way, but finally lets us down. How far does it take us? Only to the point of assuring us that *something, somehow* a cube of pink in physical space is present in the perception as other than as merely believed in.[32]

In the Carus Lectures, he is more emphatic:

The one thing we can say, with phenomenological assurance, is that whatever its “true” categorial status, the expanse of red involved in an ostensible seeing of the redness of an apple has *actual existence* as contrasted with the *intentional in-existence* of that which is believed in *as believed in*. [33]

Sellars admits at the start of the Carus Lectures that in his earlier writings on the Myth of the Given, ‘Some formulations were at the very least misleading, and, in general, the scope of the concept of the Given was ill-defined.’ Nevertheless, he claims that his afterthoughts ‘...invariably turned out to be variations on the original theme.’ [34] To reject the appeal to phenomenology as inconsistent with his earlier criticisms is to misunderstand the whole thrust of Sellars’ attack on the Given.

The Myth of the Given chiefly concerns a number of false conceptions about the *relation* between sensory nonconceptual experience and our beliefs about the things we are aware of. In its most basic form, the Myth involves the idea that when a subject has a sensory state of kind F, this *entails* that the subject thereby entertains the concept applicable to that kind F. [35] So at root, what Sellars opposes is the view that there is some kind of logical or quasi-logical connection between sensory and conceptual states.

This confusion about the relationship between the sensory and the conceptual is what underlies the various conceptions of the Given that Sellars criticises throughout ‘Empiricism and the Philosophy of Mind’. At one extreme, it is manifested in the ‘mongrel idea’ that Sellars criticises in Part 1. This is a view that directly conflates the sensory and the conceptual components of experience. Thus, “being aware of something red” is treated as a unitary episode, an episode that is both a kind of sensation, yet also a form of knowing. For Sellars, as for Kant and Wittgenstein, the sensory and the conceptual differ fundamentally, and cannot be equated in this way. [36] A sensory state is an occurrent state of consciousness, whereas a conceptual episode is essentially dispositional, and also has distinctive normative aspects. [37]

But the confusion about the relation between the sensory and the conceptual can also arise in other ways, for example, if it were claimed that perceptual beliefs are *inferred* directly from sensory states. According to Sellars, since the sensory and the conceptual belong to quite different orders, there can be no such logical relation of entailment between them. Most importantly, we cannot appeal to the idea of “*direct inspection*” of sensory experience in order to justify a belief about it. Nor does it make sense to claim that we somehow examine the nature of raw sensory experience by a process of “perceptual reduction”, and then acquire concepts directly through some sort of process of *abstraction*. [38]

It is necessary therefore to distinguish between three questions:

1. Is there a distinct conscious sensory nonconceptual component in experience? 2. Is it possible to discover such a sensory component, independent of the employment of concepts, by some kind of direct confrontation with experience – by some kind of direct inspection and abstraction, or attentive perceptual reduction? 3. Can some of the results of phenomenology – understood in a broad sense as a way of exploring the totality of what is present in conscious experience – be used as *indirect* evidence for distinctions in consciousness, and thus of the fact that experience contains nonconceptual sensory states?

It is incontrovertible that on Sellars’ view, experience does contain a conscious, nonconceptual, sensory component. The answer to the first question has to be in the affirmative. Sellars does not object to the notion of sensory experience as such but, as deVries and Triplett point out, ‘rather to the idea that we can simply find such a thing by attentive examination of our experiences.’ [39]

6. *The First-Person Version of the Subtraction Argument.*

If having a purely nonconceptual sensory state, such as a red shape, is considered as one component in experience, then it cannot, on its own, directly provide a route to a conceptual grasp of its nature. Our understanding of the claim that there is a sensory component in experience cannot be supported by an appeal to direct inspection.[40] The question therefore arises as to how we do arrive at any sort of understanding of the general nature of sensory experience, if this is not obtained by direct examination. How it is that having first-person experience is at all relevant to an understanding of the concepts we apply to experiences? How, for example, is the fact that a sighted person has experiences of colours connected with her ability to understand fully what it is to see something red? We need to find a way of doing justice to the common-sense fact that a person cannot acquire the full concept of experiential colour without being able to have colour experiences.

Fortunately, there is another means by which we can defend the idea of conscious nonconceptual sensory states, and explain how we attach a sense to claims about them. Sellars argues that we may have *indirect* phenomenological reasons for thinking that not all the properties that arise in experience are involved in the same way. There are indeed two components in experience, but we do not arrive at an understanding of this fact by direct inspection. There is a big difference between phenomenology, understood in a broad sense as dealing with the entirety of our perceptual consciousness, and the idea of direct inspection of nonconceptual sensory states. A failure to understand this difference can lead to a confusion about what Sellars is up to in his later work.

In broad terms, phenomenology deals with those features of perceptual consciousness that the subject is aware of from her own subjective standpoint. Phenomenology, in this sense, appeals to the entirety of our perceptual experience, and does not restrict itself to a narrow focus on the purely sensory aspects of experience.[41] If we consider the nature of perceptual experience from a phenomenological standpoint, this provides us with a first-person version of the Subtraction argument that avoids the difficulties that attach to the approaches considered above.

The most obvious fact about experiences, considered subjectively, is that they differ from purely conceptual states such as belief. Visual and other experiences manifest the *presence* of qualities, in a manner that is quite different from the way that qualities are *represented* in pure thought. Phenomenologically, there is all the difference in the world, as Sellars notes, 'between seeing something to be a pink ice-cube and merely thinking something to be a pink ice-cube.' No amount of philosophising can argue away the brute difference between the way properties such as the shape or colour of an object are actually present in experience, and the way such properties occur when merely thought of, when they have only intentional in-existence. The fact of the difference between perceptual experience and thinking is therefore established by reflecting on the nature of first-person conscious states. Once this phenomenological point is established, it can then be combined with the conceptual consideration that beliefs and visual experiences (understood in the broad sense) are in important respects similar: they can share exactly the same conceptual contents. Just as I can think that there is something red and triangular (in front of me, etc.), or think that there is a book on the table, or think that Gandini is juggling five clubs, I can see that there is something red and triangular (in front of me, etc.), or see that there is a book on the table, or see that Gandini is juggling five clubs.

But then it follows from these considerations that a first-person version of the Subtraction Argument is vindicated. If I compare what it is like to have the total – conceptualised – experience of seeing a red and triangular shape with merely thinking about a red and triangular shape, I am aware not only of a similarity in the propositional content, but also of some further difference between the two states. The experience must have a further sensory nonconceptual aspect that accounts for the difference between them: the red triangular shape

is present in my consciousness as a visual expanse in a manner that is very different from a thought about a red triangle.[42] The argument generalises: If, for any perceptual experience with a given conceptual content *p*, there can be a corresponding thought with the same content, then the conceptual content cannot exhaust the experience state. So we have indirect grounds for claiming that experience involves a component that is not conceptual, but sensory.

No claim is made here that we arrive at this claim through a process of perceptual reduction, finding out about our sensory nonconceptual states by some kind of direct inspection. Rather, we arrive at the conclusion that there is a nonconceptual aspect indirectly, by reflecting on the general differences and similarities pertaining to experience and belief. In doing so we appeal to the kinds of self-ascription that we find ourselves employing in common-sense usage.

Perhaps because McDowell is concerned with Sellars' claim that hallucinatory and veridical experiences have a common content, and with explicating Sellars' ideas about intentionality, he appears to overlook the fundamental question that Sellars is concerned with in 'Empiricism and the Philosophy of Mind', which is that of providing a proper account of the sensory dimension to experience. He dismisses Sellars' claim that there is a sensory element in consciousness that is 'outside the space of reasons', as he expresses it. McDowell assumes that perceptual experiences are fully accounted for in conceptual terms, and are therefore completely enclosed in the space of reasons. He thus overlooks the force of the first-person version of the subtraction argument. However, on McDowell's own account, it is left unclear how seeings are to be distinguished from mere thinkings. Both are classified for McDowell as conceptual episodes. But we are still owed an account of what distinguishes them.

For McDowell, there seem to be two ways in which experiences and thoughts differ. Firstly, he claims that experiences are 'shapings of visual consciousness' (p.442), and 'conceptual episodes of a special kind, already conceived as conceptual shapings of sensory, and in particular, visual consciousness.'.[43] But to describe matters in this way is not to explain the difference, but merely to label it as such. No clue is provided as to how they differ. Perhaps the second way in which McDowell refers to the difference is supposed to provide the explanation. He claims that visual experiences are evoked 'by an ostensibly seen object'. But this begs the question. What is "ostensibly seeing"? How does it differ from merely thinking? Obviously there is a causal, *external* difference in the way that the states arise. However, this does not help us to understand what constitutes the essential difference between seeing and thinking that is manifest from the first-person point of view. It cannot ground the subjective difference in consciousness. This follows for the same reason that the third-person version of the subtraction argument fails; external considerations bring us no nearer to understanding subjective differences. Thus again we are left with a claim that experiences and thinkings differ subjectively, but no grasp of the ground of the difference. McDowell's attempts to capture the essential distinguishing feature of experience leave us none the wiser. Sellars' two-component analysis of experience, on the other hand, offers prospects of accounting for its distinctive nature.

This way of understanding the Subtraction Argument provides an answer to questions about the *nature* of our understanding of sensory nonconceptual experience – the central problem that Sellars is concerned with in 'Empiricism and the Philosophy of Mind'. On Sellars' account we have an explanation of what it is that we *understand* when we say of another person that she is having a sensory experience of something red, or when we apply the concept of a red experience in our own case. There is a sensory state that is additional to any thoughts we entertain. Such an understanding is what we appeal to when we make certain claims about appearances, for example, when describing an experience known to be hallucinatory: 'I know that there is no red physical object in front of me, but nevertheless there is something red and triangular involved in my experience.'

7. The Nature of Sensory States.

Claims about sensory states have a sense for us because they are understood as both evidentially and conceptually connected with their input and output. The conceptual connections that contribute to our grasp of the nature of sensory states are twofold. The first kind of connection is straightforwardly with the type of physical object that normally causes the type of sensory state in question. A sensory experience of red, for example, is in part characterised by reference to objective matters, as the kind of state that arises given input from red physical objects in normal circumstance, etc. A second kind of connection is with our perceptual beliefs about the environment. Typically, the sensory experience of red received from looking at a red object in normal circumstances leads us to form beliefs, not about our own states of mind, but directly about the objects in our surroundings; such beliefs may lead on to action.

The connections with physical input, and the final behavioural output that perceptual beliefs can give rise to are what enable us, in practice, to communicate about our sensory states. We inherit a capacity to report directly upon our nonconceptual experiences, and by social training are inculcated into the practice of so doing.[44] It is not the outcome of a process of abstraction, predicated on an incoherent notion of The Given. This ability to report directly on the nature of our sensory states is worth examining in more detail.

Strawson argues that experience is thoroughly permeated with the concepts of the objects which figure in perceptual judgements. His claim is that we cannot give a veridical description of an experience without reference to the conceptual contents of the perceptual judgement it involves. The perceptual judgement is 'internal to the characterization of the experience' in virtue of which I come to make that judgement.[45] The suggestion is that the concepts we apply in our normal perceptual judgments about the world exhaust the characterization of their contents; there are no independent sensory states that we can report upon. But here, as so often in the philosophy of mind, the "internal connection" is at most a connection that holds between *types* of experience and *types* of judgement. The general idea of the sensory nonconceptual component of experiences is indeed conceptually connected with an acceptance of the broadly common-sense, realistic conception of the objective physical world, as Strawson asserts. But this is quite compatible with the idea that the nonconceptual component of experience has, in any given *token* experience, a degree of autonomy, and is not fully identified by the contents of the specific perceptual belief about the world that I have on that occasion. It is indeed true that I often characterise the experience as a whole in terms that mirror the way I would express the perceptual judgement involved. But as noted, we may also have reasons for focussing more narrowly on the nonconceptual component. To draw attention to this other aspect is not to deny Strawson's claim that perceptual experience presents itself as 'an *immediate* consciousness of the existence of things outside us'. It is to assert that fact that this consciousness has a sensory character that belief alone lacks.

Moreover, there are good reasons for holding that most normal perceptual experience has a rich complexity that far outruns the content of the perceptual judgements they involve. I can reflect on the fact that my perceptual experience contains, as Brian O'Shaughnessy notes, a mass of 'teeming detail'. I do not, and cannot attend to every aspect of it. The point is that there is usually too much that is present in my experience in a single moment for me to attend to and conceptualise every aspect. The concepts that naturally spring to mind when I contemplate my surroundings in no way exhaust what is present in a nonconceptual way. This point about the richness of experience, it should be noted, is separate from the question of the fineness of grain of sensory experience, a feature that has also been cited as distinguishing sensory and conceptual content.

Because of the two-fold nature of the conceptual connections with the sensory component, we can make sense of the idea that, when I look at a Persian carpet, the sensory component of my visual experience is not completely identified by my perceptual thoughts – it can also be identified by reference to the physical input that leads to it. Unless I am an expert, different but similarly patterned carpets can lead to identical judgements about them.[46] But

because the physical input from the two carpets differs, there are grounds for claiming that the sensory components of the two experiences are different in kind. This is *not* to say that I implicitly *notice*, in a conceptual sense, the character of my nonconceptual experience. Strawson rightly criticises Ayer on this point. The claim is, rather, that much of the detail of the carpet is captured in my nonconceptual sensory state, even though I may not conceptualise all that is present in this way in my experience.[47]

Thus I may say of another perceiver that she must be having an experience of a certain visual kind – meaning that her experience contains a certain type of sensory nonconceptual component – on the grounds that she is facing a certain scene, and with her eyes open. My grounds for asserting this claim about her visual experience is based upon physical criteria, together with certain implicit background assumptions to the effect that she has normal eyesight, is not suffering the effects of some drug that impairs her vision, and so on. Such physical criteria may occasionally come into conflict with what may be termed the belief criteria – the subject's own beliefs, as expressed in her reports, about what she sees. So suppose the subject says she cannot see any turquoise colour in the carpet in front of her. I may claim that although she fails to notice it, there is in fact an area with that colour almost directly in front of her, and that it is present in her experience. My attribution of a certain feature in her sensory experience may then be vindicated, when after a brief further moment she does notice the turquoise area.[48]

It is true that such physical criteria for claims about sensory states are defeasible. The background assumptions implicitly relied upon are testable. I may wrongly claim of someone that she has a nonconceptual experience of two different shades of colour, because I am unaware of the fact that she is color blind. In other words, a physical condition affecting input prevents her having a certain kind of sensory nonconceptual experience. But such cases will manifest themselves by the general way in which the subject fails to discriminate physical inputs across a whole range of cases.

The evidential links with physical input and fully conceptualised perceptual experiences *fix the reference* of our sensory vocabulary. By providing us with a way of thinking about the sensory component of experience, they allow us to attach a general sense to sensory concepts.[49] This view allows the possibility that our understanding of the nature of sensory states can be extended. The *intrinsic* properties of sensory states can be further characterised in terms of properties that are understood by analogy as closely mapping the resemblances and differences between physical objects.[50] So the way is open, as we shall see in the next section, for a fuller understanding of visual sensory states as inner map-like states with properties that are analogous to the spatial aspects of physical objects. As we have seen, it also makes sense to claim that there is more to the nature of visual sensory states than we can be aware of at any particular moment. Sensory content outruns our attentional capacities. There is more going on in my overall experience than I am conceptually aware of.

8. Inattentional Blindness and Connected Empirical Objections.

According to the two-component account of perceptual experience we have been considering, there are aspects of the perceiver's sensory experience present in her consciousness that she may not be attending to. The claim is that these features exist, even if the subject does not realise it. I have argued that this claim is not defeated by a priori argument; is this view consistent with empirical work on vision? Certain recent experiments on the limitations of visual attention have been interpreted by some philosophers and cognitive scientists to undermine the account offered here.

A cluster of experiments on "Change Blindness", "Inattentional Blindness" and associated phenomena have produced surprising results. According to one plausible characterization, these results show that we consciously take in far less of the visual world than it seems to us that we are aware of. It is worth briefly summarising the results of two recent sets of

experiments, in order to give a flavour of this work. Simons and Chabris describe a striking example of Inattention Blindness.[51] Subjects were asked to perform a task that involved watching a video of a casual basketball game that lasts for about a minute. The task involves counting the number of consecutive passes between members of one of the teams. While the basketball is being thrown from player to player, something unexpected takes place: a person dressed in a black gorilla-suit walks through the play, stops briefly in the centre of the picture, thumps his chest, and then walks off. Although most subjects correctly record the number of passes made by the team, at least half of these subjects fail to notice the gorilla-suited interloper, who is visible for about nine seconds. When shown the video sequence a second time they are amazed to observe what they had previously overlooked.[52]

In Change Blindness experiments, a subject is asked to attend to a picture of a scene, for example of two people in the foreground, with a number of buildings clearly visible in the background. A brief flicker, or *transient*, interrupts the display, which then returns with one substantial change – a large building in the background is no longer visible. This display remains visible for a few seconds, and then again the flicker occurs and the switch is made, returning to the original picture. It may take many such alternations between images before the subject finally notices the large scene change not previously attended to; again, this produces surprise on the part of the subjects, when they realise they have overlooked an apparently obvious change. What is agreed by all theorists is that the phenomena of Change and Inattention Blindness, etc, are well established. These experiments provide strong evidence about the limits of attention. What is less clear is exactly what they show about the overall nature of visual experience.

One straightforward reaction to the experimental work is to interpret it as showing something about the limitations of our concept forming processes and memory, rather than about the limitations of experience. The idea in the more simple-minded versions of this response is that a subject does indeed take in and process information relating to most of the scene in front of her, but then rapidly forgets the details that are not connected with her plans and projects. So formulated, this “instant forgetting” response offers an implausible account of why unusual features of scenes are overlooked, as Andy Clark notes.[53]

However, there are more subtle variants of the idea, as we shall see in due course. In order to properly assess these, it is first useful to appreciate why the alternative responses canvassed are not satisfactory.

As it turns out, there is strong empirical evidence for the claim that information from items in view is at least physically registered by the subject, even when she is unable to report them directly. This evidence is of two kinds. First, there is considerable evidence that unattended features of displays have priming effects. Mack and Rock give a number of examples of this in their work on inattention blindness. In one experiment cited, a group of subjects failed to notice the written word ‘flake’ when being asked to attend to a distracting task. A significantly higher than average percentage of these subjects subsequently chose a picture of a snow-flake from a display of five different objects. Mack and Rock claim that this experiment ‘seems to provide clear evidence of semantic priming, because a stimulus that was not consciously perceived seems to have a determining influence on the choice of the picture made by a significant number of subjects’. They conclude that there is ‘clear evidence of the implicit perception of stimuli to which subjects are inattentionally blind.’[54] A second source of evidence consists in the very common-place fact that attention can be attracted by changes in the scene that are unmasked – movements on the periphery of the visual field will cause eye saccades and attract attention. Some event is registered as taking place, *before* we attend to and classify it.

It may still be claimed that these cases do not show anything about conscious experience, even if they do show, pretty well conclusively, that at some level the subject is registering much of the data in the surroundings. But there is further evidence that shows that data from

the unattended parts of the visual field enter into conscious experience. In the experiments on inattention blindness attention is highly focussed, and background phenomena are ignored. But in other, more normal, contexts, subjects are able very rapidly to ascertain the *gist* or 'general sense of a complete scene'. So a subject becomes able, in a very short space of time – in the order of 120 milliseconds – to report on the overall type of scene she sees: whether the scene shown is, for example, a party, a garden, a harbour, and so on. In addition, subjects are also able to report rapidly upon the overall *layout* of a scene, even when they cannot report much of the detail it contains. We can absorb the information from events in the environment for certain purposes rather more quickly than seems to be required for detailed conceptual awareness of specific aspects of the scene.[55]

These objectively verifiable abilities support the idea that conscious experience does indeed contain a considerable amount of structure that is conceptualised only at a general level. Note that this means that, in a sense, the structure of the background sensory experience is still attended to; the attention is, however, largely *unfocussed*, so that specific objects are not conceptualised as such. The point is that the concepts employed do not relate to all the detailed features present in sensory experience; the concepts do not reflect any separateness in the objects experienced. But the concepts employed do relate to different overall kinds of scene that, necessarily, differ from each other in "gist" only because the experiences of the scenes contain differences at a more detailed level. We may speculate that our subjective experience of a rich and detailed background, situated around the central foveated area to which we normally attend in seeing, is intimately connected with the low-level stages of vision that are a central feature of information processing accounts of vision.

One important theory of attention in harmony with Sellars' two-component conception of sensory experience is the model recently developed by Ronald Rensink, building on the basic framework set out by David Marr. Rensink argues there is considerable evidence for the formation of a 'low-level map-like representation' at an early stage of visual processing. On Rensink's account, the low-level map like representation is not a stable structure, but is extremely volatile, being constantly updated: it is 'largely created anew after each eye movement'.[56] Representations at the lower level are categorised only by their spatial features and location. They play a crucial explanatory role in accounting for changes in fixation and attention, in priming, and in our knowledge of the overall layout, and of the gist of scenes. It is only at higher levels of processing, where *focussed* attention is brought into play, that a 'coherence field' generates the specific representations (involving higher-level conceptual categories) of individuated physical objects in the environment. At this level we come to grasp and form beliefs about the stable world of objects in our surroundings.

It is plausible to claim that Sellars' two-component view of experience is consonant with the kind of information processing account of seeing defended by Rensink and others. On Rensink's, and similar models of attention, there are two key stages in the overall take up of information that contributes to higher level decision making based upon beliefs about the objective nature of the surroundings. Initial unconscious processing leads to a low-level stage at which the map-like array is formed. This is an essentially spatial structure of "proto-objects", that is, 'relatively complex assemblies of fragments that correspond to localised structures in the world'.[57] Such proto-objects provide the raw material on which the attentional processes act. This leads on to the second stage. In attending to some part of this spatial array, we conceptualise aspects of the scene as forming a coherent unity across time, as an object of some kind. These two stages correspond to the sensory and the conceptual components of conscious experience. It is arguable that sensory experience supervenes, at least in part, upon the low-level map-like array postulated on Rensink's account.

We can build upon this model of experience to provide a variant of the "rapid forgetting" response to the experimental evidence for Change Blindness, etc. Andy Clark's criticisms of this response are worth quoting more fully. He writes:

Some element of forgetting may, I accept, be involved in some of these cases. But overall, the hypothesis strikes me as unconvincing. First of all, it is not really clear whether 'seeing-with-immediate-forgetting' is really any different from not seeing at all. (Recall Dennett's 1991 discussion of Stalinesque versus Orwellian accounts). Second, we know that only a very small window of the visual field can afford high resolution input (Ballard 1991), and we know that attentional mechanisms probably limit our capacity to about 44 bits (plus or minus 15) per-glimpse (see Verghese and Pelli (1992), Churchland et al (1994)). So how does all that fleeting richness get transduced? And lastly, as Simons (2000) nicely points out, the inattentional amnesia account seems especially improbable when the stimulus was an opaque gorilla presented for up to 9 seconds. Could we really have been consciously aware of that and then had it slip our minds?[58]

The two-component model of experience allows satisfactory reply to be made to Clark's objections. The main thrust of this reply is that, on a model of experience such as Rensink's, although the sensory information from the whole scene in front of the observer is initially processed to a rudimentary level, little of it is categorised at a higher conceptual level, hence little of it is available for storage in the memory system. The key insight is that detailed information about specific events in the scene is not forgotten, *because most of it is never conceptualised by the subject in the first place*. A full higher-level representation of the scene, complete with a classification of its all elements, is never constructed. Nevertheless, low-level information about the objects that are before the subject is represented in a volatile map-like spatial array, a visual field that is constantly regenerated.

Clark's objections can be responded to in more detail. First, there is no "seeing-with-immediate-forgetting"; the subjects who fail to report the gorilla suited figure never conceptualised input from the figure as forming a unified coherent object. The input does indeed contribute to the map-like array so that the subjects were aware that they were seeing, and not just thinking. The input from the gorilla suit may be processed in terms of a low-level array of shapes and colours. Crucially, however, the input leading to the formation of the map-like array is not classified at any higher level. Being processed no further, a representation of a gorilla does not even reach the subject's short term memory. If you do not come to believe, and store, information in the first place, you cannot be said to forget it. This reflects an important and necessary feature of any information processing system, that detail must be sacrificed to allow complex higher level classification at a subsequent stage. Second, it is not denied that only the central foveated area of the visual field affords high resolution input; so we may admit that the surrounding areas in the low-level spatial array do not contain structures articulated in great detail, though they do contain a certain amount of structure. Third, only a fraction of that structure in the low-level array feeds into the attentional mechanisms; limitations on the capacity of those mechanisms do not affect the amount that is processed earlier on in the perceptual system.[59]

9. Conclusion.

In conclusion, none of the experimental work on Change Blindness, Inattentional Blindness and related syndromes undermines the claim that visual experience involves the presence of sensory features that are not fully attended to, and whose complexity may out run the capacity we have to conceptualise our surroundings at a higher level in terms of the kinds of distinct physical object present. There is considerable experimental evidence that supports the view that visual experience contains a stage at which there are low-level spatial representations that contribute to explaining how the attentional system functions. Such representations may contribute to the subjective phenomenology of vision; in other words, they may be identified with conscious sensory states.

Sensory states, as I have argued, are to be distinguished from the conceptual and intentional realm. They have the general characteristics of phenomenal presence, determinateness (up

to the limits of visual acuity), and actual existence; in themselves they lack any kind of low- or high-conceptual element, and they do not refer in the way that intentional states do. In contrast, many of the sorts of states often described in recent literature as nonconceptual share important characteristics with fully fledged conceptual states and processes: they involve classificatory activity, and may involve an intentional aspect.

At the outset of this paper, I quoted McDowell's claims about the alleged tight logical dependence of the sensory aspect of experience on the conceptual. Contrary to such intentionalist claims, there are detailed features of the sensory component of experience (= receptivity) that outrun the concepts we employ at the time (= spontaneity). On both a priori and posteriori grounds, it can be argued that the sensory component involves aspects that vary independently from the intentional/conceptual components of experience. There is, I have argued, a striking and productive synergy between Sellars' two-component analysis of experience, and information processing accounts exemplified in the experimentally based theory put forward by Rensink. This points to a way of understanding perceptual experience that allows a certain autonomy to the low-level sensory component. In perception, a rich and detailed sensory state may be present as one component of conscious experience, even if the subject does not conceptually grasp every aspect of that state. The presence of such rich and detailed sensory states in consciousness accounts for the impression that there is more in perceptual experience than we can attend to at any given moment. It also makes sense of the fact that experiences of the same scene can be conceptualised in different ways.

If this two-component model is on the right lines, we must reject the intentionalist account of experience. The problem of the richness of visual experience is resolved. We can agree with the common-sense intuition that there is more in experience than we are explicitly aware of at any given moment.

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Notes

1. I shall concentrate in this paper on vision.
2. See for example D. Dennett (1991) and (2002); Susan Blackmore (2002).
3. K. O'Regan and A. Noë (2001); A. Noë (2002).
4. The label is used by Alex Byrne in his defence of the position (2001).
5. M. Tye (1995), p.137.
6. On Tye's account, the representational and intentional contents of experience are equated: see for example Tye (1995) ch. 4. I believe that this equation is mistaken: the sensory, representational and intentional contents of experience all differ. I do not argue the point explicitly here, though reasons for taking this different view are hinted at in the text.
7. J. McDowell (1994/96), p.51.
8. For examples, see N. Block (1990) and Forthcoming; and W. Sellars (1956), (1975), (1977) and (1981a).
9. The precise nature of the sensory component of experience is not made entirely clear in Sellars' earlier work such as the seminal (1956), but is clarified in later writings such (1977) and (1981a).
10. R. Rensink (2000a) and (2000b).
11. These aims are spelled in his (1963b) and (1981a).
12. Ned Block (Forthcoming).
13. As Sellars spells out in his (1982a) Lecture II, part VII.
14. The distinction is defended by, amongst others, T. Nagel (1986).
15. I shall use the terms 'sensory' and 'phenomenal' interchangeably.
16. J. Levine (2001); see also the arguments in N. Block and R. Stalnaker (1999).
17. W. Sellars (1975), p.306-7.
18. As S. Sturgeon expresses the point (2000) p. 9.
19. J. Valberg, (1993), p.4-5.
20. W. Sellars (1981b).
21. Peacocke (1992) chapter 3. Many other modern theorists have made a distinction between conceptual and nonconceptual content that broadly corresponds to the distinction Sellars makes between low-level, primitive concepts, and higher-level concepts that involve some kind of a self-awareness on the part of the subject; see, for example, J. Bermudez (1998).
22. See for example Sellars' remarks at the start of the third Carus Lecture (1981a).
23. For example in (1956) sections 16 and 22.
24. W. Sellars (1968).
25. W. Sellars (1956), section 60.
26. W. Sellars (1982), Lecture III, sections 2 – 5 and passim.
27. There is a complication caused by the fact that Sellars tends to conflate the third-person

version of the subtraction argument with the thesis that there is a common content to veridical, illusory and hallucinatory experiences. For reasons I have argued elsewhere (1998), I believe that Sellars is entitled to this later claim. Since the point is tangential to the sensory/conceptual distinction, however, I shall not pursue this dimension of Sellars' argument here.

28. J. McDowell (JP 1998), p.443-4. In point of fact, hallucinations are unlikely to share common impingements at the retina with veridical experiences, but McDowell's point is clearly intended to refer to inner proximate neural causes of experiences.

29. As J. Levine has argued (2001).

30. (1956), section 62.

31. W. Sellars (1975), sec 50 and 51, p.308

32. W. Sellars (1977) sections III and IV.

33. W. Sellars (1982), Lec. I, sec. 88, p.20.

34. W. Sellars (1982), Lec. I p.3.

35. W. Sellars (1982) sections 43 and 44, p.11.

36. Cf. L. Wittgenstein (1953), Part I, 151-154, and W. Sellars (1963a).

37. The essential contrast between sensory states and concepts, and dispositional nature of latter, is emphasised by J Bennett in his illuminating discussion of Kant's conception of experience (1974), chapter 2.

38. Note especially Sellars' criticisms around section 26 of his (1956).

39. deVries and Triplett, (2000), p.38.

40. It is important to realise that this problem is not circumvented by the adoption of a Direct Realist approach. For example, even if a total *perceptual experience* of red has as a constituent the objective property of physical redness belonging to the public object seen (or an instance of redness), a property that is equally open to view by all normal observers, this does not explain how the perceiver comes by the concept of the relevant nonconceptual sensory state that occurs as a component of the experience. For as we have argued, such sensory states do not, in themselves, involve concepts. So the Direct Realist is still stuck with the same problem of abstraction, of explaining how the subject moves from having a nonconceptual sensory state of redness to a conceptual grasp of what is experienced.

41. In his recent book D. Smith discusses some of the various phenomenological aspects of experience that are, it might be claimed, distinct from the sensory level: (2002) Chapter 5 *passim*.

42. There may be some kind of similarity with vividly imagining a red shape, but that is quite a different issue; what is visualised in the imagination is not essential to my thought.

43. McDowell (1998), p.442, and p.451. McDowell's account of perceptual experience is not reductionist in the way that Armstrong's belief analysis of perception is. Nevertheless, we are still owed an account of the precise way in which the intentional state of seeming to see that p differs from merely thinking that p.

44. Sellars is not of course alone in emphasising the importance of training – the idea plays an key role in L. Wittgenstein (1953).

45. P. Strawson (1979), part I.

46. Alan Millar defends an equivalent claim in Chapter 1 of his (1991).

47. This entails that the representational content of the experience is of two kinds: sensory states represent the situations that typically cause them; the concepts involved in experience represent, in a different way, those aspects of the scene that my thoughts are intentionally directed at. This raises interesting issues about the complexity of perceptual content that I plan to pursue in a further paper.

48. F. Dretske has argued a similar position over many years: see for two example, (1969), ch 2, and more recently, (1993).

49. It is important to notice here that this point is independent of the debate between 'theory theory' and 'simulation theory'. For even the advocate of simulation theory has to provide an account of how we *understand* the framework of mental states that we apply in our own case.

50. As deVries and Triplett observe, Sellars' account of sensory states is not straightforwardly functionalist in the way that his account of thoughts is: see their (2000) p.169.

51. Simon, D. and Chabris, C. (1999).
 52. There is extensive discussion of a number of different experiments demonstrating Inattentional Blindness in A. Mack and I. Rock (1998)
 53. A. Clark (2002).
 54. A. Mack and I. Rock (1998), chapter 8.
 55. See, for example, A. Mack (2002), R. Rensink (2000a) and J. Wolfe (1997).
 56. Rensink (2000a) p.22; see also his (2000b).
 57. Rensink (2000a) p. 22
 58. A. Clark (2002) p.188.
 59. Thanks are due to Steve Torrance and John Rose for many valuable discussions on the issues raised in this paper, and especially to Bill de Vries, who also provided helpful comments on an earlier draft.
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