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Does attention exist?

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I. Introduction

In the introduction to the *Phenomenology of Perception*, Merleau-Ponty (2002: 34) states that 'Attention, […] as a general and formal activity, *does not exist*' (my italics). This paper examines the meaning and truth of this difficult and surprising statement, along with its implications for the account of perception given by theorists such as Fred Dretske (1988) and Christopher Peacocke (1983). In order to elucidate Merleau-Ponty's phenomenological account of human perception, I will present two alternative models[1] of how attention might be thought to operate. The first is derived from the works of the aforementioned theorists and is, I argue, based upon a largely inaccurate computational or mechanistic understanding of the mind. The second is drawn from the works of Merleau-Ponty and cognitive scientist and philosopher, Alva Noë, and takes into account recent neurological theories concerning the role of attention in human consciousness. On the basis of these models I will argue that attention is an *essential*, rather than *incidental*, characteristic of consciousness that is constitutive of both thought and perception, and which cannot be understood in terms of the independent faculty or 'general and unconditioned power' (*ibid.* 31) that Dretske *et al's* account requires. I will conclude by considering two potential counterexamples to my argument, and evaluating the threat that these pose to the phenomenological model.

[1] The term 'model' is intended to mean a simplified description or framework, and should not be taken to beg any important questions about the nature or basis of consciousness (for example, that it is reducible to a set of physical processes).

II. Two Models of Perception

Much of the recent literature in philosophy of mind and consciousness (for example: Dretske 1988, 2004; Peacocke 1983, 1998; Ayer 1973) adopts a particular account of the functioning of perception and attention. This account is directly descended from the views of Descartes, Hume and Locke, and to a certain extent reflects various widely held prejudices and opinions about the nature of the human body and the world in general; i.e. that they are fundamentally physical in nature. This view is also substantially influenced by the modern understanding of mechanism, and in particular the workings of mechanical devices such as the camera and audio or video recorders, as well as more recently – but perhaps even more significantly – the modern digital computer with its microprocessor 'brain'. Such devices employ a process by which initial inputs (light rays, sound waves, electrical impulses, etc.) are captured by some kind of sensory surface (a photographic plate, microphone diaphragm, magnetic tape, CCD sensor) and transformed into a covariant representation of the original signal that is stored for subsequent analysis or retrieval. Due to its relative simplicity and the obvious analogy between the workings of such devices and our own sensory apparatus – the eyes, ears, skin and so on – this model offers an attractive basis for understanding the corresponding processes of human perception. Indeed, many of these mechanical devices were substantially modeled upon or influenced by the workings of the human body – a fact which only serves to strengthen the analogy. I will call this the *snapshot model of perception* (cf. Noë 2002b: 2) due to its resemblance to the way in which a camera captures a complete image of a visual scene for later reproduction or viewing.[2]

Under this account, visual perception involves the formation of a 'picture' inside our head (the brain being at the centre of what is considered to be a primarily computational process) containing a more or less accurate representation of the external world. Although we take

[2] In the discussion that follows I will concentrate upon visual perception, but the same principles apply to other sensory modalities, such as touch, hearing and proprioception (inner-sense).

in or perceive the entire scene at once, our brains do not actively process all of this information simultaneously. Rather, we extract various salient features via the faculty or process of *attention*, which homes in on various aspects or details of the scene that our central nervous system represents to us. The conscious mind is then able to 'read off' information from this internal representation in much the same way as one might read off the information contained within a photograph, train timetable or visual display unit. Any redundant or irrelevant information is either discarded, or retained in memory for later recall and analysis. The key features of this model are that (i) the initial 'snapshot' phase creates an internal representation of the entire visual scene within the subject's brain prior to any further cognitive processing for the purpose of detecting objects, forming perceptual judgements, generating an appropriate reaction, and so on (Dretske *op. cit.* 162), and (ii) that attention is envisaged as a distinct faculty or power that extracts information from the previously captured 'sense data' (Peacocke 1998).

There are several problems with this view. As Merleau-Ponty points out, 'In order to relate [attention] to the life of consciousness, one would have to show how a perception awakens attention, and then how attention develops and enriches it' (*ibid.* 31). Since it is described in terms of objective physical processes and causal relations, the snapshot model can only explain the functioning of attention as a series of responses to stimuli, as opposed to a system that actively selects certain stimuli over others, as the model itself requires (*ibid.* 30). Secondly, it entails that we represent the world as an array of determinate and (in principle, at least) objectively verifiable data, whereas our actual experience of perception appears to contain a high degree of indeterminacy – around the fringes of the visual field, for example – and can even contain logical ambiguities and contradictions, as in the Müller-Lyer illusion, for example. Finally, by positing an internal representation of the entire visual field within the subject's brain, the snapshot model simply defers the problem of understanding attention and consciousness to this inner level in what Dennett (1991: 107) describes as the 'Cartesian Theatre'. Consciousness, in the form of attention, becomes an homunculus, or 'little man', that is 'looking out' at the sense data just as we are 'looking out' at the external world; an

explanation which fails to resolve anything. To account for the apparently 'miraculous' (Merleau-Ponty *op. cit.* 30) powers of attention, the theory must either assert that the intelligible structure of the world is already contained within the perceived sense data, in which case the role of attention is reduced to mere symbol manipulation (*ibid.* 32), or that the world itself is already structured this way, in which case it is unclear why attention should be drawn towards one object rather than another (*ibid.* 31). Considerations such as these have led Merleau-Ponty and other philosophers to seek an alternative account of the nature of perception and attention.

In contrast to the snapshot model of perception, what I will call the *direct access model* denies that there is any internal representation of visual scenes prior to their entering consciousness. According to Merleau-Ponty (*ibid.* 43) and cognitive scientist and philosopher Alva Noë (2004: 420), the act of perception is itself a form of selective attention towards a world in which the observer is essentially embedded. Rather than being represented within the brain and then discarded, the unattended aspects of a perceived scene (e.g. the periphery of the visual field) are not actually *seen* by the subject at all, but are rather *sensed* as a vague and indeterminate presence on the horizon of consciousness (Merleau-Ponty *op. cit.* 78). As I sit at my desk looking at these words on a computer screen, for example, I do not *see* the wall behind the desk or the lamp and books to my left any more than I *see* the part of the room that lies behind the back of my head. Rather, I *sense* their presence as *objects that I could bring into perceptual focus should I choose to do so*.[3] This illustrates a key aspect of Merleau-Ponty's account, which is that all experience is structured as a series of 'figures' against a 'background' (*ibid.* 15). The dynamic tensions and oppositions between the foreground and background objects of experience is what forms the basis for both perception (*ibid.* 4) and attention, which Merleau-Ponty describes as 'a passage from indistinctness to clarity' (*ibid.* 32). However, rather than being a distinct process or mental faculty, attention forms an integral part of our system of perception and consciousness as a whole.

[3] This corresponds to what Noë (2004: 416) terms 'presence as absence', and is a distinctive feature of the phenomenological account of perception.

Under the direct access model, then, the function of attention is not to direct the conscious mind towards aspects of an already perceived scene, as if viewed on some kind of 'internal screen' (O'Regan 1992 in Thompson, Noë and Pessoa 1999: 167), but *to direct the process of perception itself*; that is, to orient the various organs of the body and senses towards those aspects of the environment that are relevant to our current thoughts and actions. We only *see* what we attend (or intend) to, nothing more (Noë 2002b: 5). Our impression of the world as a stable and persistent whole arises not from the integration or analysis of various sensory modalities as if this were something that occurred after the fact of seeing, hearing, and so on, but from our ability to gain direct sensory access to the world. Thus, it is not the case that I *see* the lamp, books on the desk, etc., and then discard these perceptions while concentrating upon something else. Rather, the mere possibility that I *could* direct my sensory faculties towards these objects is sufficient to give me a sense of their continued presence, even if they no longer form part of my visual field (as defined as the 'external horizon' of perceptual awareness (*ibid.* 78)).[4] Whether one calls this kind of awareness 'perception' or not is largely a matter of convention, but there is a clear contrast between this and the snapshot model in terms of what occurs at the perceptual level when we fail to attend to objects that are right in front of us.

Since perception and attention are already directly connected to (and indeed part of) the world, which functions as a kind of ultimate repository of perceptual information and awareness (O'Regan *op. cit.*), the direct access model does not require any kind of internal representation. This has the advantage that only objects within a subject's immediate field of interest need be represented by them, and only at a relatively high level of abstraction for the purposes of forming judgements, thoughts, and so on. However, since this view is perhaps less well grounded in pre-philosophical intuition than the familiar snapshot account, a more detailed reflection upon the phenomenological structure of perception and attention will be necessary in order to motivate and clarify it further.

[4] What Noë (2004: 422) refers to as 'presence as access'.

III. The Phenomenology of Attention

Imagine going for a walk beside a mountain stream on a hot summer's day. Looking around, you see water and trees below a clear blue sky, with birds circling overhead. The stream makes a pleasant gurgling sound as it trickles across the rocks, and you can hear birdsong as you walk along, enjoying the feeling of the warm sun on your back. Such a description might conjure up (or might *seem* to conjure up) something like a picture one might commonly see in a Rambler's magazine; i.e. a more or less photographic image of what you would see if you were actually there. This is the kind of image that would be captured by a camera, and is a faithful representation of what we know to be there, but to what extent does it represent how we actually *see* such a scene in practice? In reality, we do not apprehend such scenes in a single glance, but allow our eyes, ears and other senses to take it in piece by piece, much as you might have imaginatively reconstructed the scene described above as you read through it. For example, we might first notice the movement of the water, how it flows over the rocks, and its relation to the gurgling sound that we hear. Then we might notice the contrasting forms of the mountains, sky and rocks as our eyes saccade back and forth, taking in each detail. We might recognise the shape, colour and texture of the undulating masses of leaves on the trees – objects that we *know* to be there, but do not actually *see* until we examine them directly. Thus our experience of such a scene is comprised of a host of perceptual events spread out over a period of time. Far from taking in the scene in its entirety, as the snapshot model might suggest, perceptual experience has a distinctly temporal structure that is based on a series of figure-ground relations, resulting in what Merleau-Ponty (*op. cit.* 34) calls a 'perceptual field'.

On further reflection, we find that much of our sensory experience is fragmentary, indeterminate and incomplete (Noë 2002a: 191). By artificially fixing our gaze upon one spot, for example, we would be unable to pick out many of the surrounding features, which remain as vague and amorphous presences in the periphery of our vision. Although we might be able to guess their nature from the familiar context, in a more novel situation we would be at a loss to describe our

surroundings in any detail, and could easily be mistaken. It is not until we turn our attention – and therefore our perception – towards these objects that we actually *see* what is there, and thus gain an overall sense of the scene before us (*ibid.* 10–11). However, we must be careful not to stretch the analogy too far. To say that we build up a *picture* of the scene in front of us would be to posit some form of internal representation over and above what is given in experience. Moreover, there is nothing in our experience to suggest that what we are seeing is some kind of image or representation within our own brains, as the rocks and trees appear to be *over there* rather than 'in the head' (Thompson, Noë and Pessoa *op. cit.* 187).

Similarly, the fact that, for the most part at least, we experience the world as a unified and integrated whole, and not as a series of fragmentary or incomplete perceptions, does not require us to represent the perceptual field to ourselves in order to perceive it. On the direct access model, the objects we see gain their sense of stability and persistence not from any internal picture, but from the characteristic ways in which their appearance changes in response to the movements of our eyes and body (*ibid.* 55; Noë 2004: 423), and from the knowledge that if our gaze were to return to them then they would still be there. In other words, the possibility of direct access to our surroundings via our bodily senses is sufficient to give us the sense of integration and embeddedness that we all take for granted, and to assure us that objects will not cease to exist when we turn away from them. No additional form of representation is necessary.

Another notable feature of perception is that we are not drawn as quickly, or as strongly, to every aspect of our environment. Rapidly changing or moving stimuli typically attract our attention more than static or slowly moving ones (Noë and O'Regan 2000); difference more than sameness; edges and textures more than flat surfaces; and so on (Thompson, Noë and Pessoa *op. cit.* 163–4). The characteristic 'grabbiness' (O'Regan, Myin & Noë 1991: 82) of objects also forms an important part of they way that our perceptual experience is structured. In *The Structure of Behaviour*, Merleau-Ponty (1983: 7) uses the example of a moving point of light in a darkened room to illustrate how an object may draw our attention to such an extent that it becomes

almost impossible to ignore, and our behaviour in following it as 'appears as directed, as gifted with an intention and a meaning' (*ibid.*). This and similar cases illustrate the way in which our perceptual faculties are directed towards salient features of the environment by a set of instinctive or readily acquired motor skills and reflexes that keep us appraised of our immediate surroundings. Such principles are neither strict causal laws nor biologically predetermined. Rather, they can be acquired and shaped in light of the goals and experience of each individual subject. Professional sportsmen and women, for example, are trained to exclude all other factors and distractions – crowd noise, the weather, and so on – that are not directly relevant to their performance. Buddhist monks and nuns, on the other hand, are able to train their minds to become consciously aware of *all* perceptual phenomena, but without their attention becoming attached to or drawn in by any one thing, creating what could be described as a generalised non-specific state of awareness. Somewhere between these two extremes lies what is probably the normal state for most of us: a kind of restive flitting between one object of attention and another, allowing ourselves to 'latch onto' whatever most attracts our interest, whether it is directly relevant to our current activities or not. As a result, we are able to remain appraised of important changes in our immediate environment without having to attend to all of it all the time, instead relying upon our ability to notice change as and when it happens, and act upon it accordingly.

Experiments that involve the deliberate misdirection of a subject's attention, or extremely slow rates of change, demonstrate that when something escapes our attention (i.e. when we do not have occasion to notice it), we can remain completely unaware of surprisingly dramatics events, such as a gorilla walking across a basketball field (Simons and Chabris 1999) or a car mysteriously changing colour from red to green (Noë 2004: 420). Provided that our attention is being distracted by some ongoing task or event, or that the changes happen slowly enough, we simply fail to notice them. These effects are known to psychologists as *inattentional blindness* and *change blindness*, respectively, and strongly suggest that, contrary to the snapshot model, the brain does not represent or maintain a complete image of the visual field. If it did, then we would easily spot the difference between the changes in the

'external' world and our 'internal' representation of it (*ibid.*). In practice, however, we only take in and remember those aspects of the world to which we are currently attending, with everything else that remains unperceived also remaining outside of consciousness.

On the basis of the above evidence, the direct access model of perception is both compatible with the phenomenology of attention and capable of overcoming various problems associated with the snapshot theory; namely the need for internal representation, its inability to deal with indeterminate, ambiguous or contradictory data, and the fundamentally active nature of perceptual attention. However, the question of which model is correct is also partly empirical, and so we must also take into account the evidence of the physical sciences. As Merleau-Ponty (2002: 108–9) argues, this is problematic in that a purely objective description of the workings of the physical body and mental processes may be insufficient to explain the nature of subjective (or inter-subjective) phenomena like perception and consciousness. By omitting the very thing that it attempts to describe (i.e. subjectivity itself), and using concepts that are themselves derived from subjective experience, physical science may simply be unable to give a full or accurate account of the 'body-subject' (*ibid.* 105), or the nature of first-person experience. Nevertheless, the empirical evidence may still help to rule out certain hypotheses on the basis of their incompatibility with current scientific knowledge, and so the next question that I shall consider is whether it is, from a scientific standpoint, plausible to deny the existence of attention as a distinct cognitive process.

IV. The Neurological Evidence

In his book, *How Brains Think*, William Calvin (1988) proposes the existence of so-called 'Darwinian processes' (*ibid.* 136) within the physical brain by which thoughts and perceptions compete with one other for control of our limited cognitive resources. He goes on to suggest a plausible physical mechanism for these processes, involving the establishment of synchronised patterns of firing between neighbouring regions of the brain, with the winners of this internal power struggle going on to form part of our conscious mental state (*ibid.* 146). Edelman and Tononi (2000) arrive at a similar conclusion

with their 'dynamic core' hypothesis, which correlates the contents of the conscious mind with a highly selective and constantly changing region of the subject's brain. However, rather than simply equating consciousness with physical brain processes, they describe the central nervous system as entering into concert with the subject's body and environment in order to elicit characteristic patterns of behaviour and thought (*ibid.* 50). This principle also extends to memory, which they describe as non-representational in that the act of remembering also modifies the structure of the subject's brain in a way that more closely resembles the practice of a skill or ability than a purely computational act of information recall (*ibid.* 99). Accordingly, 'every act of perception is, to some degree, an act of creation, and every act of memory is, to some degree, an act of imagination' (*ibid.* 101) – a sentiment that is highly reminiscent of Merleau-Ponty's (2002: 26) view that memory involves the 'reliving' of experience.

Significantly, neither of the above theories requires anything resembling the distinct faculty or power of attention that Dretske and Peacocke's account requires. Rather, attention is thought of as a characteristic of the process by which thoughts or perceptions gain prominence over one another, either by means of some kind of internal voting mechanism, as in the case of Calvin's Darwinian processes, or by entering into the dynamic structure of consciousness, as per Edelman and Tononi. According to these theories, consciousness is inherently attentional in nature. By engaging in a constantly shifting series of interactions with its environment, the conscious subject selects which aspects of the world are experienced and brought into conscious awareness, thus allowing it to shape and direct its future thoughts and actions. Such actions guide and refine the progression of consciousness, either by predisposing the subject to seek out further perceptual experiences that are appropriate to its current goals and stimuli, or by bringing about thoughts and actions that are directed towards achieving these goals. It is this process of selection and direction towards autonomously created goals and behaviours that corresponds to what we normally call 'attention'. Under this account, attention is both partially *constitutive* and an essential characteristic of consciousness that arises from the manner in which the conscious mind evolves and adapts in response to its environment. If this view is correct, then attention and consciousness

cannot be separated *because they are both aspects of a single integrated system*, and not two distinct faculties, as Dretske and Peacocke's account supposes.

These views closely match those of Merleau-Ponty, who states that '[t]he first perception of colours properly speaking, then, is *a change in the structure of consciousness*' (*ibid.* 35; my italics). In other words, to perceive (or pay attention to) something is to *bring it into consciousness*, thus generating new or altered structures of consciousness. These structures are what the neurological theories mentioned above are attempting to describe (notwithstanding the methodological difficulties previously noted). In contrast to the snapshot model's passive 'reading off' of information from previously acquired sense data, the direct access model characterises attention as a fundamentally active process that is centred upon the goals and nature of the embodied subject, and an integral part of the cycle of action and interaction that constitutes conscious awareness.[5] This is the meaning of Merleau-Ponty's claim that attention 'does not exist' (*ibid.* 34), which is supported by his account of the fundamentally integrated and systemic nature of sense perception and consciousness.

To illustrate the point by way of a thought experiment, try to imagine a being that possesses the ability for conscious reflection but without any of the attentional processes described above. Instead of being drawn to those features of the environment that capture its interest, such a being would be equally and simultaneously aware of *all* of the elements in its visual, auditory and other sensory fields. Its mental processes would lack the interplay of mental and perceptual objects that arises as a result of the figure-ground structure, and would instead comprise of a simultaneous progression of its entire mental state in a manner that is more akin to computation or symbol manipulation (albeit of a massively parallel kind) than thought as we know it (*ibid.* 17). Indeed, it is difficult to imagine how such a creature could be anything more than a passive mirror to its environment, as without the figure-ground

[5] A comparison may be drawn with Wittgenstein (1967: §608), who denies that psychological phenomena can necessarily be 'read off' the physical state of the brain or body.

structure that is so essential to sense experience, the concept of consciousness itself begins to breaks down. Although this does not in itself prove that such a radically different form of consciousness from our own could or does not exist, it does demonstrate the closeness of the relationship between consciousness and attention, at least as far as our own thinking is concerned.

V. Two Possible Counterexamples

Two potential counterexamples to the direct access model of perception and attention described above are (i) the physical structure of the visual cortex, and (ii) the phenomenon of photographic memory. The first of these objections is motivated by the existence of highly regular and organised neurological structures for detecting movement, lines and edges of various orientations throughout the lower rear portion of the brain (e.g. Garey 2001). Although the existence of such structures might be thought to provide evidence of the kind of 'representational surface' that the snapshot model requires, current empirical evidence fails to resolve the issue either way. At best, these regions form the first rung in a series of complex neural mechanisms that undoubtedly participate in visual perception, but it is unclear how or at what point such 'signal processing' turns into what could properly be called perceptual awareness. To simply assume that such structures function in the way that the snapshot model requires would be to beg the question against the direct access model, and so cannot be taken to resolve the issue without further evidence and understanding of the precise neuro- and physiological processes involved.

The phenomenon of photographic memory is, however, more problematic. In such cases, subjects are apparently able to 'read off' details of a previously perceived scene – a page of a book, for example – whilst experiencing the phenomenological characteristics of precisely the sort of 'internal screen' that the direct access model denies. Such evidence could be claimed to support the snapshot theorist's notion of internal representation, with attention as a process that is common to both normal and so-called photographic perception. Indeed, Merleau-Ponty (*op. cit.* 118) and contemporary researchers, such as Ramachandran and Blakeslee (1999), often emphasise the importance

of similar pathological cases in providing evidence for the normal functioning and structure of the human mind. However, in the present case it is unclear whether such extraordinary feats of memory can be described as a form of perception at all, since the subject cannot be said to *see* the additional detail either when they are first exposed to the scene, or when they are later able to recount previously unnoticed aspects of it. Rather, photographic memory is, as the name suggests, an unusually vivid form of *recall* that acts alongside ordinary perception, but in which the normal order of events is reversed, with memory playing the role that is usually associated with the senses. On this account, the existence of photographic memory is not necessarily indicative of normal perceptual processes, as the snapshot theorist would wish to claim, although the mere existence of such detailed memories of past sensory experiences could itself provide support for the kind of internal representation that the snapshot model requires. However, further empirical evidence would be required to support this hypothesis, and since both theories are able to provide an account of the phenomenon, this cannot be taken as a knockdown argument in favour of the snapshot model.

VI. Conclusion

I have argued that rather than far from being a distinct faculty, or 'phase' of consciousness, attention is an integral part of all perceptual and cognitive processes and, as such, is partially constitutive of them. The snapshot model of perception advocated by contemporary philosophers, such as Dretske and Peacocke, influenced by causal and physical notions of perception, and a computational view of the mind, fails to account for the empirical phenomenon of change blindness, and is at odds with the phenomenological structure of attention as we experience it. Furthermore, by internalising the perceptible world in the form of an internal representation or 'screen', the snapshot model is unable to explain the indeterminate and contradictory qualities of perceptual experience, its fundamentally active nature, or its role in consciousness in general. Such difficulties are simply deferred to the inner level, where they recur one step removed from the phenomena to which they relate. Conversely, by conceiving sense perception as inherently attentional and directed towards particular aspects of a world

within which the subject is essentially embedded, the direct access model that arises out of Merleau-Ponty and Alva Noë's phenomenological account is able to explain the links between perception, attention and consciousness as aspects of a single integrated system which, when acting as a whole, yields the behaviour and conscious experience that we associate with living, sentient beings. Recent scientific theories, such as those developed by Calvin, Edelman and Tononi, show that the direct access model is both compatible with objective physical descriptions of the body whilst remaining sympathetic towards the irreducibly phenomenological approach that Merleau-Ponty and Noë espouse, despite the difficulty of attempting to describe the subjective realm of experience in purely objective terms.

In summary, Merleau-Ponty's denial of the existence of attention as something that exists over and above the phenomenon of perceptual awareness may be seen as a consequence of his views about the nature of perception and consciousness in general, and the primacy of the figure-ground structure in human perceptual awareness in particular. These views directly contradict the mechanistic accounts offered by Dretske, Peacocke, and other theorists who subscribe to a causal account of perception and attention, whilst successfully accounting for many otherwise mysterious aspects of perception, as well as recent developments in the rapidly expanding fields of cognitive and neurological science. Although the empirical evidence is currently inconclusive on this point, the direct access model's consistency with scientific explanation and explanatory power makes it highly plausible that attention as a distinct faculty or process does not in fact exist, but is rather just one aspect of the highly integrated and systemic nature of perception, thought and conscious awareness.

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