# *Perceptual Presence: An Attentional Account*

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## *1) Introduction*[1]

It is a distinctive mark of normal conscious perception that perceived objects are experienced as actually present in one's surroundings. Nonetheless, it is not easy to characterize this feature. A remarkably tortured attempt is made by Husserl: "The object stands in perception as there in the flesh (*als leibhafter*), it stands, to speak still more precisely, as actually present, as self-given there in the current now" (1997 [1907]:§4; for a similar characterization see also Jaspers 1911). More concisely, Dokic and Martin gloss this feature as "the feeling of being perceptually confronted with a real thing or event" (2012:538). Matthen tries to illustrate it by appealing to a simple example: "When I look down at my hands right now, it looks as if they are working on a black computer keyboard. There is something about my visual state that makes it seem as if the keyboard is really there, and that it is really black" (2010:107). The aim of this paper is to offer a

[1] I presented versions of this paper at the University of Porto, at London Institute of Philosophy and at the Institute Jean Nicod in Paris. On all occasions I greatly benefitted from discussion with the audience. Special thanks are due to Roberta Locatelli, Hong Yu Wong and, in particular, Jérôme Dokic. I'd also like to thank Enrico Terrone for his very helpful feedback on an earlier draft and the two anonymous referees of this journal for their insightful suggestions and comments. Finally, I'd like to thank BIAL Foundation for supporting this research.

phenomenologically accurate and empirically plausible account of the cognitive underpinning of the feature of conscious perception these passages attempt to describe, which I shall call *perceptual presence* (PP).[2]

Of course, such attempts to describe (PP) don't tell us much about it. What they offer is a merely preliminary characterization. To get a better grip on such an elusive phenomenon, philosophers have typically pursued two strategies (often together). First, they have contrasted perception with other sensory states lacking (PP), in particular with imagination[3] and pictorial seeing (Husserl 1997 [1907]:§4, Matthen 2005:306, Matthen 2010, Dokic 2012, and Farkas 2013). Second, they have considered sensory states other than genuine perceptions that also display (PP), most notably hallucinations (Husserl 1997 [1907]:§4, Dokic, Martin 2012, Dokic 2016, and, in particular, Farkas 2013).

Let us start with the contrast cases. When I visually imagine an apple on my kitchen table, the imagined apple is not (usually) experienced as present. Similarly, when I look at a picture of an apple on my kitchen table, the depicted apple is not (usually) experienced as present either. So why are perceived objects experienced as present whereas imagined and depicted ones are not? To answer this question, some stress that only the objects of perception are experienced as mind-independent (see Farkas (2013) and Matthen (2010); Dokic and Martin (2012)'s quoted gloss seems to point in the same

[2] This term is also employed by Dokic (2012:193), who in the same paper also talks of "feeling of presence". Elsewhere Dokic uses the term "feeling of reality" (see Dokic, Martin 2012 and Dokic 2016). Matthen (2010) talks of "feeling of presence" and Farkas (2013) of "sense of reality". Here is why I prefer the label "perceptual presence". First, it is better to avoid terms like "sense" and "feeling", for they seem to imply, and surely suggest, that the nature of the feature in question is phenomenological. That this is the case, however, is an open question. (See further below in this section for this.) Second, that feature seems better described in terms of "presence" than of "reality". If I look at a tennis match on the TV, I surely experience the players as real, though I don't experience them as "really there" in the same sense in which my computer keyboard is "really there", to stick to Matthen's example. (Thanks to Enrico Terrone, who made me appreciate this point.) Since theoretically neutral and phenomenologically more accurate, the term "perceptual presence" is thus a better candidate.

[3] The same kind of contrast can be drawn between perception and imagery, which is arguably not identical with imagination (on this point, see Nanay 2016:66-67). As this difference has no bearing on the arguments presented in this paper, I shall simply ignore it and talk in terms of imagination throughout.

direction). This suggestion surely captures a fundamental feature of perceptual experience and helps distinguish it from imagination, for—in most cases of visual imagination at least—the imagined object is indeed experienced as mind-dependent. However, appeal to mind-independence does not allow to distinguish between perceptual experience and pictorial seeing, for when I look at a picture of an apple on my kitchen table I don't experience the depicted apple as mind-dependent (on this point, see Matthen 2012:119). I do not have the sense that, were I to cease looking at the picture, the depicted apple would disappear. Nor do I have the sense that I am the only one who can see it. So what's the difference between one's perception of a real apple and one's perception of a depicted one? A plausible suggestion is that whereas real objects are experienced as part of the actual environment, depicted ones are experienced as parts of a merely pictorial environment. Now consider again the case of imagination. Suppose I look at my kitchen table and thereby visually imagine an apple on it. In this case, my experience is of an imagined object as being part of the actual environment. Nonetheless, the imagined apple is not experienced *as actually present* in my kitchen. I am just imagining it to be there on the table. A lesson we can draw from these considerations is thus that (PP) requires that the relevant object be experienced as mind-independent *and* as part of the actual—i.e. not of a merely pictorial—environment.[4] Importantly, when taken alone, none of these two features suffices for (PP), for a depicted object can be experienced as mind-independent and an imagined object can be experienced as part of the actual environment.

As I mentioned earlier, genuine perceptions are not the only sensory states displaying (PP). Hallucinations also share this feature. The puzzlement prompted by such episodes consists precisely in the fact that the subject experiences a certain object as perceptually present even though no such object is actually there. Of course, to be satisfactory an account of (PP) will need to make sense of the fact that objects are experienced as perceptually present both in veridical perception and hallucination (on this, see especially Farkas 2013:401). For this reason, and also due to its especially challenging character, a great part of my discussion will focus on the case of

[4] This last notion is admittedly vague. Discussion in section 6 will help to qualify it.

hallucinatory experience. However, reflection on the contrast case of pictorial seeing will also prove crucial for refining the account on offer.[5]

An interesting question concerns what kind of phenomenon (PP) might be. There are four main options in the literature:

i. (PP) is part of perception's phenomenological character;

ii. (PP) is part of perception's representational content;

iii. (PP) is constituted by a higher-order belief or judgment

iv. (PP) is constituted by a "cognitive feeling".

As the account I shall defend here is compatible with (i), (ii) and (iv), I won't engage into a detailed discussion of these different options.[6] All my proposal entails is that (iii) is false. This, however, is not much of a burden, for (iii) is untenable. The reason is that (PP) is insensitive to the higher-order beliefs (or judgments) one endorses concerning the status of one's current perceptual experience. To make a hallucinatory example: even if Ute believes that she is hallucinating the dog she seems to be seeing there on the table, still the dog is—or, at least, can be—experienced by her as perceptually present.[7]

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[5] As we saw, imagination is another usual contrast case to perception when it comes to (PP). So why not draw further on this contrast? The reason is that the case of imagination is so intricate that no even remotely satisfying treatment could be aimed at on this occasion. To highlight the complications, let me just name two of them. First, as already noted (see footnote 2), both imagination and imagery can be contrasted with perception. So one would need to clarify the difference between them and, ideally, deal with both. Second, though hallucinations typically display (PP), some have argued that they are just a specific kind of imagination (Allen 2015) or imagery (Nanay 2016). If one of these views is true, it is thus simply false that imagination or imagery is, as such, a contrast case when it comes to (PP). As these are arguably not the only troubles awaiting an appropriate examination of imagination and/or imagery, I shall leave this issue to further work.

[6] Farkas (2013) and Matthen (2010; see also Dokic 2012:398-99) provide arguments against (i) and (ii), respectively. Matthen (2010), Dokic (2012) and Dokic and Martin (2012) defend (iv).

[7] Husserl (1997 [1907]: §5) already makes this point by appealing to resisted hallucinations.

Dokic and Martin (2012) suggest that (PP) is produced by a subpersonal mechanism monitoring or tracking first-order sensory states:

> The feeling of reality with respect to what is perceived is the conscious result of low-level MC [meta-cognition] mechanisms whose function is to 'tag' first-order informational processes as being genuinely perceptual, or more specifically generated from the external world. (Dokic, Martin 2012:538)[8]

This meta-cognitive view seems plausible, as it nicely fits with traditional source-monitoring accounts of hallucination, according to which sensory states go through some sort of meta-cognitive reality-test so that only those states that pass the test are considered genuine perceptions (see, for instance, Bentall 1990). Accordingly, hallucinations are the product of malfunctions in the testing procedure—roughly, states of the wrong kind pass the reality-test and are erroneously taken for perceptions. Of course, the meta-cognitive view only provides the general template for an empirical account of (PP). The aim of this paper is to fill in that template by providing a specific hypothesis about the feature of sensory states tracked by the subpersonal mechanism responsible for (PP).

Here is an overview of the paper. In section 2 I consider and criticize the seminal account of (PP) proposed by Mohan Matthen (section 2). I then put forward my own attentional account. I start by offering a simple version of the view by focusing on vision and then extend it to audition (section 3 and 4). After a brief discussion of depersonalization (section 5), I consider some objections (section 6). The last objection, in particular, will motivate a refinement of the attentional account of (PP) for the visual case (section 7). The paper ends with some concluding remarks mainly about the specificity of the visual case *vis-à-vis* the auditory one.

## *2) Matthen's Model*

[8] Matthen's proposal is similar, see (2010:114-15).

Before I go on to sketch my own account of (PP), in this section I shall critically review Mohan Matthen's own one. Matthen's view is particularly relevant because, to my knowledge, it constitutes the only explanatory account that specifies which particular features of perceptual processing are responsible for (PP). It is thus a direct competitor to the view I shall advocate here.[9]

Matthen develops his account by contrasting seeing, which is typically characterized by (PP), and pictorial seeing, which is not. He argues that the difference between these two cases is not one of content (a perception and a picture may have the same content), but one of attitude. But how does the attitude of seeing differ from that of pictorial seeing, and how does this difference matter to the issue of (PP)? As Matthen (correctly) notes, depicted objects "look spatially disconnected from you", whereas normal seeing involves "a visual feeling of spatial connection" between subject and perceived scene (Matthen 2010:115). His hypothesis is therefore that (PP) depends on a specific kind of spatial representation.

To articulate this idea, Matthen exploits the Two-Streams Hypothesis (TSH), according to which there are two functionally independent kinds of vision. On the one hand, *motion-guiding vision* provides the information about the *localization of objects in egocentric space* that controls one's bodily interaction with the environment. On the other hand, *descriptive vision* provides information about the *visible features of the objects in one's surrounding*, such as color, shape and orientation. Neurophysiologically, motion-guiding vision and descriptive vision are associated with different brain networks, the so-called dorsal and ventral streams respectively.[10] The claim defended by Matthen is

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[9] Matthen's most detailed treatment of the "feeling of presence" is to be found in his (2010), on which I shall focus. However, see also Matthen (2005, especially:304-07).

[10] Two things to note here. First, the labels "motion-guiding vision" and "descriptive vision" are not of common use in the literature, as far as I know. Here, I adopt Matthen's terminology for ease of discussion. Second, Matthen stresses that his argument is committed only to the functional independence of the two visual systems, and not also to their neuroanatomical segregation. Though in my paper I sometimes use the more current labels "ventral" and "dorsal", which refer to specific regions of the brain, I do not assume that no relevant neuroanatomical connection between the two systems exists, nor that Matthen's proposal requires this to be the case.

that (PP) depends on motion-guiding vision. More specifically, the proposal is that (PP) "arises out of a visually guided but non-descriptive (i.e. non-conscious, unstored, unrecallable) capacity for bodily interaction with external objects" (Matthen 2010:123).

Matthen's proposal nicely explains the phenomenological difference between seeing and pictorial seeing. The "feeling of spatial connection" characteristic of (normal) seeing depends on the working of motion-guiding vision. As depicted objects cannot be localized in egocentric space nor interacted with, pictorial seeing lacks this feature. Despite of this, Matthen's proposal also faces some problems.

These problems derive from cases of dissociation between descriptive and motion-guiding vision. The first one is *blindsight*. Usually, blindsight patients suffer a complete loss of descriptive vision in part of their visual field. When presented with a stimulus in the affected region of their visual field, they report not to undergo any visual experience whatsoever. However, if asked to point to the stimulus, they do point to the correct location with reasonable accuracy. According to (TSH), blindsight results when motion-guiding (dorsal) vision is (partially) preserved despite the subject having suffered a complete loss of descriptive (ventral) vision (see Milner, Goodale 2006). Now, if (PP) depended on the capacity (i) to locate a given object in egocentric space and (ii) to interact with it based on visually-gathered information, one would expect (PP) to characterize blindsight, at least residually. However, this is not the case, as objects placed in the affected region of the patient's visual field are not (usually) experienced as present.[11]

The second case is *optic ataxia.* Though unable to reach for and grasp objects located in the periphery of their visual field, patients suffering from this pathology can make accurate judgments about their visible features. Optic ataxia is explained by (TSH) as a case in which impairment of motion-guiding (dorsal) vision coexists with preserved (ventral) vision (see, again, Milner, Goodale 2006). Again, if (PP) depended on the

[11] Studies on subjects with normal vision show that "invisible" objects that remain undetected by the ventral stream can elicit responses in the dorsal stream (see Fang & He 2005). As no awareness whatsoever of such objects is reported, activation of the dorsal stream can occur (as in blindsight) in the complete absence of conscious perceptual experience and, *a fortiori,* of (PP).

capacity (i) to locate a given object and (ii) to interact with it based on visually-gathered information, one would expect (PP) to be disrupted in cases of optic ataxia. However, patients do not seem to visually experience the objects as, in any sense, non actually present in their environment.

Matthen argues that (PP) depends on the ability to bodily interact under visual guidance with objects in one's environment which constitutes the core function of motion-guiding vision. This view, however, faces serious difficulties when it comes to explaining what goes on in cases in which motion-guiding vision and descriptive vision are dissociated. So I think it's worth looking for an alternative account. (A further weakness of Matthen's account will be discussed in section 4 below.)

*3) The Attentional Model: a First Sketch for the Visual Case*

Contrary to Matthen's account, the basic version of the account I'm going to propose is based on reflection on the case of visual perception and hallucination. (I shall come back to the case of pictorial seeing later in the paper.) At a first shot, and restricted to visual modality, the attentional account can be formulated as follows:

($AA_v$) In visual experience (PP) depends on selection of a visual object by visual attention.

If we accept the core idea of the meta-cognitive approach, this means that selection through object-based visual attention is the relevant feature of visual states tracked by the meta-cognitive mechanism responsible for (PP). When a visual object is so selected, this mechanism tags it with (PP). The objects so selected are those we experience as perceptually present.

My account appeals to a specific notion of visual attention, namely *object-based visual* attention (for an overview, see Scholl 2001 and Chen 2012). Object-based attention is usually contrasted with spatial attention and feature-based attention. These three kinds of attention are distinguished by the type of *unit* selected by the attentional mechanisms. The unit selected by spatial attention is a region of space; the unit selected

by feature-based attention is a visual feature such as color or orientation; the unit selected by object-based attention is a visual object. My claim is that object-based visual attention is the kind of visual attention involved in the production of (PP).

In what follows I shall offer some considerations in support of ($AA_v$). As ($AA_v$) is an empirical claim about the mechanism underlying (PP), such considerations are not intended to provide an argument establishing the truth of ($AA_v$). Their aim is merely to raise its plausibility.

I start with some general phenomenological considerations. ($AA_v$) seems to capture an intuitive phenomenological fact about perception: usually we perceive as present the objects we attend. When I visually attend to my car parked outside the window, my visual experience typically displays such a phenomenological trait. Unattended things usually don't pop up in that way in one's experience, as strikingly demonstrated by the phenomenon of inattentional blindness. Interestingly, the objects experienced as perceptually present in complex visual hallucinations occupy the focus of one's visual field, rather than its periphery (see Collerton et al. 2005). Thus, hallucinated objects accompanied by (PP) occupy the same spot which in veridical perception is normally occupied by the objects we are attending.

Empirical evidence from hallucination research reinforces such general phenomenological points. There is growing agreement that deficits of attention, in particular object-based attention, play a crucial role in the production of complex visual hallucinations (VH). Complex hallucinations differ from simple hallucinations in terms if content: the former ones are hallucinations of people, faces, animals and objects; the latter ones include, for instance, dots, lines, flashes and geometrical patterns. To my knowledge, Collerton et al. (2005) were the first to put forward a neurocognitive attentional model for complex VHs. An important motivation behind Collerton's hypothesis is precisely that the hallucinated objects figuring in complex VHs appear within the field of focal attention. This suggests that some malfunction in visual attention plays a crucial role in producing hallucinations of this kind. This hypothesis is supported by a survey of the available data regarding the occurrence of complex VHs in several

distinct pathologies, like Charles Bonnet syndrome, Parkinson, dementia with Lewy bodies, schizophrenia, etc., which all seem to involve attentional deficit.

Collerton's perceptual and attentional deficit (PAD) model for complex VHs is based, in turn, on a family of models about the functioning of visual object perception. The basic idea is that object perception involves two basic steps. The first one consists in the "rapid formation of sophisticated (although volatile) proto-objects" (Rensink 2000:1476). The second one consists in the attentional selection of a proto-object (or of a few of them) for further processing and subsequent "formation of coherent objects" (1476). Of course, the proto-objects postulated by such models differ from the object of conscious perception. They "reflect the visual system's segmentation of current visual input into candidate objects" (Driver et al. 2001:62). The relevant segmentation involves primarily phenomena of perceptual grouping. These proto-objects (not more than a few) are selected by visual attention for further processing. The object of conscious perception results from this additional cognitive work.

Given this picture of the cognitive system underlying visual perception, Collerton argues that:

> a hallucination is experienced when an incorrect proto-object is bound in the attentional focus of a scene. This is generally when the visual system is constrained by a combination of impaired attentional binding and poor sensory activation of the correct proto-object, in conjunction with a relatively intact scene representation that biases perception towards an incorrect image … . (2005:748)

This model shares with the majority of neurocognitive models about hallucinations the assumption that hallucinations are due to a combination of bottom-up and top-down deficits. The specific claim is that such deficits *combines* at the level of object-based attention. Here is an example: complete loss or severe degradation of the sensory inputs on which the visual system operates (like in Charles Bonnet syndrome) results in the arbitrary segmentation of the visual scene and to the consequent formation of incorrect

proto-objects.[12] A conscious VH occurs when one such incorrect proto-object is selected by visual attention.

Other neurocognitive models stress that attentional malfunction, in particular at the level of object-based attention, is implicated in the etiology of complex VHs. Among recent work, that by James Shine's group is particularly important (see, in particular, Shine et al. 2014). Shine's model is based on previous results suggesting the existence of three different attentional network in the brain, the so-called Default Mode Network (DMN), Ventral Attention Network (VAN) and Dorsal Attention Network (DAN). The DAN, in particular, is supposed to be responsible (among other things) for voluntary orientation of attention and cognitive information processing. Roughly, it is responsible for visual attention's standard contribution to the selection and interpretation of visual stimuli. Accordingly, Shine and colleagues argue that complex visual hallucinations are due to a "failure to recruit the DAN during periods of perceptual ambiguity", resulting in "the interpretation of those perceptual targets by neuronal networks poorly suited to the task, such as the VAN and DMN" (Shine et al. 2014).

Despite the differences in the details, two major neurocognitive models of VHs converge on the idea that complex VHs result from malfunction of object-based visual attention (see also Koerts 2010 for additional evidence). The visual system forms and selects incorrect proto-objects.[13] This process yields hallucinations with object-like content. Typically, such hallucinated objects display (PP). In light of this—and of the phenomenological considerations set out above—, that (PP) tracks objects selected by visual attention seems at least a plausible empirical claim.

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[12] For instance, VHs in Parkinson disease correlate with degraded visual input due to reduced contrast and color discrimination (see Diederich et al. 2005).

[13] The notion of "incorrect proto-objects" employed by Collerton is somewhat ambiguous. A proto-object may be incorrect because it misrepresents an item in the environment, or because no suitable item is there at all. Given that Collerton's model is about hallucinations, the second option is here the pertinent one. However, there might as well be visual illusions caused by a malfunction of object-based attention. In such cases, if they exist, the notion should then be read in the first sense. (Thanks to an anonymous referee for raising this issue.)

There are two further points I want to stress. First, both Collerton and Shine argue that object-based attention plays a key role in causing the occurrence of *complex* visual hallucinations. On the contrary, they take it to play no analogous role in the etiology of simple hallucinations, such as dots, lines and geometrical patterns. The reason is simple: in most cases, the content of simple hallucinations does not involve any object at all. Therefore, it would be odd to appeal to a dysfunction of object-based attention to explain them. Why is this relevant for my attentional account? If (PP) depends on selection by object-based attention, it should tag only hallucinations of object-like items, and not simple hallucinations. Now, this is precisely what happens: while hallucinated objects are typically experienced as present in one's environment, the same does not occur when one hallucinates only simple shapes and patterns.

Second, as Farkas (2013:402) notices, (PP) "attaches not to the experience itself but to the object of experience". If I see an apple, it is the apple itself that is perceived as present. Contrast this with the following case. If my visual experience of the apple is blurred, blurriness is not experienced as a feature of the apple, but as a feature of the experience I'm having of it. Thus, whereas blurriness is experienced as a feature of one's experience, (PP) is experienced as a feature of the object one is perceiving. It is a *transparent* feature, we may say. Now, according to the account I'm proposing (PP) attaches to the objects we visually attend to. It therefore offers a straightforward explanation of (PP)'s being a transparent feature. Though admittedly a minor one, this point further reinforces its pedigree of phenomenological accuracy.

*4) Extending the Account: the Auditory Case*

So far, I've addressed only the case of vision. Of course, it would be a considerable gain if the account could gather supporting evidence from literature on other sensory modalities. I shall argue that the prospects are good by briefly investigating the case of audition.

First, theories of auditory perception usually take object-based auditory attention to play a role similar to that of object-based visual attention. More specifically, they

assume that a preliminary scene parsing (see Bregman 1993; O'Callaghan 2008) guides further allocation of attention to specific auditory objects, i.e. sounds (Kubovy & Van Valkenburg 2001; Shinn-Cunningham 2008). Thus, it is at least reasonable to think that the model could be extended to cover also audition:

($AA_A$) In auditory experience (PP) depends on selection of an auditory object (sound) by auditory attention.

As my argument for the visual case draws heavily on evidence regarding VHs, we may ask if ($AA_A$) can equally find support from research on hallucination.

Hugdahl et al. (2013)'s recent findings suggest that the occurrence of auditory verbal hallucinations (AVH) in schizophrenia results, at least in part, from deficits of object-based auditory attention.[14] As they put it, AVHs "seem to attract attention inward towards the 'voices'" (305). More precisely, the hypothesis is that an AVH is produced when an incorrect, typically internally produced stimulus is selected by auditory attention. Thus, Hugdahl's account constitutes a nice parallel to Collerton's PAD model for the auditory modality. Interestingly, Hugdahl and colleagues argue that a further deficit in cognitive control inhibits the subject from (overtly) allocate auditory attention to external stimuli, thus contributing to the maintenance of AVHs. Thus, according to the model both occurrence and persistence of AVHs are due to impaired attentional selection of auditory stimuli. To conclude, my suggestion is that the "voices" heard by schizophrenia patients are experienced as perceptually present in virtue of their being (and remaining) selected by auditory attention.

It is helpful to contrast how the attentional model fares concerning the auditory case with Matthen's account of (PP). There is evidence of an auditory two-streams system similar to that postulated for vision. As in the case of vision, moreover, the auditory dorsal pathway is supposed to provide information about the location of things in one's surroundings to be used for motor control (see Kubovy, Van Valkenburg 2001). This would provide a natural extension to Matthen's original proposal to the effect that,

[14] For more empirical evidence, see also Løberg et al. (2015) and Rayner, Lee & Woodruff (2015).

in the auditory case, (PP) depends on the capacity to localize the auditory stimulus in egocentric space.

This hypothesis, however, fails to make sense of so-called internal verbal hallucinations (IVAH), a less common and somewhat puzzling sub-class of VAHs in which the "voices" are heard as being "in the head". Episodes of this sort contrast with external verbal hallucinations (EVAHs) in which the "voices" are experienced, like in normal auditory perception, as located in external space. Importantly, reports by subjects experiencing VAHs—mostly schizophrenia patients—suggest that the felt reality of the "voices" is independent of apparent location. Consequently, IVAHs constitute a class of cases in which the hallucinatory auditory object ("voice") is perceived as (i) present *and* (ii) "in the head", i.e. as not located in external space at all. Indeed, a recent fMRI study by Looijestijn et al. (2013) suggests that IVAHs differ neurophysiologically from EVAHs precisely by lack of activity within the dorsal stream. To put it differently: whereas the "voices" feel real in both EVAHs and IVAHs, their dorsally-realized localization in egocentric space occurs only in the former class of episodes. Therefore, at least in the case of audition, evidence from the case of IVAHs indicates that (PP) cannot depend on the working of the motion-guiding (dorsal) system.

To conclude, whereas ($AA_A$) gains support from recent work on auditory hallucinations, an extension of Matthen's model to the auditory case seems to face substantial empirical problems. Of course, Matthen could simply rebut that he intended his account to specifically explain how (PP) works in the visual case. Hence, a failure to extend it to other modalities would hardly disprove its validity. Nonetheless, an account that *can* be successfully extended to another sensory modality should be preferred. Though I cannot claim to have exhaustively showed that the attentional model achieves such a success, I take the evidence surveyed in this section to suggest that ($AA_A$) constitutes at least a promising attempt in that direction.

*5) The Case of Depersonalization*

Patients suffering from depersonalization typically report to experience both their own self and the environment they perceive as, in some sense, unreal. Dokic (2012:400) and Dokic and Martin (2012:539) have argued that the world-directed feeling of unreality characterizing this condition[15] is determined by a disruption of the mechanism responsible for (PP). One could therefore question whether the attentional model has enough resources to make sense of what goes wrong in this disorder.

Given that systematic neurocognitive research on depersonalization has been pursued only in recent years, the available empirical evidence makes it difficult to adjudicate the case. On the one hand, there is evidence suggesting that depersonalization involves deficits in visual attention (together with deficits in spatial reasoning as well as verbal and visual short-term memory), whereas general cognition and working memory seem unimpaired (see Guralnik, Schmiedler, Simeon 2000; Adler et al. 2014).[16] On the other hand, the visual attention deficits detected (i) concern spatial rather than object-based attention and (ii) occur only under certain experimental conditions (e.g. more demanding tasks), whereas depersonalization patients' reports do not suggest any such restriction: they just say of any object that it feels unreal.

I think (i) is not decisive. As it is not clear how spatial and object-based attention in general interact, it is at least possible that impairments of the former may also cause (or co-occur with) impairments of the latter. Point (ii) seems more compelling. Note, however, that visual attention seems to be impaired in *different ways* in depersonalization. Empirical evidence suggests (according to the papers just mentioned), for instance, an imbalance between top-down and bottom-up attention (with abnormal preponderance of the latter over the former) and a lowered sensitivity in presence of visual noise causing a slower features extraction. So even if each kind of impairment is

[15] Sometimes this specific feeling of world-directed unreality is described in the literature as the mark of derealization, a condition that is in turn categorized as part of a broader depersonalization/derealization disorder.

[16] Importantly, Guralnik, Schmiedler and Simeon (2000) suggest that the detected short-term memory deficits are "secondary to difficulties focusing, perceiving, and taking in new information" (107). Attention deficits seem thus to be the primary problem here.

restricted to certain kinds of stimuli and conditions, there will be several different kinds of stimuli and conditions to which the visual system won't react as it does in normal subjects. A mutual reinforcement also seems possible. For instance, impaired extraction of visual features may reinforce the imbalance between top-down and bottom-up visual attention. Incorrect binding and selection of visual objects may just be another effect of this kind of malfunction.

One may worry that given the complexity of this condition it is difficult to isolate the specific role supposedly played by lack of (PP) within depersonalization's overall visual phenomenology. Moreover, some researchers describe the outward-directed feeling of reality that is disrupted in depersonalization as something different from what I have called (PP). For instance, according to Varga (2012) such feeling "intends the world as a whole and not as an object among other objects" (107). Accordingly, patients' reports should not be understood as "about objects experienced in a certain manner" (108). (PP), on the contrary, targets perceptual objects. One could therefore argue that we are dealing with two distinct phenomena.

However, though the outward-directed sense of unreality which is typical of depersonalization is often described as concerning the "external world" or one's "surroundings" (see Sierra 2009:7; Simeon, Abugel 2006: 13, 74), usually such descriptions are *not* meant to deny that patients also experience particular objects as unreal. According to what appears to be a seminal textbook description of depersonalization (approvingly quoted by Simeon, Abugel 2006:12), "[p]eople and objects" are among the things that look "unreal" to depersonalization patients. (More recently, Adler (2014:230) talks of "individuals or objects"). In fact, it seems that *both* a sense of unreality directed at the world in general and a sense of unreality directed at specific objects are typically part of depersonalization phenomenology. Consider, for instance, the following report: "Through the eyes I look out a world that might be a picture of the world, of objects vaguely unreal till I touch them" (Shorvon 1946). Here, the patient describes his (or her) experience of unreality as concerning both the world in general and the particular objects he (or she) sees. (I shall come back later to the pictorial character of depersonalization visual phenomenology.)

Of course, it is not easy to draw neat conclusions here. Perhaps the patients experience their surroundings as unreal because they experience the particular objects in their surroundings as unreal. In support to this claim, one could note that other visual disturbances typically associated with depersonalization, such as macropsia and micropsia (see Simeon, Abugel 2006:13), clearly concern object perception. Accordingly, the object-directed sense of unreality reported by the patients would be the basic phenomenon. Alternatively, one may think that the world-directed sense of unreality is the most fundamental aspect of depersonalization. In that case, lack of (PP) would just be one among other non-basic features of depersonalization's complex visual phenomenology, such as that ordinary objects feel strange or unfamiliar.[17] This weaker claim, however, suffices to defend Dokic's and Martin's contention that disruption of the mechanism responsible for (PP) plays a role in depersonalization phenomenology.

To conclude, there are reasons to believe that lack of (PP) contributes to depersonalization's feeling of unreality. Moreover, the scant empirical evidence available on this syndrome proves compatible with the attentional account of (PP). First, depersonalization patients show substantial attentional deficits that arguably lead to an impairment of the formation and selection of visual objects. Second, these deficits clearly play a role in the etiology of depersonalization's visual phenomenology, including the feeling that one's surroundings and the objects placed in it are unreal. Taken together, these points support the view that object-based visual attention is responsible for (PP) and that its malfunction leads to the feeling that the object one visually experiences are unreal.

*6) Some Objections and a Problem*

[17] Compare the following report: "At times, the most common, familiar objects can seem foreign, as if I am looking at them for the first time. An American flag, for instance. It's instantly recognizable, and immediately means something to everyone. But if I look at it for more than a moment, I just see colors and shapes on a piece of cloth" (Simeon, Abugel 2006:7).

Some objections may be raised against the attentional account. A first worry flows from the controversial relation between consciousness and attention. Suppose that consciousness constitutively depends on attention, as argued for instance by Jesse Prinz (see his 2011). If this claim were true—one could argue—, $AA_{V/A}$ would turn out to be trivial, for not only (PP), but any conscious phenomenon would then constitutively depend on attention. This problem, however, is not particularly pressing. For one, that consciousness constitutively depends on attention is a highly controversial thesis. Moreover, even if we were to grant it, this claim is about attention in general, whereas $AA_{V/A}$ concerns a specific form of attention, namely object-based visual/auditory attention. Thus, even if we were to accept the general claim, the attentional account would still be informative, for it details which *particular*—and more or less operationally specified—kind of attention is implicated in a specific conscious phenomenon.

Further, one could question whether object-based attention is *necessary* for (PP). As Farkas (2013:411) stresses, one "could get a fleeting glimpse of something, and yet be convinced of its reality". In such cases, one could argue, (PP) occurs even though no visual object is consciously seen, thus falsifying the model. In response to this objection, I propose to treat "fleeting glimpses" as specific cases of attentional capture. Typically, a new stimulus is detected somewhere in the visual field. Attentional capture channels the cognitive resources of the visual system to that new stimulus, resulting in a more or less detailed conscious perception of it. On the contrary, a "fleeting glimpse" is a case in which a stimulus is detected, but is too short-lived to allow for the further processing required for detailed conscious perception. Let me elaborate a bit on this idea by drawing on recent empirical work. Experiments conducted by Hollingworth, Simons and Franconeri (2010:1298; see also Franconeri, Hollingworth, Simons 2005) show that attention is drawn "by the abrupt sensory transient created when an object undergoes a salient change", such as "object motion, looming, luminance change, and contrast polarity". For instance, when a cat jumps on the sofa, this motion detected by the visual system is what draws our attention towards the cat. Now, what seems to happen when we experience a "fleeting glimpse" is that attention is captured by a sensory transient that lasts only for a very short time. For my account, the crucial point is that this kind of exogenous capture still involves attentional selection of a visual stimulus for further

processing. Of course, given the short-livedness of the stimulus this process of selection does not issue into any proper object-binding, so that no object is visually experienced. As (PP) does not attach to the conscious perception of an object, what the subject experiences is the feeling that something appeared in one's visual field without one's being able to make out what it was.

There's a point in my argument one may quarrel about. While I have framed my account of (PP) in terms of selection of a visual object, my treatment of fleeting glimpses exploits the notion of "sensory transient", which is not a visual object. Indeed, the authors of the studies just mentioned want to distinguish between transients and objects. Their main point, however, is that sensory transients are "*necessary* for capture" (Franconeri, Hollingworth, Simons 2005:280). To put it differently: a new object can attract object-based attention *only if* it displays, for instance, some kind of motion or brightness change.[18] This means that the power of the relevant transients to capture object-based attention depends on their reliability in predicting that a new object appeared in the visual field. Franconeri and colleagues thus suggest that this kind of exogenous capture constitutes one of the heuristics "used by the visual system to construct high-level 'object' representations for only a subset of items in the visual field" (280). Against this backdrop, "fleeting glimpses" may thus be seen as cases in which this kind of heuristic misfires, as the attracting transient is too short-lived to issue any high-level object representation. More importantly, that sensory transient capture is designed to facilitate the selection of a visual object fits nicely with my claim that it also *suffices* to trigger the mechanism responsible for (PP), for according to my account (PP) tags the objects selected by attention.

[18] In their earlier model, Anne Hillstrom and Steven Yantis defend the opposite claim. Their basic contention is that "the appearance of new objects, and little else [i.e. no other features like motion], captures attention" (Hillstrom, Yantis 1994:409). What's relevant for the purposes of my paper is that their model allows an equally plausible account of "fleeting glimpses". Accordingly (see Hillstrom, Yantis 1996:410), the visual field is parsed and segmented into potential objects. Some objects are selected by object-based attention and corresponding object-files are created. When a new object abruptly appears, attention is captured towards it and a new object-file is created. If this turns out to be the right picture, my suggestion would then be that a "fleeting glimpse" occurs when the appearance of the new object is too short-lived to allow the relevant object file to be successfully created.

A related worry may be raised by considering the case of peripheral vision. When I sit at my desk writing on my laptop, my attention is focused on the screen. However, I am also visually aware of, say, the lamp on my right and the bookcase on my left. Though I am not attending to them, these objects are, too, perceived as present. Against my account, this seems to show that we experience many unattended visual objects as present. My answer to this objection is simply to deny that the objects in question are unattended. To start with, the claim that, in the example, the lamp and the bookcase constantly remain outside the region of focal attention cannot be easily defended merely based on phenomenological observation. As we foveate very often and very quickly, the focus of our attention tends to shift constantly. So it may just be that the lamp and the bookcase are experienced as present because they enter, at some point, the region of focal attention (on this point, see Schwitzgebel (2008:255), who convincingly warns against naive introspection in the case of peripheral vision).

But suppose the one sitting at the desk is not me, but Berta, an expert practitioner in matter of visual phenomenology. Berta has been participating in several experiments of visual psychology. She is thus trained in keeping eyes fixation and thereby preventing shifts of focal attention. We can imagine her constantly staring at a point on the far left of the screen, so as to make sure that the lamp on her right lies outside of the focal region. The claim that, under this condition, it would simply be *impossible* for her to experience as present the lamp at the periphery of her visual field seems pretty adventurous, at best. But wouldn't it just follow from the view I am defending?

I don't think it does. The claim would follow only if object-based attention—the kind of attention that, according to my account, is responsible for (PP)— were *necessarily* focal. This, however, is not the case. Visual attention can be both focal and peripheral, and this is also the case for object-based attention.[19] So Berta can experience

[19] See: "Despite the fact that the acuity of attention is increasingly coarser towards the periphery of FA [field of attention], the peripheral attention, however, may play crucial roles in searching objects and in fine adjustment of attention focus", Yao et al. (2011:4). See also Thorpe et al. (2001), who show that peripheral vision suffices for the detection of animals in natural images.

the lamp at the periphery of her visual field because she is able to peripherally attend to and select it as a proper visual object.[20]

Note that my account not only allows for cases in which one perceives a peripheral object as present, but also for cases in which one perceives visual items in the focal region that lack (PP). Afterimages, which are typically focal and, when attended, not experienced as objects present in our surroundings, but merely as environmentally uninstantiated color patches, are just one such case.

Even if the case of peripheral vision does not challenge an attentional construal of (PP), someone may restate the worry by appealing to a more general feature of perception. The idea is that perceptual experience encompasses items—features and objects—which are not attended at all. McGinn clearly makes this point: "Since I do not (could not?) pay attention to everything in my visual field, there are aspects of the way I see things that I fail to notice … , say, the color of a flower worn in someone's buttonhole, though I certainly saw the color: it registered in my visual field" (McGinn 2004: 28). Assuming this is the case, one could argue that there are unattended objects—in the example, the flower in the buttonhole—which are seen and felt as perceptually present.

I still remain unconvinced. If one's visual system "registers" a certain item in one's visual field, there is a sense of "seeing" according to which one sees that item. But this sense applies also to cases of subliminal perception or masked cueing in which one fails to become at all aware of the relevant feature. The phenomenon of inattentional blindness suggests that items like McGinn's buttonhole flower, when completely unattended, equally fail to become objects of conscious apprehension.

McGinn also writes: "if you focus your attention on a portion of the visual field, the rest does not disappear; it hovers unattended. And you can shift your attention back to

[20] This may seem to be in tension with a point I made earlier (see section 3). There, I argued that the fact that hallucinated objects occupy the focus of one's visual field supports the view that they are selected by visual attention. But that claim requires only that visual attention is *usually* allocated focally, not that it is necessarily focal.

the unattended portion without thereby producing it anew" (26). It is true that we have the sense that what we are not presently attending is still there. But this phenomenon can nicely be made sense of within the attentional framework I am defending. Rensink, for instance, argues that "[i]f attention can form a coherent representation of an object whenever requested, the representation of a scene will appear to higher levels as if it is 'real', i.e. as if all objects simultaneously have a coherent representation" (Rensink 2000:1475). According to this proposal, that the unattended portion of the scene remains *virtually represented*, as Rensink puts it, is a consequence of the fact that a few specific objects are *actually selected* by visual attention. To put it differently: the sense that we can always shift attention back to another part of the scene we are experiencing is parasitic on the cognitive capacity to attend to particular objects within that scene.

Another worry may be raised against the claim that object-based attention is *sufficient* for (PP). For instance, Norman, Heywood and Kentridge (2013) describe an experiment showing that "objects can act as units of attentional selection even when they are not consciously seen" (837). Of course, if the object selected by visual attention fails to be experienced, *a fortiori* it cannot become perceptually present. So what can we say here?

One controversial aspect of the experiment is the nature of the visual objects unconsciously attended. They consist of rectangular patterns of Gabor patches which pop-up from a background of Gabor patches due to the different orientation (90° contrast). During the experiment, the relative orientation of the Gabor patches (objects vs. background) alternates continuously any 30 ms, i.e. quickly enough to prevent the subject to become visually aware of the objects. Thus, one could perhaps question whether stimuli of this sort can reasonably qualify as visual objects.

This strategy, however, would be hopelessly unhelpful, for a closer scrutiny reveals that the fact that the objectual stimuli fail to become conscious is hardly crucial when it comes to the issue of (PP). To see why, suppose that the stimulus were a bright and constantly displayed red cube against a black background. Typically, stimuli of *this* sort are easily selected by visual attention and consciously perceived. We would all no doubt (consciously) see the cube. But would we also *experience it as a perceptually*

*present object*? Surely not, for what we were presented with would just be the *picture* of a red cube. To put it differently, the standard stimuli employed in experimental work on visual attention are *pictorial*—no standard objects in the environment, but displays on a computer screen. As pictorial seeing constitutes a contrast case to normal perceptual experience when it comes to (PP), we should therefore *expect* that the stimuli subjects are presented with in experiments of this kind are not perceived as present.

From this, two morals should be drawn. First, in the visual case object-based attention is actually not sufficient for (PP). The problem, indeed, proves much deeper than initially presumed: it is not confined to a few, possibly controversial cases of unconscious object-based attention, but it extends to the standard conscious conditions studied in the lab. This means that the attentional account (for the visual case) requires some urgent refinement. Second, we should not expect the empirical literature on object-based attention to supply guidance as to what the missing ingredient might be. So where are we to look?

*8) The Specificity of Vision: Refining the Account*

Experimental work shows that stimuli projected on a computer screen are selected *as objects* by visual attention. Visual objects of this sort, however, are experienced as lacking the kind of (PP) which characterizes our perception of the worldly objects we encounter in everyday life. The relevant difference between these two cases can thus be revealed by reflection on pictorial seeing.

As we saw, Matthen stresses that seeing and pictorial seeing differ in terms of how objects are spatially arranged. According to his proposal, this difference reflects the fact that whereas we actively engage with worldly objects, this does not occur in the case of depicted objects. When I see an apple there on the table, I can pick it up and eat it. No such embodied interaction is possible with a depicted apple. Therefore, Matthen suggests, (PP) is best understood as resulting from the kind of active engagement we have with worldly objects. As I have argued, this proposal faces serious problems. In the remainder of this section I shall explore how his initial insight about worldly and depicted objects

differing in terms of spatial arrangement might be spelled out in a more promising direction.

Worldly visual objects typically occupy a three-dimensional region of space. On the contrary, depicted objects are arrayed on a two-dimensional surface. This does not mean that three-dimensionality is entirely lacking in pictures. If I look at a picture of an apple on my kitchen table, the picture displays the apple *as* a three-dimensional object. The space in which the depicted apple is situated, however, is a purely pictorial one. On the contrary, the worldly apple there on my kitchen table occupies a region of ordinary space. To occupy a location in a purely pictorial space is not sufficient for a given object to be experienced as three-dimensional in the sense relevant here. My claim is thus that depicted objects lack (PP) because they do not display this kind of three-dimensionality: they do not occupy a region of ordinary three-dimensional space. (In section 1, I have argued that mind-independence does not exhaust the phenomenon of (PP), for depicted objects can also be experienced as mind-independent. In addition, an object needs to be experienced as being in the actual environment in order for it to feel present. We are now in a position to better spell out this second condition: to be experienced as part of the actual environment is just to be experienced as occupying a region of ordinary three-dimensional space.)[21]

Importantly, the very same kind of three-dimensionality is also missing in depersonalization. Worldly objects look like depicted ones to patients suffering from this condition, who "often report a subjective flattening of their visual-perceptual world into two dimensions" (Guralnik, Schmeidler, Simeon 2000:107).[22] On the one hand, it is natural to think that this "flattening" is at the heart of the phenomenology of unrealness associated with depersonalization. On the other hand, the "flattening" seems to depend on deficits in the visual processing of three-dimensional objects. This points to a

[21] For similar considerations see also Dokic (2012:394).

[22] A report to this effect is quoted above in section 5. The second symptom listed in the Cambridge Depersonalization Scale devised by Sierra and Berrios reads: "What I see looks 'flat' or 'lifeless', as if I were looking at a picture" (Sierra 2009:161).

straightforward explanation: the deficits cause the visual flattening which, in turn, causes the feeling of unrealness.[23]

Finally, that three-dimensionality is necessary for (PP) also fits nicely with the phenomenology of simple visual hallucinations. As already noted, hallucinations of this sort (including dots, lines as well as geometrical pattern) all lack (PP). The reason is that what one seems to see in such cases is not the kind of three-dimensional visual objects poised to trigger the mechanism responsible for (PP).

To conclude, reflection on pictorial seeing, depersonalization and simple hallucinations suggests that we do not experience as perceptually present the visual objects we do not consciously see as three-dimensional. So I suggest the attentional account should be refined as follows (for the visual case):

($AA_v$) In visual experience (PP) depends on selection of a *three-dimensional* object by visual attention.

*9) Conclusions*

The basic idea of the attentional account is that (PP) depends on object-based attention. The objects we experience as perceptually present are those selected by this specific form of perceptual attention. In an unqualified form, however, this claim only holds for auditory objects (sounds), and not for visual objects. In the visual case, for an object to be perceived as present it is not sufficient that it be so selected. It is also required that it be three-dimensional (in the sense specified above). So the question naturally arises about the specificity of visual *vis-à-vis* auditory objects.

I believe that the answer to this question partially resides in the essentially *spatial* nature of visual objects. Whereas auditory objects are identified in virtue of their

[23] In section 5 I argued that the spatial attention deficits found in depersonalization possibly impair the binding and selection of visual objects. Given the present refinement of the account, and assuming that the feeling of unreality typical of depersonalization consists in a lack of (PP), my position requires only that such deficits impair the correct formation of three-dimensional visual objects.

temporal properties, visual objects are identified in virtue of their spatial properties (see O'Callaghan 2008). In light of this, it may seem less surprising that, in the visual case, (PP) only targets objects displaying certain spatial features. Nonetheless, this does not suffice to explain why, in particular, three-dimensionality is required for (PP) in the visual case. To make sense of this particular fact, it is again important to consider the difference between seeing and pictorial seeing.

In a certain sense, depicted objects are essentially spatial in precisely the same way in which ordinary visual objects are: as I identify two identical tennis balls by reference to their location in space, I equally identify two depicted identical tennis balls by reference to their location in pictorial space. This suggests that whatever spatial feature might play the role of distinguishing worldly visual object from depicted objects, it must be more specific than mere location. Three-dimensionality (in the sense specified above) is just a feature of this sort.

At this point, one might suspect that my account of the visual case has just become a variant of Matthen's original account, as I too ended up appealing to a spatial feature distinctive of natural seeing. This suspicion, however, is unfounded. According to my view, (PP) results from the same cognitive machinery issuing in conscious object perception—what Matthen calls descriptive vision. This is explicitly denied by his account, according to which (PP) depends on motion-guiding vision. To put it differently: whereas the spatial feature I appeal to—three-dimensionality—is an ingredient of *conscious* visual experience, those doing the explanatory work in Matthen's account amount to *unconscious* representations mediating our bodily engagement with external things. This squarely distinguishes the two accounts.

Though familiar to everyone, the phenomenon I have been concerned with in this paper proves especially elusive. I hope the attentional account sketched here will help to get a better grip on it.

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