ORIGINAL ARTICLE

Look again: Phenomenology and mental imagery

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Abstract This paper (1) sketches a phenomenological analysis of visual mental imagery; (2) applies this analysis to the mental imagery debate in cognitive science; (3) briefly sketches a neurophenomenological approach to mental imagery; and (4) compares the results of this discussion with Dennett's heterophenomenology.

Key words mental imagery · consciousness · phenomenology · neurophenomenology · heterophenomenology

1 Introduction

A lot has happened in cognitive science and the philosophy of mind since the heyday of the mental imagery debate in the 1970s and 1980s.[1] The computer model or computational theory of mind, once considered to be "the only game in town," is now called classical cognitive science, and co-exists, separately and in various hybrid forms, with connectionism and dynamical and embodied approaches to cognition. Consciousness, once dismissed as marginal to the scientific understanding of the mind, is now a subject of great interest. More striking still is the new and growing appreciation for the usefulness of introspection in the scientific investigation of cognition (Jack & Roepstorff, 2002, 2003, 2004).

Given these developments, it is regrettable that the recent reappearance of the imagery debate takes no account of them (Kosslyn et al., 2006; Pylyshyn, 2002, 2003a, b, c). In particular, no effort is made to clarify the conscious experience of

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[1]For this debate, see the articles collected in Block (1981a, b). See also Rollins (1989) and Tye (1991).

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mental imagery. Instead, researchers assume that the subjective character of imagery experience is obvious, and that there is no need for a careful phenomenological analysis of the way we experience this type of mental activity. Yet debate still reigns about the nature of mental imagery and its relation to cognition and the brain. If there is to be progress in understanding mental imagery as a form of human experience, and not merely as a form of mental representation, then we need to do better.

In this paper, I sketch a phenomenological analysis of imagery experience. The main upshot of this analysis is to call into question the usual conception of a "phenomenal mental image" as some kind of mental picture inspected by the mind's eye. Both "pictorialists" and "descriptionalists," the two main rivals of the imagery debate, assume that imagery experience seems subjectively to be the experience of mental pictures; what they disagree about is whether the subpersonal mental representations used in visual problem-solving are depictive or propositional in form. Thus, both theories agree in their assumptions about the phenomenology of mental imagery; what they disagree about is whether that phenomenology corresponds to or accurately reflects the underlying representational structures and processes. Yet both theories, I will argue, get the phenomenology wrong. According to the phenomenological account I will present, which closely follows Husserl's phenomenological analyses of imagination (Husserl, 2006) and their elaboration by Marbach (1993), in visual imaging or visualizing, we do not experience mental pictures, but instead visualize an object or scene by mentally enacting or entertaining a possible perceptual experience of that object or scene. This phenomenological account, as we will see, provides important constraints on theories of mental imagery in cognitive science. It also provides a vantage point from which to raise certain questions about Dennett's "heterophenomenology," which he first put forward in the context of the mental imagery debate (Dennett, 1978).

2 Experience and the imagery debate

The subjective experience of mental imagery has occupied a problematic place in the imagery debate since this debate's inception in the early 1970s. On the one hand, everyone agrees that the experience of imagery exists and that any adequate theory of imagery must ultimately be able to account for it. On the other hand, the main concern of imagery theories has not been to explain imagery experience, but rather to explain the ability of individuals to solve problems in various kinds of cognitive tasks in which they report using imagery. Classic examples are judging whether two objects of different orientation have identical shapes by "mentally rotating" one to see whether it can be brought into correspondence with the other, or "mentally scanning" a visualized map in order to determine whether a particular object is present on it (see Kosslyn et al., 1981; Kosslyn, 1980, 1994). Although imagery research relies on reports of imagery experience as a source of data, the two main rival theories of the mental representations involved in imagery, pictorialism and descriptionalism, have left imagery experience as such unaccounted for.

Pictorialism and descriptionalism are theories about the subpersonal representations and processes that are supposed to be causally implicated in imagery tasks. According to pictorialism (whose principal exponent is Stephen Kosslyn), these representations are depictive (or "quasi-pictorial"), which means that they represent by virtue of their spatial format. In a depictive representation, each part of the object is represented by a pattern of points, and the spatial relations among these patterns correspond to the spatial relations among the object's parts.[2] It is well known, for example, that in primates, the first cortical area to receive signals from the retina, known as V1, is organized retinotopically. In other words, neurons in this area are organized in a way that roughly preserves the spatial structure of the retina. Although this cortical representation of the retina is laid out in physical space, a depictive space need not be physical, according to Kosslyn, but could be specified purely functionally, like an array in a computer. On the other hand, according to descriptionalism (whose principal exponent is Zenon Pylyshyn), the mental representations involved in vision and imagery represent by virtue of their propositional structure. Pylyshyn argues that the notion of a purely functional space has no explanatory value in accounting for the actual format of mental representations (Pylyshyn, 2003a, pp. 359–368). He also argues that the activation of retinotopically organized brain areas in certain types of visual mental imagery tasks does not show that imagery or vision involves depictive representations laid out in the physical space of the brain, for mental images and topographical patterns of activation in cortical visual areas fail to correspond in a number of ways (for example, the 3D spatial structure of what we perceive or imagine was never present on the 2D retina or its retinotopic cortical projection in V1; Pylyshyn, 2003a, pp. 387–426). On Pylyshyn's descriptionalist view, mental imagery is the mental representation of how things look or would look, based on our tacit propositional knowledge of visual properties and relations.

Although scientific research on imagery designed to test these two theories must rely on first-person reports of imagery experience as an indispensable source of data, neither descriptionalism nor pictorialism has provided any explanatory bridge back to imagery experience at the personal level from their subpersonal representational theories. Imagery experience is used on the way in, but is left in limbo on the way out.

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[2] How to specify precisely what makes a representation depictive is a difficult matter. Kosslyn (1994, p. 5) defines a depictive representation as "a type of picture, which specifies the locations and values of configurations of points in a space. For example, a drawing of a box would be a depictive representation. The space in which the points appear need not be physical, such as this page, but can be like an array in a computer, which specifies spatial relations purely functionally. That is, the physical locations in the computer of each point in an array are not themselves arranged into an array; it is only by virtue of how this information is 'read' and processed that it comes to function as if it were arranged into an array (with some points being close, some far, some falling along a diagonal, and so on). In a depictive representation, each part of an object is represented by a pattern of points, and the spatial relations among these patterns in the functional space correspond to the spatial relations among the parts themselves. Depictive representations convey meaning via their resemblance to an object, with parts corresponding to parts of the object." For critical discussion of this concept of depictive representation, see Pylyshyn (2002, 2003a, pp. 328–333). See also Tye (1991, pp. 33–60) for helpful clarifications.

We can trace this situation back to Pylyshyn's opening round of the debate in 1973 (Pylyshyn, 1973). Pylyshyn acknowledged that "imagery is a pervasive form of experience" and that "[w]e cannot speak of consciousness without, at the same time, implicating the existence of images" (1973, p. 2). But he argued that imagery experience does not reveal the content of mental representations or the information-processing functions operating on those representations. Imagery experience is not so much silent, but positively misleading. The ordinary or commonsense conception of an image is that of a picture, but the mental representations mobilized in imagery tasks are best characterized as descriptive and propositional, not pictorial. Pylyshyn's conclusion was that the concept of a mental image is not a useful explanatory construct in psychology.

Kosslyn and Pomerantz, in their reply to Pylyshyn in 1977, defended the explanatory importance of imagery (Kosslyn & Pomerantz, 1981). They argued that introspection, when taken together with behavioral performance data, is an important source of evidence. They also remarked that the experience of imagery is undeniable and studying it in its own right is a legitimate enterprise (Kosslyn & Pomerantz 1981, p. 159; see also Kosslyn et al., 2006, p. 48). Yet they offered no such study or any scientific explanation of mental imagery informed by this kind of study. Instead, they sketched a theory of imagery that seemed to rely on the problematic assumption that the *content* of imagery experience corresponds to the *format* of the underlying representation. This type of assumption has been called *analytical isomorphism* (Pessoa et al., 1998; Thompson et al., 1999). Analytical isomorphism is the idea that successful explanation requires there be an isomorphism (one-to-one correspondence) between the phenomenal content of subjective experience and the structure or format of the underlying neural representations. This idea involves conflating properties of what is *represented* (representational *contents*) with properties of the *representings* (representational *vehicles*). Kosslyn and Pomerantz seem to have implicitly relied on analytical isomorphism when they proposed that an image is a temporary depictive representation in active memory generated from more abstract information in long-term memory. On this view, an image is a spatial pattern of activation in a visual buffer (in the most recent statement of Kosslyn's theory, the visual buffer is a single functional structure comprising the topographically organized areas of the occipital cortex (Kosslyn et al., 2006, p. 136)). Kosslyn and Pomerantz implied that the images the person experiences *are* these "surface images" in the visual buffer. In a subsequent paper, however, Kosslyn and his colleagues qualified the relation by explaining that the term "image" refers to representations in active memory, not an experience. In this way, the meaning of "image" becomes primarily subpersonal. Thus, they wrote: "The experience of 'having an image' is taken as an indication that an image representation is present in active memory; the question whether one can have an image representation without the experience is left open" (Kosslyn et al., 1981, p. 133). Over the years Kosslyn has enlarged and refined his theory, but this gap between subpersonal representation and experience has not gone away. Thus, in his 1994 book *Image and Brain*, he writes:

> [M]ost interest in psychology has focused on only one facet of imagery – its role in information processing, not its phenomenology or role in emotional life. In this book we will focus on the nature of the internal events that underlie the

experience of "seeing with the mind's eye"; we shall not consider the qualities of the experience itself. The term "image" will refer to the internal representation that is used in information processing, not the experience itself. The experience of imagery is a sign that the underlying brain events are taking place, and hence plays an invaluable role in the research – but is not in its own right the present topic of study (Kosslyn, 1994, p. 3).

Here we can easily see that the concept of a mental image has become almost completely subpersonal, while imagery experience at the personal level remains mainly a heuristic for getting at the subpersonal level.

We find a similar chasm between the personal and subpersonal levels in Pylyshyn's recent restatement of the descriptionalist view (Pylyshyn, 2002, 2003a, c). What is distinctive about mental imagery, according to Pylyshyn, is not that it involves a special depictive form of representation, but rather that the contents of the thoughts we experience as images represent how things look or would look to us. Pylyshyn is aware that how things look is a matter of the content of our conscious experience. He admits that "[a]s scientists we cannot ignore the contents of our conscious experience, because this is one of the principal ways of knowing what we see and what our thoughts are about" (Pylyshyn, 2003a, p. xi). Nevertheless, he believes that the contents of experience are "insidious," "misleading," and "contaminate" many scientific theories of perception and imagery (Pylyshyn, 2003a, pp. xi, 2). In his view, to allow subjective experience to guide or constrain scientific theories of the mind is to fall prey to a "phenomenological snare" (Pylyshyn, 2003b, p. 112). Hence, he does not allow that a phenomenological account of seeing and imagining could be profitably linked to a scientific account of perception and imagery.

I disagree. It is not only possible, but also necessary, to pursue phenomenology and experimental science as mutually constraining and enlightening projects. If our aim is to have a comprehensive understanding of the mind, then focusing on the nature of the internal events that underlie imagery experience, without considering the qualities of the experience itself, will not take us far.

A good way to start is by scrutinizing the phenomenological assumptions made by imagery theorists. Although descriptionalists and pictorialists adopt different attitudes toward imagery experience, they share a deeper view of its phenomenal character, and they assume a certain conception of what imagining is as an intentional act. Descriptionalists argue that our subjective experience of imagery is no guide to the format of the underlying mental representations, whereas pictorialists argue that our imagery experience does correspond, at least partially, to this representational format (see Kosslyn et al., 2006, p. 48). Nevertheless, theorists of both camps seem to agree that in imagery we experience "phenomenal mental images." The term "phenomenal mental image" has been used to refer to the "seeming objects of image experiences," by contrast with the term "functional mental image," which refers to the internal representations involved in imagery (Rey, 1981, p. 124). Usually, phenomenal mental images are assumed to be pictorial or depictive objects we *see* "with our mind's eye," though it is also sometimes said that phenomenal mental images are not things we see, but things we *have* (Block, 1983). In either case, it is usually taken for granted that the subjective experience of mental imagery is properly characterized as the experience of having (seeing or undergoing)

a phenomenal mental picture.[3] It is important to notice that this assumption is a conceptual and phenomenological one about what constitutes imagery experience at the personal level. One way to put this assumption is that our imagery experience involves the belief that in such experience we see or have images in the mind. Descriptionalists think this belief is strictly speaking false. According to descriptionalism, the mental representations involved in imagery are not pictorial, introspection is misleading and unreliable, and our experience of imagery is a kind of "grand illusion." Pictorialists, on the other hand, think this belief is true or at least partially accurate. According to pictorialism, the mental representations involved in imagery are depictive, and introspection is sometimes reliable.[4] We thus arrive at a number of deeper and questionable assumptions these theories share:

1. The phenomenal character of visual experience in general and imagery experience in particular is pictorial (what we see and visualize seems to us like the content of a picture); hence, any phenomenological account of imagery experience must describe this experience as pictorial.
2. If the phenomenal character of experience at the personal level does not match or correspond to the internal representations in our brains at the subpersonal level, then our experience is illusory (it is not really what it subjectively seems to be).
3. Visual experience is permeated by the belief that certain kinds of representations are created in our brains during perception and imagery, namely, depictive or pictorial representations ("pictures in the head").
4. The phenomenal character of visual experience, whether in perception or mental imagery, is intuitively obvious or evident to casual reflection; hence, there is no need for careful phenomenological analysis. (Visual experience obviously seems pictorial.)

These ideas deserve to be criticized for a variety of reasons. Firstly, it is not obvious that the phenomenal character of perceptual experience is pictorial. On the contrary, as I discuss in the next section, the content of our experience is not picture-

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[3] Consider the following examples: "Kosslyn's view has great initial plausibility. For we seem to be aware of images – pictures in the mind-playing an important role in thought" (Sterelny, 1990, p. 608). "The fact that we seem to use representations in our head in the same way that we use maps and diagrams is a special case of the similarity between perception and imagination. Just as we perceive the relative locations of two cities on a real map without apparent effort or inference, so too we seem to be able to employ the inner eye to perceive these locations on an inner, memory-generated, representation" (Sterelny 1990, p. 615). "Cognitive science is rife with ideas that offend our intuitions. It is arguable that nowhere is the pull of the subjective stronger than in the study of perception and mental imagery. It is not easy for us to take seriously the proposal that the visual system creates something like symbol structures in our brain since it seems intuitively obvious that what we have in our mind when we look out onto the world, as well as when we close our eyes and imagine a scene, is something that *looks like* the scene, and hence whatever it is that we have in our heads must be much more like a *picture* than a description. Though we may know that this cannot be literally the case, that it would do no good to have an inner copy of the world, this reasoning appears to be powerless to dissuade us from our intuitions" (Pylyshyn, 2003a, p. 157). "Nobody denies that when we engage in mental imagery we seem to be making pictures in our head – in some sense. The question is: Are we really? That is, do the properties in our brains have any of the properties of pictures?" (Dennett, 2002a, p. 189).

[4] As Kosslyn, Thompson, and Ganis state in their recent case for the pictorialist view: "from the time of Plato at least up to William James... philosophers and psychologists have relied on their introspections to argue that depictive images play a functional role in psychology. If this view is correct, we will gain important insight into the nature of consciousness – given the striking correspondences between some aspects of phenomenology and the underlying representational format" (2006, p. 20).

like in a number of ways. Secondly, there is no need for a precise match between what we experience in perception and whatever internal representations there are in our brains. For example, we visually experience the world to be rich in detail not because we must represent all that detail inside our heads at any given moment, but because we have constant access to the presence and detail of the world, and we know how to make use of this access (O'Regan 1992; O'Regan and Noë, 2001). Thirdly, whatever impression we supposedly have of there being pictorial representations in our head when we perceive is not a first-person impression of experience, but a third-person theoretical belief. Hence, the illusion is a theorist's illusion, not an experiential one.[5] Finally, the foregoing points are not immediately obvious, but emerge from careful phenomenological considerations (sometimes in tandem with experimental investigation). Although subjective experience is intimate and familiar, it hardly follows that its phenomenal character is easy to specify. We need to distinguish between what seems intuitively obvious and what requires careful phenomenological analysis to discern.

In the rest of this paper, I build on these ideas and apply them to the phenomenological analysis of visual mental imagery. According to this analysis, visual experience is not pictorial in the way many theorists assume. The phenomenal content of perceptual experience is dissimilar from the content of a picture in certain crucial respects, and visualizing is not an experience in which we seem to see or have a mental picture. Visualizing is rather the activity of mentally representing an object or a scene by way of mentally enacting or entertaining a possible perceptual experience of that object or scene. If this analysis is correct, then contrary to what pictorialists assume, the phenomenology of imagery experience provides no particular reason to suppose that there are depictive representations in the brain corresponding to the content of what we see or visualize. Of course, this point hardly rules out the possibility of there being depictive representations in the brain playing a functional role in perception and imagery. This possibility is an empirical matter to be determined by cognitive neuroscience. What the point does rule out, however, is that the depictive format of these representations corresponds to (or is identical with or constitutes) the content of what we experience when we see or visualize.

3 Picturing visual experience

To frame my discussion I propose to make use of Ernst Mach's famous attempt to portray his own visual field (Figure 1; Mach, 1959).[6] Lying on a divan with his right eye shut, Mach tried to depict not his room, but the content of his (monocular) visual

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[5] Dennett's response to this point is that the belief may be a theorist's belief, "but it turns out we are all theorists" (Dennett, 1998, p. 754; see also Dennett, 2002b). According to his view, perceivers tacitly believe they have pictorial representations in their heads corresponding to what they perceive, and perceptual experience is partly constituted by this belief. But this view seems misguided. Perceptual experience is directed toward the world, not toward the brain. Beliefs about what goes on in the brain are no part of ordinary perceptual experience. In particular, perceptual experience involves no commitment to the belief that we have pictures (or any other kind of representation) in our brains when we see (Noë, 2002, 2004, pp. 55–59; Noë et al., 2000).

[6] My use of Mach's picture builds on Noë (2004, Chapter 2) and Thompson et al. (1999, pp. 194–195).

Figure 1 Ernst Mach's depiction of his visual field (Mach, 1959).

field. We can consider his drawing on several levels. Firstly, the drawing exemplifies a certain pictorial conception of visual experience: The content of perception is like that of a realistic picture. Secondly, given this conception, it is natural to think that were Mach to close his eyes and imagine his view of the room, he would, on the basis of memory, be creating or calling up a mental image, a picture in the head (probably sketchy and indistinct by comparison with perception). Thirdly, Mach's drawing is itself a pictorial object; it is a material entity that depicts a certain scene. It is thus not simply an object of perceptual experience, but an object of pictorial experience. We need to look more closely at these three aspects of Mach's drawing.

Mach's drawing is meant to be a depiction of what it is like for him to see his study (with one eye), a depiction of the phenomenal content of his visual experience. The drawing also invites us, the external viewer of the picture, to imagine taking up Mach's position as the internal viewer of the represented scene, so that our visual experience would, as it were, coincide with his. There is readily available phenomenological evidence, however, that our visual experience is not like this depiction (see Noë, 2004, pp. 49–50, 69–72). Consider that we have poor peripheral vision. Hold a playing card at arms length just within your field of view; you will not be able to tell its color, suit, or number. Stare at a word or phrase on a page of text, and you will be able to make out only a few of the other words. These simple

demonstrations show, contrary to Mach's drawing, that we do not experience the entirety of our visual field as having the clarity and detail of what we focally attend to.

Barry Smith has interpreted Mach's drawing as a depiction of Ewald Hering's definition of the visual field as "the totality of real objects imaged at a given moment on the retina of the right or left eye" (Hering, 1964, p. 226, as quoted by Smith, 1999, p. 324). But this interpretation cannot be right. Given the poor resolution of peripheral vision, Mach must have moved his eye in order to draw the detail at the periphery. Furthermore, besides these overt shifts of visual attention involving eye movements, he must have made covert shifts of mental attention while holding his eye still, thereby changing his mental focus while holding peripheral vision constant. His drawing is thus a representation that abstracts and combines the contents of many attentional phases of visual experience. It is a static representation of a temporally extended, dynamic process of sensorimotor and mental exploration of the scene. It tries to present all at once visual contents that at any given moment are not present to one in the way of a detailed picture.[7]

Another important feature of Mach's drawing is his attempt to depict the indeterminacy of the peripheral visual field by means of fading to white. This feature may also be an attempt to depict the field as unbounded or topologically open, in the sense that there is no boundary that is part of the field itself (Smith, 1999, p. 324). Yet it seems impossible to depict these kinds of features of experience in a picture. The visual field is unbounded and indeterminate in various ways, but not by becoming white in the periphery. How to characterize these features is a difficult matter, but they do not seem to be pictorial properties. They do not seem to be qualities representable within experience, but rather structural features of experience.

What these brief considerations indicate is that our visual experience of the world at any given moment lacks many of the properties typical of pictures, such as uniformity of detail, qualitative determinateness at every point, and geometrical completeness. Although most vision scientists would accept this statement, many would also regard it as inconsistent with how our visual experience subjectively seems to us (see Pylyshyn, 2003a, pp. 4–46). It is important to notice, therefore, that the foregoing considerations have been entirely phenomenological and have not appealed to any facts beyond what is available for one to experience in one's own first-person case.

4 Transparency and experience

Mach's attempt to depict his visual field presupposes that we experience or can introspectively attend to our visual field. Yet what Mach could not help but depict is

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[7] Of course, picture-viewing also involves sensorimotor and mental exploration of the picture. My point, however, is that visual experience is not determinate in its contents in the way the surface of a picture is determinate in its qualitative features.

his room and a portion of his body from a certain vantage point. Experience is in this way often said to be "diaphanous" or "transparent."[8] In trying to attend to the qualities of experience, we as it were see right through them to the qualities of what is experienced.

Some philosophers rely on this idea to argue for representationalism, the thesis that the phenomenal character of experience is entirely a matter of the representational content of experience, or to put it another way, that the qualities of experience are one and the same as the qualities of the world represented by experience (Harman, 1997; Tye, 1991, 1995). What it is like for me to see the grey expanse of the winter sky, for example, is entirely a matter of the way my visual perceptual experience represents the sky. Most versions of representationalism are externalist: They maintain that the representational content of experience is given by the external properties of the objects represented by the experience (Dretske, 1995; Tye, 1995). Philosophers who maintain that experience has intrinsic sensational properties or qualia, in addition to representational content, reject representationalism. I wish to present a different criticism of representationalism. This criticism is phenomenological and is directly relevant to the task of clarifying the phenomenal character of mental imagery.

The phenomenal character of experience includes both the *qualitative character of what we experience* (for example, sensory qualities of the world and our body) and the *subjective character of the mental acts whereby we experience* (perceiving, remembering, imagining, and so on).[9] Representationalism neglects the subjective

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[8] This idea goes back to G.E. Moore: "When we try to introspect the sensation of blue, all we can see is the blue; the other element is as if it were diaphanous. Yet it *can* be distinguished if we look attentively enough, and if we know there is something to look for" (Moore, 1922, p. 25). Note that Moore here states that the visual sensation is *as if it were* diaphanous, but that it *can* be distinguished, a view in keeping with his sense–data theory of perception. H.P. Grice, on the other hand, in his expression of the diaphanous idea, implied that we cannot introspectively distinguish any sensation distinct from what we see: "such experiences (if experiences they be) as seeing and feeling seem to be, as it were, diaphanous: if we were asked to pay close attention, on a given occasion, to our seeing or feeling as distinct from what was being seen or felt, we should not know how to proceed; and the attempt to describe the differences between seeing and feeling seems to dissolve into a description of what we see and what we feel" (Grice, 2002, p. 45). For discussion of the transparency thesis, see Kind (2003), Martin (2002), Siewert (2004), and Stoljar (2004).

[9] Here I use the term "subjective character of experience" somewhat differently from Nagel (1979). Nagel introduced this term to refer to what a subject's experience is like for that subject. What experience is like in this sense is supposed to involve both the qualitative properties of the subject's experience (qualia) and the subject's first-person perspective. I am using the term, however, to refer specifically to how a given type of mental activity, such as seeing or visualizing, is experienced in one's own case. Such experience is typically not reflective or introspective. My usage of "subjective character of experience" is close to Kriegel's (2006). He uses it to mean the implicit and nonreflective "for-me-ness" of conscious experience. For both Kriegel and me, the phenomenal character of experience is the compresence (to use his formulation) of qualitative character and subjective character (for-me-ness). On this view, every conscious mental state (every mental state with phenomenal character) is implicitly and nonreflectively self-aware. This notion of nonreflective self-consciousness is central to the accounts of consciousness in the phenomenological tradition from Brentano to Husserl to Sartre. For recent discussions, see Kriegel (2002, 2003) and Zahavi (2004, 2005a).

character of experience.[10] By contrast, phenomenological analysis focuses explicitly on the linkage between the qualitative character of what we experience and the subjective character of the mental activity whereby we experience it.

To bring out the import of this point we need to consider more carefully the claim that experience is transparent. Its *locus classicus* in recent philosophy is the following passage from Gilbert Harman:

> When Eloise sees a tree before her, the colors she experiences are all experienced as features of the tree and its surroundings. None of them are experienced as intrinsic features of her experience. Nor does she experience any features of anything as intrinsic features of her experience. And that is true of you too. There is nothing special about Eloise's visual experience. When you see a tree, you do not experience any features as intrinsic features of your experience. Look at a tree and try to turn your attention to intrinsic features of your visual experience. I predict you will find that the only features there to turn your attention to will be features of the presented tree, including relational features of the tree "from here" (Harman, 1997, p. 667).

Harman's main concern in this passage is to undercut the sense-datum theory of perception, according to which the colors we are aware of are internal mental properties, not properties of external objects. Nevertheless, it is not clear what the exact argument of this passage is supposed to be (see Kind, 2003; Stoljar, 2004). Let us focus on two core phenomenological claims that can be extracted from this passage. The first concerns experience in the sense of *awareness* (presented in the third-person about Eloise); the second concerns *attention* (presented as a prediction about what one will find in one's own first-person case):

Extreme Transparency of Awareness We are not aware of (intrinsic mental features of) our experience, but only of the objects and properties presented by that experience.

Extreme Transparency of Attention We cannot attend to (intrinsic mental features of) our experience, but only to the objects and properties presented by that experience. Harman's passage clearly suggests these extreme transparency

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[10] This statement needs qualification. By "representationalism" I mean externalist representationalism. For a representationalist model of subjectivity, defined as the possession of a phenomenal first-person perspective, see Metzinger (2003). This model focuses on the phenomenal content of the first-person perspective, but does not analyze the intentionality of mental acts as these are experienced in their subjective performance. It would take me too far afield to consider Metzinger's account here. For incisive criticism of this account from a phenomenological perspective, see Zahavi (2005b), and from an embodied dynamical perspective in cognitive science consistent with phenomenology, see Legrand (2005).

claims.[11] I call them *extreme* in order to distinguish them from the following two *moderate transparency* claims:[12]

Moderate Transparency of Awareness We are not usually aware of (intrinsic mental features of) our experience, but only of the objects and properties presented by that experience.

Moderate Transparency of Attention We can (with effort) attend to (intrinsic mental features of) our experience, but not by turning our attention away from what that experience is *of* (that is, what is presented by that experience). I submit that the extreme transparency claims are demonstrably false and the moderate ones true.

Consider visual experience. When I see the bottle of wine in front of me on the table, I experience (am visually aware of) the wine bottle. But I also experience my seeing. In experiencing my seeing in this way I do not need to introspect or reflect; my awareness is instead an implicit and nonreflective one. I experience my seeing by living it nonreflectively. Suppose, now, that I close my eyes and visualize the wine bottle. The intentional object of my mental act is still the bottle (the bottle is "the seeming object of my image experience," not a mental picture of the bottle). But now what I implicitly and nonreflectively experience is my visualizing. Several points are important here. Firstly, there is clearly a significant difference in the intentional content of the visualization and the perception. The most striking is that the bottle as visualized does not have the immediacy and presence of the bottle as perceived; rather, it has a peculiar kind of phenomenal absence. As Sartre puts it: "in so far as he *appears to me as imaged*, this Pierre who is present in London, *appears to me as absent*. This fundamental absence, this essential nothingness of the imaged object, suffices to differentiate it from the objects of perception" (Sartre, 2004, p. 180). Secondly, this difference in intentional content is not, however, a difference in descriptive content; it is not a difference in the features or properties the two experiences represent the object to have. Thus, there can be phenomenal differences in intentional content between experiences that are otherwise identical with respect to the object properties they represent. Thirdly, it is important also to notice the distinct experiential features of the intentional acts themselves. For example, the visual perception feels involuntary and effortless, whereas the visualization feels voluntary, effortful, and needing to call upon memory.[13] In these ways, I am aware not simply of the intentional objects and properties presented by my experience, but also of features of my experience, or rather of my ongoing activity of experiencing. These features

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[11] Thus, Harman says, "Nor does she experience any features of anything as intrinsic features of her experience. And that is true of you too." Similarly, Ian Gold, citing Harman, writes: "Experience, it is sometimes said, is 'diaphanous': one sees through it to the object or property the experience is representing. The experience itself has no properties accessible to the experiencer" (Gold 2002, p. 190).

[12] See Kind (2003, p. 230). She distinguishes between "strong" and "weak" transparency claims, whose formulations differ from mine.

[13] I do not mean to imply that all imagining is voluntary and effortful in this way. Daydreaming, reverie, and fantasy are usually not. See Sartre (2004 pp. 18–19): "In most cases, no doubt, the [mental] image springs from a deep spontaneity that cannot be assimilated to the will... But involuntary and voluntary images represent two closely related types of consciousness, of which one is produced by a voluntary spontaneity and the other by a spontaneity without will."

include the specific intentional act or attitude component of the experience (perceiving or visualizing or remembering), associated qualities of this act (being effortless or effortful), and the invariant phenomenal quality of "mineness" or "for-me-ness" that characterizes all my experiencing (it is my seeing and my visualizing).[14]

We could summarize this last point by saying that the extreme transparency of awareness thesis neglects that feature constitutive of subjective experience that phenomenologists call *prereflective self-consciousness*. In my visual experience of the wine bottle, I am explicitly aware of the bottle, but also implicitly aware of my visual experience of the bottle.[15] This sort of implicit awareness is a kind of self-consciousness (I am implicitly aware of the visual experience as *mine*). But it is not a reflective or introspective self-consciousness, because there is no phenomenally conscious reflection or introspection that takes the experience as its object.[16] Rather, the experience itself is prereflectively self-aware. In Sartre's words: "every positional consciousness of an object is at the same time a non-positional [non-object-directed or intransitive] consciousness of itself" (Sartre, 1956, p. liii). This type of self-consciousness is arguably a constitutive feature of phenomenal consciousness. It is hard to make sense of the thought that one could have a conscious perception without experiencing one's perceiving, or that one could have a conscious mental image without experiencing one's imagining, or that one could have a conscious memory without experiencing one's remembering. But if conscious experience is necessarily self-aware in this way, then contrary to the extreme transparency thesis, we are implicitly aware of constitutive features of our experience and not simply of the objects and properties our experience presents.

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[14] Dainton (2000, 2002) has criticized what he calls *awareness-content dualism* in theories of consciousness. Crucial to this dualism as Dainton describes it is the view that awareness is a bare act devoid of any intrinsic phenomenal characteristics. The Husserlian phenomenological differentiation of experience into intentional-act and intentional-object poles involves no commitment to this notion of bare awareness.

[15] Kriegel (2004) interprets this implicit self-awareness as a form of marginal or peripheral awareness. This view can also be found in Gurwitsch (1964). The problem with this view is that it treats one's nonreflective awareness of one's experiences on the model of one's implicit awareness of objects in the background of perception. Various arguments can be given to show, however, that experiences are not given as *objects* to self-awareness and that prereflective self-consciousness does not have a subject/object structure. See Thompson (2007) and Zahavi (2005a).

[16] Notice I say that the experience is not the object of another higher-order *phenomenally conscious* mental state. The reason is that I do not wish to beg the question against the higher-order thought theory of consciousness. According to this theory, a conscious mental state is one that is the object of an accompanying higher-order cognitive state that is not itself a conscious state. Thus, this theory attempts to explain *intransitive* consciousness (a mental state's being a conscious mental state) in terms of *transitive* consciousness (a mental state is intransitively conscious just in case one is transitively conscious of it, and to be transitively conscious of it is to have an accompanying higher-order thought that one is in that very state). This theory is meant to be a substantive hypothesis about what intransitive consciousness is, not a phenomenological description. My point above, however, is a phenomenological one: It is that experience involves an implicit self-awareness that is not a function of conscious reflection or introspection. The higher-order thought theory is free to acknowledge this phenomenological point, but would aim to explain or analyze implicit self-awareness in terms of transitive consciousness and accompanying (nonconscious) higher-order thoughts. I think such accounts are unsuccessful, but I do not intend to argue for this point here. For the higher-order thought theory, see Rosenthal (1997). For rebuttals of the higher-order thought theory on behalf of a one-level account of consciousness as intransitive self-consciousness, see Kriegel (2003) and Zahavi and Parnas (1998).

It also seems clear, contrary to the extreme transparency of attention thesis, that we can become aware of features of our experience by attending to them (instead of attending simply to the objects presented by that experience). In seeing, I attend to features of what there is to see. But I can also attend to how seeing feels, to what the activity of seeing is like for me, and to the ways it feels different from freely imagining and from remembering. In attending to experience in this way, I can become aware of features I do not normally notice (attend to), precisely because they usually remain implicit and prereflective.

The moderate transparency of attention thesis is compatible with these points. It acknowledges that we can (with effort) attend to experience. But it also makes the point that we cannot do so by turning our attention away from what that experience presents. Some philosophers do talk about turning attention away from the experienced object to the intentional experience itself. But this way of speaking does not seem apt. Usually when we talk about turning our attention away from one thing to another we imply that we ignore or look away from the first in favor of the second. It seems impossible, however, to ignore the experienced object when we attend to features of the experience (Siewert, 2004, pp. 35–37). This truth is what the transparency metaphor aims to convey. Thus, the right way to think about phenomenological analysis is not that we turn our attention inward (as the notion of introspection implies), but rather that we direct our attention to the appearance of the object, or the appearance of the world more generally, while vigilantly keeping in mind that appearances are objective correlates of subjective intentional acts (how something looks is correlated to and is a function of how one looks at it). Clearly, the sort of attention in play here is cognitive or mental attention, not perceptual attention. In attending to features of my visual experience, I do not (and cannot) look away from what that experience presents. Rather, I shift my mental or cognitive attention to how things look given my perceptual attitude. In this way, features of experience on the side of the intentional act, which usually remain implicit or latent, can be made explicit and available for phenomenological consideration. In sum, the way to think about what we do when we attend directly to features of our experience is not that we turn away from the outer and ignore it in favor of the inner, but rather that we make explicit or manifest features that are usually implicit or latent.[17]

5 Picture-viewing

Let us return to Mach's drawing with these ideas in hand, considering it now as a picture seen by us. Following Husserl (2006), we can distinguish three types of intentional object implicit in the experience of picture-viewing (see Bernet, Kern, and Marbach, 1993, pp. 150–152). Firstly, there is the physical and perceptible *pictorial vehicle*, in our case, Mach's drawing on paper (the original and its

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[17] There is a large phenomenological literature on whether this activity of making features of experience explicit and available for phenomenological consideration is primarily descriptive or interpretive, and whether it must involve an objectifying (and hence distorting) form of reflection. For some recent discussions, see Poellner (2003); Stawarska (2002); and Zahavi (2005a).

reproductions). Secondly, there is the *pictorial image*, which also appears perceptually, but is not apprehended as a real thing like the pictorial vehicle. In our example, the pictorial image is Mach's field of view *as depicted*. Whereas the pictorial vehicle is something we can touch or move, the pictorial image as such is not. It is ireal, or as Sartre more provocatively puts it, "a nothingness" (Sartre, 2004, pp. 11–14, 125–136). Finally, there is the *pictorial subject* or referent – the person himself or herself who is the subject of the depiction (in a portrait), or the scene itself (in a landscape painting). In our example, the pictorial subject is Mach's actual field of view. The pictorial subject is absent and may or may not exist.

The phenomenological problem of the intentionality of picture-viewing is the problem of how these distinct types of intentional objects and their correlative intentional acts combine to form the unified experience of seeing something as a picture.

Let me now introduce the Husserlian phenomenological distinction between intentional acts of *presentation* and *re-presentation* (see Marbach, 1993, Chapters 2 and 3).[18] Perception is presentational; imagination, memory, and picture-viewing are re-presentational. We can approach this distinction from two sides, the side of the intentional object and the side of the intentional act. In a perceptual experience, the object is experienced as present in its "bodily being," and thus as directly accessible. In a re-presentational experience, on the other hand, the object is not experienced as present and accessible in this way, but rather as absent. Yet this absence is precisely a *phenomenal absence*, for the experience is of the object *precisely as absent*. This difference on the side of the intentional object between bodily presence and absence corresponds to the difference on the side of the intentional act between presentation and re-presentation. A re-presentational experience intends its object precisely as both phenomenally absent in its bodily being and as mentally evoked or brought forth. In this way, the object is said to be mentally re-presented, rather than perceptually presented. It is important to note that what makes the experience re-presentational is precisely that its object is mentally evoked or brought forth while also phenomenally absent; it is not that the object is mentally evoked or brought forth *again*. The latter characteristic belongs to memory, but not to every type of re-presentational experience (such as fantasy).

Picture-viewing comprises both presentation and re-presentation in a complex way. The physical picture is present to perception, while the absent pictorial subject is re-presented, brought to presence by the pictorial image. In viewing and appreciating a picture, we are interested mainly in neither the physical picture nor the pictorial subject as such, but rather in the pictorial image that appears in the physical picture and represents the pictorial subject. The intentional object of picture-viewing is thus in a way double, for it comprises both the pictorial subject and the pictorial image of that subject appearing in the physical vehicle of the picture. One could argue that this physical vehicle counts as a pictorial entity thanks to the apprehension of an image appearing in it. On this view, imagination, in the

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[18] This distinction is between what Husserl calls *Gegenwärtigung* (presentation) and *Vergegenwärtigung* (re-presentation).

sense of the mental apprehension of an image, is a necessary constituent of pictorial experience.

My concern here is not to defend this claim about pictorial experience, but rather to make the point that imagining in the sense of visualizing has a different intentional structure from picture-viewing.[19] This point can be introduced by first considering the mental activity of remembering.

6 Remembering

Suppose Mach, having finished his drawing, later remembers having drawn his visual field while seated in his study. In what does the experience of this sort of mental activity consist? How is remembering different in its subjective character from perceiving and picture-viewing?

As I noted above, perceptual experience has a directness and immediacy that makes it presentational in character rather than re-presentational.[20] In episodic or autobiographical remembering, however, a situation and event is experienced not as present, but as past. The past situation or event is thus necessarily re-presented. The phenomenological question is how this re-presentation subjectively works. According to the classical image theory of memory, in remembering, one apprehends a mental image of something experienced in the past. One problem with this theory is that in memory one does not take oneself to be imagining something that seems like what one remembers; one takes oneself to be remembering something as it occurred. The standard way to deal with this problem is to insist that what one remembers is the past occurrence, not the mental image, but that one remembers the past by way of the mental image. But this move highlights a deeper problem, which is that the image theory fails to account for how an image had in the present can yield a memory experience as of something past. Husserl's account of memory as the *re-presentation of a past experience* aims to overcome this difficulty (Bernet, 2002; Marbach, 1993, pp. 78–83).

Consider that when you remember a past occurrence, situation, or event, you also implicitly remember your earlier experience of it. Mach remembers his field of view as it appeared to him from his couch, but in doing so he also implicitly remembers his earlier visual perception. Thus, in memory, one apprehends something absent (the past) not by means of an image, in the sense of a present mental picture, but through the activity of re-presenting an experience believed to have occurred in the

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[19] The claim that imagination is a necessary constituent of pictorial experience is controversial. Now classic discussions are Walton (1990) and Wolheim (1980, 1987). For recent discussions, see Levinson (1998); Lopes (1996); Hopkins (1998); Stock (2006); and Wolheim (1998).

[20] Cf. Searle (1983, pp. 45–46): "If, for example, I see a yellow station wagon in front of me, the experience I have is directly of the object. It doesn't just 'represent' the object, it provides direct access to it. The experience has a kind of directness, immediacy and involuntariness which is not shared by a belief which I might have about the object in its absence. It seems therefore unnatural to describe visual experiences as representations... Rather, because of the special features of perceptual experiences I propose to call them 'presentations.' The visual experience I will say does not just represent the state of affairs perceived; rather, when satisfied, it gives direct access to it, and in that sense it is a presentation of that state of affairs."

past. Of course, one does not have to entertain this belief explicitly in the episodic or autobiographical memory experience. Rather, in remembering, the re-presented experience is simply subjectively given as having occurred in the past. In memory, one reproduces and relives, as it were, this past experience, but in a modified way, namely, precisely as re-presented, and thus as not occurring now, but posited as past. In other words, the past experience is not literally or really reproduced in the present, but is rather reproduced as part of the intentional content of the memory (Marbach, 1993, p. 61). In Husserl's formulation, the present memory does not "really" contain the past experience, but instead "intentionally implicates" it (Husserl, 1983, Section 99, p. 294, and Marbach, 1993, pp. 34–36, 69–70).

On this view, to say that I remember X is to say that I intend (or refer or mentally direct myself to) X by re-presenting an experience of X that is subjectively given as having occurred in the past (or in a more cognitivist vein, that is believed to have occurred in the past). Notice that the intentional object of the memory is usually the past occurrence, not the past experience (unless the two are one and the same, as in the case of remembering a past emotion or feeling). If the intentional object of the memory is the past experience itself, then the act of remembering is a reflective one. Usually, however, the re-presenting of the past experience operates only implicitly and prereflectively in one's memory of the past event or situation.

A tempting to way to link these ideas to cognitive science would be to say that memory does not involve "on-line" sensory experience – sensory experience appropriately constrained by current sensorimotor interaction with the environment – but rather "off-line," simulated or emulated sensory experience. An emulation represents an activity by reenacting it in a circumscribed and modified way – for example, as an internal process that models, but does not loop through, peripheral sensory and motor systems (Grush, 2004). Remembering could involve emulating earlier sensory experiences, and thus reenacting them in a modified way.

The experience of remembering thus involves a kind of doubling of consciousness, for in being the conscious re-presentation of a past occurrence, remembering is also the conscious re-presentation of a previous consciousness (Bernet, 2002).[21] Seeing something as a picture, on the other hand, involves a double intentional object – the pictorial subject plus the pictorial image appearing in the physical picture. There is thus a clear sense in which picture-viewing can be said to involve a phenomenal mental image, for the image in a picture is arguably nothing other than an intentional correlate of the mental activity of picture-viewing. This image has a clearly identifiable vehicle, namely, the physical material of the picture. Remembering, however, lacks this threefold structure of vehicle/image/referent. Moreover, appealing to mental images does not explain the intentionality of memory. The problem with the classical image theory of memory is that it turns memory experience into a kind of picture-viewing, and thereby distorts its intentional structure and subjective character.

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[21] Here we touch upon the complexities of internal time-consciousness, which are beyond the scope of this paper.

7 Visualizing

The same points hold for imagining in the sense of visual imaging or visualizing: Imagery experience is not a species of picture-viewing. In visual imagining, one apprehends an object not by means of a phenomenal mental picture, but by re-presenting that object as given to a possible perceptual experience. What needs to be clarified is how this sort of mental re-presentation differs from remembering.

Suppose Mach, while drawing his visual field, becomes distracted and visualizes his books rearranged on the shelves. We can suppose that he is not remembering any particular past arrangement and that he has no intention of actually rearranging them. He simply visualizes how they would look in a different arrangement. In this way, imagining does not require belief in the factual reality of the perceptual experience it intentionally implicates in its mental re-presentation of the scene. In other words, there is no implication either that such an experience has occurred in the past (as in remembering) or that it will occur in the future (as in anticipation or expectation). Rather, in imagining, this doxastic feature of belief in the actual (past or future) occurrence of the intentionally implicated experience is "neutralized."[22]

On this view, to say that I imagine X is to say that I mentally re-present X as given to a neutralized perceptual experience of X (see Marbach, 1993, p. 75). For example, in right now freely visualizing the Eiffel Tower, I re-present the Eiffel Tower as given to a perceptual experience whose actual (past or future) occurrence I am in no way committed to. What makes this mental act re-presentational is that the Eiffel Tower is phenomenally absent and mentally evoked or brought forth. What makes the act different from remembering is that I mentally re-present the Eiffel Tower as given to a perceptual experience that I do not posit as having occurred in the past (of course, the visualization in this case depends on memory, but that is another matter). In sum, we could say that to visualize X is to mentally re-present X by subjectively simulating or emulating a neutralized perceptual experience of X.

This account thus accepts what Martin calls "The Dependency Thesis," which states, "to imagine sensorily a ϕ is to imagine experiencing a ϕ" (Martin, 2002, p. 404). According to this thesis, when we visualize objects we imagine visually experiencing them. Martin takes this thesis to imply that "one kind of phenomenally conscious state, an event of imagining, takes as its object another type of conscious state of mind, a sensory experience" (Martin, 2002). On the Husserlian-inspired view proposed here, however, although visualizing an object entails imagining visually experiencing the object, the visual experience is not the object of the imagining; the intentional object is the visualized object. As visualized, however, that object must be given visually in some way or other, and this mode of visual givenness on the part of the object entails a correlative mode of visual experience on the part of the subject. The visual experience co-imagined in visualizing an object is thus simply the intentional correlate of the imaged object's mode of visual appearance in the

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visualization. The intentional object of the transitive imaging consciousness is the imaged object; the correlative and co-imagined visual experience is experienced only intransitively and prereflectively. In other words, this experience is "lived through" without usually being noticed, attended to, or reflected upon (if it is taken notice of in these ways, then the imaging experience becomes a reflective one). I take this intentional structure to be the reason why, as Martin puts it, "imagery seems to give us the presence of an imagined scene rather than a mere imagined experience of the scene" (Martin, 2002, p. 416; though, as noted earlier, this presence is also a kind of phenomenal absence; see Sartre, 2004, pp. 11–14, 126–127, 180).

The foregoing analysis of visual imagining tries to capture both the important similarities and differences between perceptual experience and imagery experience. On the one hand, visual imagining involves visual experience, but on the other hand, this visual experience is only intentionally implied, not actual. That it is internal to the nature of visual imagining that there is a re-presented visual experience whenever one visually imagines an object or scene may account for the important similarities between visual perception and visualization (such as shared perspectival content). That the visual experience is only intentionally implied, however, means that its content is determined primarily by the imagining intention and the knowledge that intention contains.[23] Hence, unlike perception, the intentional content of one's imagining is not constrained by one's current sensorimotor activities and dependencies – ones "sensorimotor contingencies" (O'Regan and Noë 2001). In particular, there is no correlation (or merely a temporary, accidental one) between what one is visualizing and how one is sensing and moving in relation to one's environment. To borrow an example from Pacherie: "I can, for instance, close my eyes and imagine a cube, I can even imagine myself turning around the cube, I can during this exercise move my head and my body in different ways, but unless by coincidence or because of my deliberately intending it to be so, my movements will not be correlated with the sequence of images of the cube that I imagine I am moving around" (Pacherie, 1999 p. 158).

The supposition that the intentional content of an imagining episode is determined primarily by an intention unconstrained by current sensorimotor contingencies might also explain another widely noted difference between imagery experience and perceptual experience, namely, a certain unexplorability of the imagined object by contrast with the explorability of the object for perception (see Casey, 2000, pp. 91–93). In perception, objects not only appear perspectivally, but present profiles that vary with one's movement. We experience objects as having "sensorimotor profiles,"

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[23] See Sartre (2004, p. 57): "The image is defined by its intention. It is the intention that makes it the case that the image of Pierre is consciousness of Pierre. If the intention is taken at its origin, which is to say as it springs from our spontaneity, it already implies, no matter how naked and bare it may seem, a certain knowledge: it is, hypothetically, the knowledge (*connaissance*) of Pierre... But the intention does not limit itself, in the image, to aiming at Pierre in an indeterminate fashion: he is aimed at as blond, tall, with a snub or aquiline nose, etc. It must therefore be charged with knowledge (*connaissances*), it must aim through a certain layer of consciousness that we can call the layer of knowledge. So that, in the imaging consciousness, one can distinguish knowledge and intention only by abstraction. The intention is defined only by the knowledge since one represents in image only what one knows in some sort of way and, reciprocally, knowledge here is not simply knowledge, it is an act, it is what I want to represent to myself... Naturally, this knowledge should not be considered as added to an already constituted image to clarify it: it is the active structure of the image."

as things whose appearances would vary in precise ways as we move around them, or as they move in relation to us (Noë, 2004, p. 117). Perception thus implies "the necessity of *making a tour* of objects" (Sartre, 2004, p. 8). On the other hand, although the object as imagined appears perspectively, "we no longer need to make a tour of it: the imaged cube is given immediately for what it is" (Sartre, 2004, p. 9). Whereas my seeing something as a cube is revocable – I could be mistaken, the object could show itself to be something else as I explore it – my imagining a cube is not revocable in this way. There is no possibility of still-to-be-disclosed profiles that could show the object not to be a cube, for to say it is no longer a cube, but rather (say) a diamond, is to say that I am now imagining a diamond, that is, that the intention of my imagining has changed and now determines a new intentional object. Exactly the same is true if I visualize a cube now from this angle, now from that angle: I do not explore or make a tour of the cube, but change what I imagine by changing my imaginative intention.[24] Although such intentions clearly embody sensorimotor knowledge, the movement from one to the next, unlike in perception, is not correlated to the sensorimotor dependencies that currently figure in one's relation to one's surroundings.

We are now in position to summarize the main upshot of this phenomenological analysis of imagery experience: *This analysis makes no mention of phenomenal mental images, in the sense of phenomenal mental pictures inspected by the mind's eye*. In visual imaging or visualizing, we do not inspect a phenomenal mental picture, but instead mentally re-present an object by subjectively simulating or emulating a perceptual experience of that object.

One might object that phenomenal mental images or pictures, although not the intentional objects of remembering and imagining experiences, and thus not inwardly "seen," are nonetheless "had" or "undergone" in those types of experience. How we should respond to this objection depends on what we understand a phenomenal mental image to be. If the proposal is that a phenomenal mental image is simply a subjectively simulated or emulated perceptual experience, then the foregoing analysis can be taken to support this proposal. Notice, however, that this proposal amounts to an important conceptual and phenomenological clarification of the notion of a phenomenal mental image: A phenomenal mental image is not a phenomenal picture in the mind's eye, nor indeed is it any kind of static image or depiction; it is rather the mental activity of re-presenting an object by mentally evoking and subjectively simulating a perceptual experience of that object. On the other hand, if the proposal is that this simulated visual experience is itself a kind of mental picture, or more precisely that its intentional content is pictorial, then the fate of this proposal hangs on whether perceptual experience is pictorial. Earlier in this paper, we saw that there are ways in which the content of perceptual experience is

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[24] Because of these characteristics of imagining – the determination of its content by knowledge and intention, as well as the essential unexplorability of the imagined object – Sartre describes the intentional attitude of imagining as one of "quasi-observation," by which he means an attitude of observation, but an observation that does not teach anything (Sartre, 2004, p. 10). As McGinn (2004, pp. 19–20) notes, this formulation should be modified to allow for the possibility of cognitive enhancement (for example, problem solving) by imagining.

unlike any picture. If perceptual experience is not pictorial, then there is no reason to think that the content of the simulated visual experience in imagining and remembering is pictorial, and hence no reason to think that this experience is some kind of mental picture. In sum, according to the view I am proposing, the only time visual experience is straightforwardly pictorial is when one has the visual experience of looking at a picture, or the experience of remembering or imagining looking at a picture.

8 The imagery debate revisited

What is initially striking about the phenomenological analysis of imagery experience, from the perspective of the imagery debate, is that it supports the claim, made by descriptionalists, though not proprietary to them, that visualizing is not the inspection of a mental image, but rather the mental representation of what it is like, or was like, or would be like, to see something, given one's tacit knowledge of how things look, how that knowledge is organized, and one's sensorimotor skills. The phenomenological analysis thus undermines a principal motivation for analytical isomorphism in imagery research, namely, the assumption that imagery experience is the experience of a phenomenal mental image, or that the content of imagery experience is given by an image. Analytical isomorphism seeks to find depictive structures in the brain corresponding to the supposedly imagistic or pictorial content of imagery experience. It is, of course, an empirical question whether topographically organized areas of the cortex are involved in one or another type of visual imagining. But the evidence for their involvement cannot be taken to mean that activity in these areas corresponds to the content of what we experience when we visually imagine an object. In visualizing an object, we subjectively simulate a visual experience of the object, and the content of this experience is not given by an image or picture.

Although this line of thought is critical of pictorialism – to the extent that pictorialism maintains that activity in topographical cortical areas corresponds to the content of imagery experience – it should not be taken as favoring descriptionalism. Descriptionalism does not maintain simply that visualizing is the mental representation of what it is like to see something; it also maintains that the relevant tacit knowledge is propositional in form, and that the subpersonal format of the neural representations are symbolic (language-like). The phenomenological analysis presented here is not directly relevant to this hypothesis about the subpersonal representational format. As we have seen, this analysis aims to clarify the subjective character and phenomenal content of imagery experience at the personal level. Whether such experience is neurally mediated by depictive or propositional structures is clearly not something phenomenology on its own is in a position to answer.

Nevertheless, the foregoing phenomenological analysis does have critical implications for descriptionalism too. In particular, it suggests that the descriptionalist, tacit-knowledge account of mental imagery is vague and under-specified. According to Pylyshyn, the "null hypothesis" is that all cognition makes use of the

same representational format.[25] What is distinctive about imagery is that the content of one's thoughts concern how things look. To decide, however, whether to reject this null hypothesis in any given case, we need to know exactly what the subject is mentally doing. According to the tacit knowledge proposal, when subjects are asked to visualize something, they in effect ask themselves what it is like to see it, and then simulate as many of the relevant aspects as they can, given their knowledge of how things look, how that knowledge is organized, and their repertoire of psychophysical skills. The problem with this proposal, from a phenomenological point of view, is that does not specify in nearly enough detail what the individual subject is mentally doing during a particular episode of imagery experience. As we have seen, one can simulate seeing something in various ways – by imagining it (where this means noncommittal re-presentation according to various "positing attitudes"), by remembering it, and by seeing it in a picture. One can also reiterate these types of mental activities in complicated ways: One can remember imagining something; one can imagine remembering something; one can visualize looking at a picture; one can remember visualizing looking at a picture, and so forth. These mental activities all have different subjective characters and intentional and cognitive structures.

This point casts light on the intentional structure of imagery experience in standard imagery tasks. Consider Shepard and Metzler's well-known mental rotation task (Shepard & Metzler, 1971). Subjects looked at pairs of two-dimensional, perspective line-drawings of three-dimensional shapes. The shapes were at different orientations, and the task was to determine whether the two shapes were the same. What Shepard and Metzler found is that the time it takes to decide whether the two shapes are identical increases linearly as the angle between them increases, no matter whether the rotation is in the plane or in depth. Although introspective reports were not collected in the original study, many people report visualizing one or both shapes being rotated in order to perform the task. This task involves a combination of picture-viewing and visual imagining, because one sees the 2D display as a 3D image and then visualizes movement in the picture. In other words, one *visualizes the rotation of a pictorial image*. Consider now Kosslyn's well-known map scanning experiments (described in Kosslyn et al., 1981). Subjects memorize a simple picture of an island with various objects on it. Once they have learned to draw the map from memory, they are asked to visualize it, fix their attention on one landmark, mentally "scan" to another landmark, and report when they can "see" this second landmark in their "mind's eye." The reaction time to report "seeing" the second landmark is measured and found to be a linear function of the distance between the two landmarks in the original map. This task combines picture-viewing, remembering, and visualizing, for one must *visualize a remembered picture*. Thus, in these imagery tasks, subjects appear to be *simulating or mentally representing the perception of a picture*. What these tasks elicit, therefore, is neither simply perception, nor visual

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[25] Pylyshyn routinely conflates this hypothesis with the substantive hypothesis that all cognition involves the same propositional format, namely, a "language of thought." But to pretend that the language of thought hypothesis does not have its own deep conceptual problems (where does the semantics of the symbols come from?), analogous to those that dog pictorialism, is sheer bluster.

remembering, nor visual imagining, but both actual and imagined pictorial experience.

As Pylyshyn has discussed, there is a widespread tendency to interpret the results of these experiments according to analytical isomorphism, in other words as showing that we rotate and scan phenomenal mental images isomorphic to depicture structures in the brain (Pylyshyn, 2002, p. 180; 2003a, p. 356). One wonders to what extent this tendency is influenced by the fact that in these experiments subjects are perceiving and visualizing pictures. By contrast, in the case of motor imagery, there seems less temptation to assume that one is moving a motor image instead of emulating what it is like to perform a motor action.

The foregoing phenomenological analysis of imagery experience has methodological implications for empirical research. At the personal level, we need more refined and precise descriptions of what subjects are subjectively doing in various imagery tasks. Such descriptions should include the overall intentional structure of a given imagery task, as well as variations in subjective experience across individuals and from trial to trial for a given individual. Producing such descriptions requires incorporating a distinct phenomenological level of investigation into experimental psychology and neuroscience (Lutz and Thompson 2003; Varela 1996). On the one hand, we need to gather more precise descriptive first-person reports from subjects about how they experience their cognitive activity from trial to trial in a given experiment. On the other hand, collecting this type of data requires that subjects attend to their experience in an open and nonjudgmental way. "First-person methods" are methods designed to foster this ability to be present to one's own experience in this way (Varela & Shear, 1999a, b). Such methods exist in phenomenology (Depraz et al., 2000, 2003), psychology (Price & Barrell, 1980; Price et al., 2002), psychotherapy (Gendlin, 1981; Stern, 2004), and contemplative traditions of mental training (Lutz et al., 2007). In an experimental context, these methods need to be complemented with "second-person methods" of interviewing subjects so that the reports they produce are maximally descriptive of experience and minimally conjectural about the causes of experience (Petitmengin, 2006).

After this first phase of collecting descriptive first-person reports, we then need to work with the subjects to discern whether there are any invariant intentional and phenomenal structures of their experience. Recent experimental work on the neurodynamics of conscious visual perception has shown that phenomenal invariants of experience produced in this first-person/second-person phenomenological manner can be used to detect and interpret novel patterns of neural activity that correlate with cognitive activity and behavior (Lutz et al., 2002). Without this phenomenological window on brain activity, these patterns would remain lost in the highly variable neural signals, usually treated as noise. This approach of combining first-person reports informed by phenomenological analysis with third-person neurophysiological and behavioral data defines the research program known as *neurophenomenology* (Lutz & Thompson, 2003; Thompson, Lutz, & Cosmelli, 2005; Varela, 1996).

A neurophenomenological approach to imagery experience that followed the lead of the phenomenological analysis sketched in this paper would dispense with the construct of the phenomenal mental image, understood as a pictorial entity or content in consciousness, and instead direct us to study imagining as a type of

mental activity whereby we relate to something phenomenally absent.[26] Such an approach would not aim to find depictive representations in the brain that match phenomenal mental pictures. Instead, it would try to relate the experiential structure of the visualizing act to the dynamical structure of brain activity (Cosmelli et al., 2007). It would begin by using first-person and second-person methods to investigate how subjects experience the visualizing act in a given protocol. On this basis, it would pursue a phenomenological analysis of the experiential structure of visualizing, and use the results of this analysis to guide investigation of the neurodynamics of the visualizing act.

9 Phenomenology and heterophenomenology

To conclude this paper, I would like to examine the relation between the phenomenological approach taken in this paper, including the neurophenomenological proposal just sketched, and Dennett's heterophenomenology.

In his 1978 paper, "Two Approaches to Mental Images," Dennett distinguished between what he called the "scientific approach" to mental images and the "phenomenological approach" to mental images (Dennett, 1978). He later renamed the phenomenological approach "heterophenomenology," in order to emphasize the resolutely third-person approach taken by this sort of phenomenology (Dennett, 1982, 1991). The scientific approach to mental imagery defines mental images as the *normal causes* of the beliefs subjects have about what they call their experienced mental images. This approach guarantees the existence of mental images so defined, and then investigates whether the normal causes of these beliefs include anything that has the properties of images ordinarily understood, such as a depictive representational format. The heterophenomenological approach, on the other hand, defines images as the *intentional objects* of the subjects' beliefs. It guarantees the existence of mental images as logical or intentional constructs. The aim of this approach is to assemble from the third-person point of view a comprehensive recording of the beliefs subjects express about their images, and then to extrapolate and describe the corresponding intentional objects. Subjects have final authority over the content of their beliefs (their beliefs about things seem to them when they are

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[26] Sartre already announced this dynamic and relational conception of imagery in 1940, at the beginning of his phenomenological study, *The Imaginary*. There he used phenomenological analysis to expose what he called "the illusion of immanence," by which he meant the cognitive illusion of taking mental images to be pictorial items in consciousness. One form this illusion can take is supposing that the qualities of the object one imagines also belong to one's mental image, or as we would say today, confusing properties of what is represented with properties of the representing. But Sartre went further than this familiar point. He argued that a mental image properly understood is not a content contained in consciousness, but rather an intentional act of consciousness: "The word "image" could only indicate therefore the relation of consciousness to the object; in other words, it is a certain way in which the object appears to consciousness, or, if one prefers, a certain way in which consciousness presents to itself an object. To tell the truth, the expression "mental image" gives rise to confusion. It would be better to say "consciousness-of-Pierre-as-imaged" or "imaging-consciousness-of-Pierre." As the word "image" is long-standing, we cannot reject it completely. But, to avoid all ambiguity, I repeat here that an image is nothing other than a relation" (Sartre, 2004, p. 7). Sartre compromised this insight, however, by falling back into treating imaging consciousness as a species of picture-viewing. See Stawarska (2001).

visualizing), but not over the status of the intentional objects of those beliefs (the mental images posited by their beliefs). The heterophenomenologist regards these intentional objects as occupants of the "heterophenomenological world" of the subjects, and this world is to be treated by the heterophenomenologist as a purely notional realm, or as Dennett also describes it, as a kind of fictional world (Dennett 1991, pp. 78–81). The scientific task is then to determine whether these intentional objects correspond in sufficiently many of their properties with the real structural and functional properties of what goes on in the brains of subjects when they report having images. If there is enough of a correspondence, then we can identify the intentional objects with the underlying neural representations, and the beliefs of the subjects turn out to be largely true. If there is not sufficient correspondence, then the beliefs turn out to be mistaken (Dennett, 1991, p. 85). In this case, the individuals are subject to a kind of systematic illusion.

From the standpoint of the phenomenological approach pursued in this paper, we can raise a number of critical points about heterophenomenology.

1. Heterophenomenology interprets first-person reports about experience as expressions of the subjects' beliefs about their experience, and then evaluates the truth or falsity of those beliefs by determining whether they match or fail to match what is really going on in the brain. Below I will suggest that attributing beliefs to subjects about their experience on the basis of what they say about their experience is misguided as a general interpretive policy. Let me set that issue aside for the moment, however, to focus initially on the proposal that the truth or falsity of what subjects report about their experience should be determined in relation to what is really going on in their brains. Let us also limit ourselves to experimental contexts in which subjects are instructed to give descriptive reports about their experience, and hence may be required to introspect and/or retrospect (see Jack and Roepstorff, 2002). The critical point to be made is that this evaluative procedure is inappropriate for most first-person reports, and certainly for ones that are properly descriptive in form, as opposed to ones that indulge in conjecture about the underlying causes of experience. Descriptive reports carry no particular commitments on the part of the subject about what is going on in his or her brain. When one says, "I decided the two figures had the same shape by visualizing one of them being rotated," one is describing one's subjective experience of one's own mental activity and not expressing a belief about what is really going on in one's brain considered as a cognitive system. One is describing one's subjectivity at the personal level in a way that is completely noncommittal about the subpersonal workings of one's brain. Therefore, we should not try to evaluate such reports by comparing what they assert to what is going on in the brain. Moreover, we should certainly not try to evaluate such reports by asking whether their *content* matches or fails to match the properties of the representational *format* of the relevant neural systems. In other words, it is a mistake to assume that the only way the subjects' beliefs about their imagery experience could turn out to be true is if the neural representations had a depictive format. To make this assumption is tantamount to assuming analytical isomorphism: We assume that the subpersonal representational format must be depictive, given that we experience mental images, but then decide that we do not really experience mental images, but only think or believe we do, because the representational format

turns out not to be depictive. The remedy for this predicament is to keep in clear view the conceptual difference between experiential content at the personal level and representational format at the subpersonal level.

2. Heterophenomenology focuses on specifying the intentional objects of subjects' expressed beliefs, but does not try to trace those intentional objects back to the intentional acts necessarily correlated to those objects. Instead, it construes those intentional objects as posits of the subjects' beliefs. From a phenomenological standpoint, on the other hand, there simply is no such thing as an intentional or notional object without a corresponding intentional act, and intentional acts are not to be identified with beliefs. Intentional acts are subjectively lived through mental (and bodily) acts of intending (relating or directing oneself to) objects, events, and states of affairs, and believing is only one type of intentional act. Furthermore, intentional acts are related constitutively to their objects, for the way the object appears or is disclosed depends on how it is intended (an imaged objects appears differently to an act of remembering and an act of pure fantasy). For a phenomenological analysis to be comprehensive, it needs to bring into view this correlational structure of intentional experience and intentional object, and it needs to analyze the constitutive relation between them.

3. The next critical point arises when we ask exactly how we are to gain access to these intentional acts themselves. In phenomenology, the mode of access is first-personal, specifically the awareness one has of one's own mental activities.[27] Given that we aim to gain access to intentional acts of imagining, remembering, and so on, as they are subjectively lived, it is hard to see how we could forego this mode of access.

The foregoing point concerns the unavoidable need to make use of first-personal modes of access to mental phenomena. It also stands to reason that such modes of access are not static and fixed, but exhibit degrees of plasticity, and might be trainable in various ways. In other words, attention and meta-awareness could be flexible and trainable skills, so that through various first-person and second-person methods, individuals could become more attuned or sensitized to aspects of their experience that might otherwise remain inaccessible to them. One of the working hypotheses of neurophenomenology is that developing this type of awareness, and putting it to work in an experimental context, can be especially relevant to the science of consciousness, for individuals skilled in this way might be able to provide more informative first-person reports about their experience, and these reports could in turn significantly constrain the interpretation of neurophysiological data (Lutz and Thompson, 2003).

The critical question for heterophenomenology is how it relates both to the ineliminable need to rely on the first-person perspective, and to the possibility of putting the first-person perspective directly to work in science in a more careful phenomenological and neurophenomenological way. On the one hand, there seems to be nothing in the heterophenomenological method itself that disallows using the

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[27] Not all forms of phenomenology would not describe their mode of access to phenomena in this way. To equate phenomenology with one particular way of doing phenomenology would be a leveling misrepresentation. Different ways of doing phenomenology are appropriate in different contexts. In this respect, phenomenology is no different from science or philosophy overall.

first-person perspective in this way. On the contrary, if the material on which hete-rophenomenology goes to work is first-person reports about experience, and if the production of such reports sometimes requires that subjects attend to and describe their experience, then heterophenomenology already depends on the first-person mode of access to mental phenomena being put to work in an experimental setting. On the other hand, given its resolutely third-person attitude, there is nothing in heterophenomenology that would lead it ever to envision – let alone take the step – of working with experience in this direct and first-personal phenomenological way. Hence, this step, which is simply unavoidable if progress is to be made in the science of consciousness, must come from outside heterophenomenology, with phenome-nological concepts and procedures that heterophenomenology cannot provide. Heterophenomenology, therefore, must be deemed methodologically incomplete. In short, phenomenology from its start has already encompassed heterophenomenology (or its possibility), but heterophenomenology on its own is insufficient.

4. Dennett's view is that the "primary interpreted data" for the science of consciousness are subjects' expressed beliefs about their experiences, and not the experiences themselves. In the context of an experiment in which subjects are required to make introspective reports, it may be legitimate to treat those reports as belief expressions (though it does not follow that the experiences they report are themselves beliefs). In more ordinary cases, however, to take statements about experience as expressions of beliefs about experience seems strained. This sort of interpretation distorts experience by over-intellectualizing it. A belief, in the canonical philosophical sense, is a mental state having the form "S believes that p," or in first-person form, "I believe that p." A state of this type contains a subject term, or an "I," and a whole propositional content. We should not assume a priori, however, that any given experience has to have these features. In interpreting first-person reports as expressions of belief, the heterophenomenologist runs the risk of over-interpreting subjects, and thereby distorting their experience.

Dennett offers the following argument for why subjects' expressed beliefs should be the primary (interpreted) data for a science of consciousness: "if you have conscious experiences you don't believe you have – those extra conscious experiences are just as inaccessible *to you* as to the external observers. So a first-person approach garners you no more usable data than heterophenomenology does. Moreover... if you believe you have conscious experiences that you don't in fact have – then it is your beliefs that we need to explain, not the nonexistent experiences!" (Dennett, 2005, p. 45). The problem with this argument is that it collapses the crucial distinction between conscious experience and belief about conscious experience. One can insist upon the importance of this distinction without supposing there are qualia of the sort Dennett is concerned to attack (private, ineffable, and possibly inaccessible qualities of experience). Consider that we can indeed have experiences we do not believe we have. Examples are pervasive moods, our experience during absorbed and fluid skillful activities, and rapid and transient emotional experiences. Such experiences are not inaccessible in principle, and therefore do not have to be construed as cases of phenomenal consciousness divorced from any possibility of access consciousness. First-person and second-person methods work directly with these sorts of experience, and thus do indeed garner more usable data than heterophenomenology does.

This line of thought also indicates that the above assimilation of experience to belief about experience makes experience too static and determinate. Lived experience is dynamic and indeterminate in multiple ways, and thus always outstrips whatever beliefs we may happen to have about our experience. The question of what we believe about our experience arises when we take a reflective or deliberative stance toward experience, but most of experience is prereflective and spontaneous, not reflective and deliberative.

The upshot of these considerations is that we should not equate conscious experiences with beliefs about conscious experiences, and that to limit the science of consciousness to what subjects believe about their experience is too constricting.

5. Dennett advertises heterophenomenology as a purely *third-person approach*, a *neutral method* for the study of consciousness, and the *standard practice* of scientists studying consciousness. Questions can be raised about each of these purported features.

Is heterophenomenology really a purely third-person approach? Consider an experiment in which we are interested specifically in what subjects report about their imagery experience. For example, we may wish to learn exactly what experiences subjects report having when they perform a cognitive task apparently requiring visualization and "mental rotation." Dennett allows that to investigate consciousness scientifically we need to make use of first-person reports about experience. To obtain such reports, however, we need to instruct subjects to attend to their experience and/or to recall retrospectively their experience. Such instructions belong to the "script" given by the experimenter to the subjects (Jack & Roepstorff, 2002). This script is addressed to the subject in the *second-person*; the sort of attention it is meant to induce is a cognitive act that has to be put into play in the *first-person singular*; the response the subject gives is addressed to the experimenter in the *second-person*; and the entire context of this communication and endeavor is an *intersubjective* one (Roepstorff, 2001; Jack & Roepstorff, 2002).

In light of these considerations, what are we to make of Dennett's insistence that heterophenomenology is a purely third-person endeavor? If the natural sciences are supposed to be the model of what it means to take a purely third-person approach to one's subject matter, then heterophenomenology cannot be a purely third-person approach. Perhaps it is an "extension" of the third-person approach taken in the natural sciences (Dennett, 2003, p. 19). Yet this way of putting things masks two crucial points. First, heterophenomenology is no mere extension, because it employs methods fundamentally different from the methods of the natural sciences. As Dennett himself emphasizes, heterophenomenology requires that we adopt the "intentional stance," whereby we interpret behavior as speech acts, and speech acts as expressions of belief. Notice that such interpretation also requires talking things over with the subjects. Heterophenomenology thus stands in an interpretive, intersubjective, and interpersonal relation to its subject matter. These features make it fundamentally different from (say) particle physics, organic chemistry, and molecular biology. Indeed, these sciences are not really third-personal, but impersonal. Second, talking things over with the subjects (if it is to be effective and respectful) is not a purely third-person endeavor, but a second-person one. Heterophenomenology depends on this second-person approach, particularly when it

comes to devising experimental scripts and working with subjects to make sure they understand them (and are willing to participate in them).

Heterophenomenology, therefore, simply cannot be a purely third-person approach in the way Dennett advertises. If physics, chemistry, and biology set the standard for what counts as a third-person approach, then heterophenomenology qualifies as a kind of critical second-person approach. If physics, chemistry, and biology are more properly seen as impersonal, then heterophenomenology qualifies as a kind of hybrid third-person/second-person approach. Either way, heterophenomenology winds up looking different from Dennett's presentation of it as more of the same old "objective science" (a conception that basically amounts to a kind of positivism).

Is heterophenomenology really a neutral method? The foregoing discussion has brought to light two ways in which heterophenomenology is clearly not a neutral method.

First, Dennett builds into heterophenomenology a biased conception of how to interpret first-person descriptive reports about experience in relation to brain activity, namely, that they are to be evaluated for their truth and falsity according to how well their content matches the properties of neural activity. The bias of this approach is that it demands we interpret subjects as expressing beliefs not simply about "what is going on inside them," but about "what is going on inside them *subpersonally.*"

Second, Dennett builds into heterophenomenology a biased conception of the relation between conscious experiences and beliefs about conscious experiences, and hence about what the proper data for a science of consciousness are supposed to be.

Is heterophenomenology really the standard practice in the science of consciousness? Alvin Goldman (1997, 2004) has challenged Dennett's assertion that heterophenomenology, specifically its adoption of agnosticism about the truth of subjects' verbal reports, is standard practice in the science of consciousness (see also Goldman, 2000). On Goldman's view, "scientists make a practice of relying 'substantially' on subjects' introspective reports" (Goldman, 2004, p. 11). Dennett disputes this point (Dennett, 2003, pp. 24–25; 2005, pp. 50–54), but I concur with Goldman.[28] As Jack and Roepstorff (2002) write in an important article on introspection:

> Introspective observation is not just a pervasive feature of our personal lives. Cognitive scientists use this source of evidence to inform virtually every stage

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[28] Dennett writes: "[O]f course experimenters on illusions rely on subjects' introspective beliefs (as expressed in their judgments) about how things seem to them, but that is the agnosticism of heterophenomenology; to go beyond it would be, for instance, to assume that in size illusions there really are visual images of different sizes somewhere in subjects' brains (or minds), which of course no researcher would dream of doing" (Dennett, 2003). In this last statement, we see the same bias toward interpreting first-person reports as expressions of belief about what is going on in the brain or mind considered as a subpersonal cognitive system. Goldman, (2004) usefully terms this sort of interpretation "architecturally loaded" (because it interprets subjects as expressing beliefs about their subpersonal cognitive architecture), and writes: "The following... seems like a reasonable rule of thumb: 'When considering an introspective report, and a choice is available between an *architecturally loaded* interpretation of the report and an *architecturally neutral* interpretation, always prefer the latter.' This is just the opposite of Dennett's practice. His proclivity is to interpret ordinary introspective reports in architecturally loaded terms" (Goldman 2004, p. 12).

of their work. From the moment we conceive of an experimental paradigm, through piloting and refinement, to the interpretation of results, we are guided by considerations of our own experience and the experiences we attribute to others, understood by proxy to our own. The very language of cognitive science is, in substantial part, the language of experience. Discussions are laden with terms that we understand first and foremost by reference to our own internal states: 'consciousness', 'awareness', attention', 'recollection', 'perception', 'imagery', 'rehearsal', 'recognition', 'effort', 'dreaming', etc. Many psychological constructs, but by no means all, have an agreed upon 'operational' behavioural definition. Nonetheless, the question of whether the same construct can be applied to other situations is often difficult to determine. Behavioural paradigms can often be formalized in several different ways. Judgements of similarity and difference between paradigm are open to dispute. It is a simple fact that the cognitive characterization of behavioural paradigms ('task analysis') remains a matter of subjective judgement. Further, it is clear that these judgements are frequently, and sometimes explicitly, informed by introspective observation. Discussions of results are frequently sprinkled with hypotheses whose only direct method of verification is introspection (Jack & Roepstorff, 2002, p. 333).

The crucial point here is twofold: Scientists not only rely substantially on subjects' introspective reports, but also rely substantially on their own first-person experience. Without relying on their own experience, scientists would not only be unable to make sense of what subjects are saying; they would also be unable to grasp what cognitive phenomena are. Heterophenomenology claims that it can do justice to all the first-person phenomena from an entirely third-person perspective. What we are now in position to appreciate is that the heterophenomenologist will not be able to make sense of his third-person data without drawing on his own first-person experience of mental phenomena.[29]

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[29] Versions of this paper were presented to the Department of Philosophy, University of Toronto; the Center for Subjectivity Research, University of Copenhagen; the Syracuse Philosophy Annual Workshop and Network (SPAWN), Department of Philosophy, Syracuse University; and the Centre de Recerche en Epistémologie Appliqué (CREA), Ecole Polytechnique. I am thankful to the audiences on these occasions for their comments and critcisms. Special thanks are due to Ned Block, Diego Cosmelli, Jun Luo, Uriah Kriegel, Alva Noë, Pierre Livet, Brian Cantwell Smith, Joel Walmsley, and Dan Zahavi.

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