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Lack of Imagination: Individual Differences in Mental Imagery and the Significance of Consciousness

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Ensconced in the armchair, a philosopher of mind is liable to mistake an investigation of his or her own mind for an investigation of all minds. This mistake is arguably encouraged by our monolithic talk of 'The Mind', as in the 'The Mind-Body Problem' or 'The Mind-Brain Identity Theory'. In contrast, psychologists have long studied individual differences in our mental capacities, particularly in the areas of personality and intelligence, but increasingly with respect to basic perceptual and cognitive functions (Kanai and Rees 2011). Such differences merit philosophical attention, too. The philosophers of the 'new wave' represented in this collection should be philosophers of minds.

In this chapter, I focus on one particular individual difference and its potential philosophical significance. The difference concerns variation in visual mental imagery (and correlatively visual episodic memory). This variation is one of the most remarkable individual differences in psychology. At one end of the spectrum are super-imagers: subjects who profess easily to be able to bring scenes before their mind's eye with the apparent richness and vivacity of normal vision; at the other end are non-imagers: subjects who claim not to enjoy any genuine visual imagery whatsoever. Such variation is striking for at least two reasons, no doubt related. First, although one in forty (Faw 2009) or perhaps even one in ten (Abelson 1979) of us are non-imagers, most of us are wholly unaware of the extent or even existence of such disparities. Indeed, even when their attention is drawn to them, super-imagers often struggle to believe the reports of non-imagers, and vice-versa. Thus, in his pioneering investigation into the subject, Galton writes of his astonishment on finding that 'the great majority of the men of science to whom I first applied protested that mental imagery was unknown to them, and looked on me

as fanciful and fantastic in supposing that the words "mental imagery" really expressed what I believed everybody supposed them to mean' (1880, 302).[1] Second, despite a great deal of experimental work, few if any strong or systematic correlations have been uncovered between reported imagery and levels of performance, even in tasks which intuitively implicate imagery – for example, Shepard and Metzler's mental rotation tasks, Kosslyn's visual scanning tasks or standard recognition and memory tasks.[2] Again, as Galton writes, 'men who declare themselves entirely deficient in the power of seeing mental pictures can nevertheless ... become painters of the rank of Royal Academicians' (1880, 304).

Consider how baffling it would be if we were to encounter a community many of whose members were blind yet amongst whom there was almost no recognition of significant variation with respect to sightedness. On the face of it, this is exactly how Galton discovered our own community to be with respect to imagery. With the case of blindness in mind, it is understandable that many psychologists and philosophers have been sceptical whether such reported differences in imagery are in fact genuine. Indeed, according to one common line of thought, the cost of taking subjective reports at face value is an implausible epiphenomenalism concerning mental imagery. After all, if those who lack imagery do no worse in objective tests typically regarded as implicating imagery, it is obscure how imagery earns its functional keep.

In what follows I explore this challenge and thereby consider the real significance of taking individual differences in imagery seriously. I proceed as follows. In the next section, I develop the puzzle raised by the apparent lack of correlation between objective task performance in imagery tasks and reported imagery in terms of a dilemma which apparently faces us, a dilemma between what I call *inscrutability* and *epiphenomenalism*. In Section 2, I argue that the first step in any adequate response to this dilemma is to distinguish between two conceptions of imagery: imagery in the *representational* sense, meaning underlying subpersonal representations of a putatively imagistic nature – the focus of the so-called 'mental imagery debate' – and imagery in the conscious or *experiential* sense, meaning conscious personal-level episodes of imagining. Since subjective reports speak only to imagery in the second, experiential sense, this distinction partly resolves our dilemma. Faced with two subjects who perform equally on imagery tasks yet differ dramatically in their reported imagery, we can credit both with similar *representational* imagery (avoiding epiphenomenalism) but allow for marked differences in their *experiential* imagery corresponding to their differing reports (avoiding inscrutability).

This cannot be the whole story, however. For there remains the apparently puzzling failure of conscious, *experiential* imagery to correlate with objective task performance. In light of this failure, it may seem that the import of individual differences in imagery is that *conscious* imagery does lack a useful function. Moreover, generalizing, we might conclude by adopting the increasingly widespread view that consciousness per se lacks a useful function and is best conceived of as an evolutionary spandrel (e.g., Blakemore 2005). Sections 3 and 4 offer rejoinders to these two lines of thought. In Section 3, I argue that even if conscious imagery does lack a useful function, nothing follows about the significance of consciousness *in general*. I demonstrate this by arguing that on one leading account of the significance of *perceptual* consciousness (namely, as a condition of demonstrative thought), mental imagery could not share the same significance. In Section 4, I return to the question of the significance of conscious imagery. I argue that whilst objective data from mental imagery tasks do plausibly establish the presence or absence of imagery in the representational sense, it is not obvious that such data do settle the presence or absence of imagery in the experiential sense. Instead, the differences between conscious imagers and non-imagers may emerge only when we consider exclusively personal-level differences in the way in which imagers perform imagery tasks: differences in the personal-level genesis, justification and self-understanding of their performances.

1 Individual differences in mental imagery: The dilemma of inscrutability or epiphenomenalism

Questionnaire-based studies have repeatedly confirmed Galton's finding of substantial variation in reported imagery.[3] Despite this, many theorists have doubted that such reported differences accurately reflect underlying reality. Most forcefully and recently, Schwitzgebel (2011, ch. 3) has argued that Galton's supposed discovery of large variation in imagery is a myth based on 'excessive optimism about subjective report' (36). Schwitzgebel accepts that individual *reports* of imagery vary dramatically. What he disputes is the alleged link between such reports and what he calls 'underlying imagery experience' (36).

Schwitzgebel expresses antecedent scepticism concerning the existence of sizable individual differences in experience within normal human populations (e.g., 133–134).[4] But we need not share that view to feel the force of Schwitzgebel's argument in the present context. The argument is simply this. If subjects really did differ in their 'underlying

imagery experience', we should predict 'vast corresponding differences in performance on cognitive tasks involving imagery – differences comparable to that between a prodigy and a normal person or between a normal person and one with severe disabilities' (44; cf. the discussion of blindness above). Such differences in performance are not found. Thus, we should conclude that underlying imagery experience does not vary much across individuals. As for their reports: many subjects are just wildly wrong about their own experience.[5]

Schwitzgebel devotes most of his attention to defending his argument's crucial premise that individual differences in visual imagery do not closely or systematically correlate with objective task measures, in terms either of basic task competence or of specific response patterns. This premise is the subject of a long-standing and live controversy, and Schwitzgebel (ch. 3, §5) provides an excellent review of the relevant literature, including a critical assessment of the most recent major review suggesting a weak positive correlation between task performance and reported imagery (McKelvie 1995).[6]

As Schwitzgebel brings out, well over a century since Galton's work launched a substantial programme of research into the functional correlates of individual differences in reported imagery, there is little conclusive evidence of such a correlation. Instead, what emerges is 'a disorganized smattering [of positive findings, with respect to what Schwitzgebel later calls 'a suspiciously desultory sprinkle of tasks', 51], with frequent failures of replication' (48). Thomas offers a similar assessment, writing that 'most surprisingly and disappointingly... virtually no sign of any correlation has been found between people's vividness ratings and their performance (speed or accuracy) in various visuo-spatial thinking and problem solving tasks, even though, subjectively, such tasks seem to depend on imagery' (2009, 450).[7] Many prominent imagery researchers make similar assessments of the literature.[8] As a result it is unsurprising that many have outright rejected any correlation between reported imagery and objective task performance or simply turned their back on subjective reports.[9] As Reisberg, Pearson and Kosslyn remark, 'negative results, showing no relationship between imagery self-report and performance with imagery tasks, are relatively common. As a result, roughly a century after Galton's original publication, many cognitive scientists remain deeply sceptical about the value of these self-reports' (2003, 150).[10]

My aim here is not to enter this fray. Instead, I want to consider what follows if there does indeed exist no strong and systematic relationship between reported imagery and objective task performance. Thus, in

what follows, I propose to make this large and controversial empirical assumption in order to consider its broader implications.[11]

Granting this assumption, let us return to Schwitzgebel's argument against the existence of large individual differences in imagery. Its crucial move has undoubted appeal.[12] It is the claim that subjective differences will be closely mirrored by differences as measured by objective methods, methods, as Schwitzgebel puts it, 'in which success or failure on a task depends on the nature of the subject's imagery' (2011, 43). In short, it is the demand that our reports be backed up by action (or lack of it) – a demand naturally associated with neobehaviourist (broadly, function-alist or interpretationist) views in the philosophy of mind.

On the other hand, the view that many of us consistently produce dramatically inaccurate reports about our own conscious experience is not appealing. Schwitzgebel himself is notoriously happy to embrace such a view about all aspects of our conscious lives (see 2011, passim). However, despite disavowing any commitment to a particular concep-tion of introspection (120), Schwitzgebel's sanguinity here arguably betrays a commitment to a questionable model of introspection. In particular, Schwitzgebel talks of 'the mechanisms' of introspection and of introspection as a 'method [better, 'a pluralistic confluence of proc-esses'] by which we normally reach judgments about our experience' (120). Such claims may seem innocuous, but they allow Schwitzgebel to think of the mechanism(s) of introspection as breaking down, as being variously 'misleading', 'faulty' and 'untrustworthy' (129) and perhaps ultimately as being simply broken, leaving us cut off from our stream of consciousness.

This last view seems to be that of Marks, who suggests 'that non-im-agers suffer from some sort of subclinical neurological disconnection syndrome that somehow makes them unable to report on, or form verbal memories about, images that they nevertheless, in some sense do experience'.[13] What is so hard to understand about such a view is what it would mean for a non-imager to (in any sense) *experience* imagery and yet for that imagery to be entirely inaccessible to her, for her to be entirely 'disconnected' from it. It is not of course hard to understand our making mistaken judgments about our conscious life from occasion to occasion. What is arguably incoherent is that the layout of a subject's consciousness might be a certain way and yet that layout seem a quite different way – or no way at all – from the subject's own point of view (for expressions of this kind of viewpoint, see Dennett 1991; Shoemaker 1994; Chalmers 1996, 196–197; Martin 2006, §7). In Shoemaker's terms, what is incoherent is that we be *self-blind*: constitutionally incapable of

responding reliably to our own experience. After all, if an experience is outside the ken of its own subject, it is hard to understand in what sense we should think of it as conscious. In what sense does it contribute to the *subjective* life of the individual (cf. Nagel 1974)?

As I say, there is nothing incoherent about our making mistakes about our conscious lives. One might interpret Schwitzgebel as simply insisting that such mistakes are extremely frequent. But in the present context we want some explanation of why apparently attentive and rational subjects consistently make the same mistakes about their inner lives. A perceptual model of introspection (cf. Shoemaker 1994) licences such a possibility, since with a mechanism at hand we can think of it as fragile. But such a model also licences the apparently incoherent idea that we could be completely cut off from our conscious life. If we reject a percep-tual model, however, we must grant that non-imagers are in a position to know about their imagery but for some reason fail to exploit that position. Here it seems reasonable to ask for explanation. But no such explanation is forthcoming. Indeed, Schwitzgebel wants to insist that we 'make gross, enduring mistakes about even the most basic features of our currently ongoing conscious experience, *even in favourable circum-stances of careful reflection*' (119; my emphasis) and that such mistakes are *not* merely the result of being 'distracted, or passionate, or inatten-tive, or self-deceived, or pathologically deluded' and do not occur only 'when we are reflecting about minor matters, or about the past, or only for a moment, or when fine discrimination is required' (118).[14]

More could certainly be said here but enough has been said to moti-vate the search for an alternative to inscrutability. Yet as we have seen, accepting subjects' reports at face value and avoiding inscrutability comes at the apparently severe cost of embracing epiphenomenalism (here meaning 'no functionalism') about imagery. For if large variations in imagistic experience obtain without being reflected in performance in imagery tasks, it is hard to resist the conclusion that this is because imagery is of little or no use in such tasks. At its simplest and most extreme, the cost is of accepting that visual imagery has *no* cognitive consequences beyond our reports on its existence. Striking as it is, such a view has found adherents. Winch (1908) makes the argument with refreshing directness. First, by appeal to his own case; arguing that he has no mental images but is far from intellectually inferior, so mental images can't perform the functions they are supposed to; they may even be a hindrance. Second, by appeal to experimental evidence from Thorndike (1907) and his own studies, both of which find no correlation between reports of vividness and performance

on a memory task.[15] Winch imagines a contemporary Schwitzgebel retorting to him, 'If you were capable of proper introspection, you would find these images you say you are without' (1908, 342). He is entirely unmoved.[16]

Schwitzgebel makes the natural objection to epiphenomenalism – namely, that it 'seems to posit a major faculty with a fairly obvious range of purposes but in fact with little purpose at all, and little effect on behaviour apart from the power to generate reports' (2011, 51). In short, we seem faced with an unappealing choice between inscrutability and epiphenomenalism, a choice of either denying that subjects have access to their own imagery or denying that imagery plays any useful function. As Heuer et al. (1986) nicely summarize the dilemma: 'there are many reports of no relation between performance and imagery self-report. This suggests that either the differences in imagery report are misleading about the underlying experience, or that the differences in experience do not have functional implications' (1986, 162).

In the next section, I argue that the first step in navigating between the horns of this dilemma is to distinguish imagery in the *representational* sense, referring to underlying subpersonal representations of a putatively imagistic nature, from imagery in the *experiential* sense, referring to conscious personal-level episodes. Since subjective reports speak only to imagery in the second, experiential sense, where objective performances match there is no reason not to explain those performances in terms of matching underlying representations.

Our puzzle then exclusively targets the mismatch between conscious imagery and task performance. This puzzle is taken up in Sections 3 and 4. In Section 3, I argue that even if we conclude that conscious imagery lacks significance, this need not imply that consciousness *in general* lacks substantial significance. I demonstrate this by arguing that on one leading account of the significance of perceptual consciousness (viz., as a condition of demonstrative thought), mental imagery could not share that same significance. In Section 4, I argue that whilst objective data from mental imagery tasks do plausibly establish the presence or absence of imagery in the representational sense, it is not obvious that such data do in fact settle the presence or absence of imagery in the experiential sense. Instead, I argue that the significance of conscious imagery may emerge only when we consider exclusively personal-level differences in the way in which imagers perform imagery tasks: differences in the personal-level genesis, justification and self-understanding of their performances.

2   Two conceptions of imagery

Many theorists insist that mental imagery is *by definition* a form of conscious experience.[17] If imagery is by definition conscious, then we seem to be directly driven onto the dilemma of inscrutability or epiphenomenalism. Professed non-imagers must either be wrong about their inner lives or their imagery must serve no function in relevant tasks: not being itself a step in the process of solving the task but rather, as Neisser puts it echoing Watson, 'a kind of cognitive "luxury", like an illustration in a novel' (1967, 157). Plausibly, commitment to this connection between consciousness and imagery is a major impetus towards such views.

Others, however, have suggested that there is a perfectly respectable notion of imagery shorn of its implication of conscious awareness.[18] From an objective perspective, one obvious reason to ascribe imagery is that subjects exhibit certain patterns of response in various tasks. As already noted, in the field of imagery research two of the most famous tasks are mental rotation tasks and visual scanning tasks. What we observe in such tasks is a certain pattern of response, a pattern we then explain by hypothesising representational structures, which by dint of their functional and structural features we regard as imagistic. For example, data from visual scanning tasks concerning the linear correlation of reaction time and represented distance are held to evidence imagistic representations, since 'one of the defining properties of [an imagistic] representation is that metric distances are embodied in the same way as in a percept of a picture' (Kosslyn et al. 1978, 53).

Whether such representations are in fact imagistic in format is the issue at the heart of the mental imagery debate of the seventies and eighties (see Kosslyn 1994, ch. 1, for an overview). However, as many have observed, this debate is about underlying representations and not about the nature of conscious mental imagery per se (Tye 1991 emphasizes this point).[19] Imagery in this representational sense is clearly not conscious by definition. It may be that such representations subserve conscious imagery wherever it is found (i.e., such representations may be an empirically necessary condition of experiential imagery), but we need not think that such representations are sufficient for experiential imagery. As a result, the fact that someone does not report conscious imagery does not militate against crediting that subject with imagery in the representational sense. For we are crediting them with subpersonal informational structures intended primarily to explain behavioural patterns. The nature of these representations (i.e., what can be inferred

about them from the relevant behavioural and, of course, increasingly neuroimaging data) is an empirical question. There is no question of subjects being positioned to know about such representations just in virtue of having them.

What subjects report, on the other hand, are conscious episodes of imagining. Arguably, such episodes cannot continue to exist entirely outside their subject's ken. Consequently, rational and attentive subjects' honestly denying having imagery *does* militate against ascribing conscious imagery to them. Thus equipped with the distinction between representational and experiential or conscious imagery, a resolution of our earlier dilemma suggests itself. For we might hope to avoid inscrutability by granting that non-imagers lack 'conscious imagery' as they say, whilst still crediting their task performances to imagery in the representational sense, thereby avoiding epiphenomenalism (cf. Kosslyn et al. 1978, 53).

This picture is attractive. It also goes some way towards explaining our initial puzzlement as to why large individual differences in imagery seemingly go unnoticed. The partial answer is that large differences in experiential imagery are consistent with matched task performances underlain by similar representational imagery. In this way, ordinary non-imagers are not comparable to the blind, since the blind (at least typically) lack the visual representations which underlie ordinary visual experience. However, merely distinguishing between experiential and representational imagery does not get to the root of matters. For even accepting the resultant picture of individual differences, we still face the challenge that *conscious* imagery is epiphenomenal, in the sense of serving no clear function beyond prompting reports on its existence.[20]

Schwitzgebel presses the concern as follows:

Unless conscious experience is epiphenomenal, people whose imagery is mostly conscious ought to perform somewhat differently on cognitive tasks than people whose imagery is largely unconscious, and thus it remains strange that such differences have not been found. Maybe consciousness *is* epiphenomenal, or at least largely so, but such a view faces the challenge of explaining why whatever biological or functional facts permit some cognitive processes but not others to be conscious seem to have so few other ramifications. (Schwitzgebel 2011, 51)[21]

In the remaining two sections I confront this concern directly. I do so by challenging two common presumptions, both implicit in the passage

just quoted. First, in Section 3, I argue that even if conscious imagery lacks functional significance, this does not imply that consciousness *in general* lacks substantial significance. I demonstrate this by arguing that on one leading account of the significance of perceptual consciousness (viz., as a condition of demonstrative thought), mental imagery could not share the same significance. Finally, in Section 4, I propose that the significance of conscious imagery may *not* be appropriately measured by objective performance in imagery tasks. I thereby undermine the case for the insignificance of consciousness even in the imagistic case.

3   The significance of consciousness

The general question of the significance of consciousness is often raised with reference to cases of blindsight (Weiskrantz et al. 1974; Weiskrantz 1997). According to the traditional story, subjects with blindsight, a condition caused by damage to or removal of some portion of primary visual cortex, lack conscious awareness in regions of their visual field corresponding to the damaged regions of their retinotopically mapped cortex. Despite this lack of awareness, such subjects can be prompted to make highly reliable judgments about certain features in their blind field (e.g., the presence and location of a stimulus, the direction of motion). According to Block, we can imagine a hypothetical blindseer being trained 'to prompt himself at will, guessing what is in the blind field without being told to guess'.

The super-blindsighter spontaneously says 'Now I know that there is a horizontal line in my blind field even though I don't actually see it'. Visual information from his blind field simply pops into his thoughts … without having any perceptual experience of it. The super-blindsighter himself contrasts what it is like to know visually about an 'X' in his blind field and an 'X' in his sighted field. There is something it is like to experience the latter, but not the former, he says. It is the difference between *just knowing* and knowing via a visual experience … the content that there is an 'X' in his visual field is [access]-conscious but not [phenomenally]-conscious. (Block 1995, 233)

Block supposes here that the hypothetical super-blindseer has a capacity for *knowledge* about aspects of his environment, knowledge subserved by a (damaged) visual system but not sourced in conscious perceptual experience. The alleged possibility of super-blindsight prompts the question:

if such knowledge can be available in the absence of perceptual experience, what is the distinctive role, if any, of perceptual experience?

There are at least two ways we might question the coherence of Block's hypothetical case. We might argue that 'if a patient could be trained to treat blindsight stimuli as self-cuing or prompting, this would amount to restoring the patient's consciousness of events in their scotoma, the only remaining difference between such experience and normal vision being the relative poverty of the content' (Dennett 1995, describing his 1991, 332–343).[22] Alternatively, we might argue that it is illegitimate to credit the super-blindseer with environmental *knowledge* because of her failure to possess internalist reasons – reasons either identical to or provided by conscious perceptual experience (cf. Smithies, ch. 6 of this volume).

A more concessive approach is to accept that the blindseer both lacks conscious awareness of the blind field *and* can come to have knowledge of the relevant portion of her environment but insist that there remains a difference between the kind of knowledge blindseers are capable of acquiring concerning their blind field and the kind of knowledge we ordinarily acquire through perceptual experience. One suggestion here (developed most fully in Campbell 2002) is to think of the blindseer as incapable of acquiring *demonstrative* knowledge of the items in her environment. As Roessler puts it, 'We can imagine a blindseer who has learned to exploit blindsight to verify existentially quantified propositions, such as "the object in my blind field is yellow". But no amount of training [except presumably insofar as the training restores sight] will enable her to think of the object as "that lemon"' (2009, 1035).[23] My interest here is not in defending this proposal. Rather, it is in showing that, *if* a proposal along these lines is right, then perceptual and imagistic consciousness are importantly disanalogous. This disanalogy allows us to credit perceptual consciousness with a significance that imagistic consciousness lacks and so to resist any inference from the putative insignificance of conscious imagery to a more general claim about the insignificance of consciousness in general.

To begin, note that non-imagers are naturally compared to subjects with super-blindsight. The comparison is misleading in various ways, and I do not mean in making it to suggest that non-clinical non-imagers can straightforwardly be compared to rare clinical cases of so-called 'blind imagination'.[24] But one similarity between the non-imager and the super-blindseer is salient: namely, that both can successfully prompt themselves to answer various questions of a kind which 'normal' subjects answer by reference to their conscious experience. Super-blindseers can

prompt themselves successfully to answer various questions about their environment in the absence of perceptual experience. Non-imagers can prompt themselves successfully to solve various imagery tasks (e.g., determine the congruence or incongruence of two Shepard figures) in the absence of imaginative experience. The responses of non-imagers can be highly reliable across a range of features; as we are assuming here, they are as reliable as those of imagers.[25] So we are led to ask: what role does conscious imagery have to play?

In the case of blindsight two initial answers were forthcoming. First, there was Dennett's suggestion that, in virtue of subjects being able to achieve knowledge via self-cueing, their sight is restored. This approach to individual differences in imagery would in effect be to deny the existence of such differences (and so embrace inscrutability), for non-imagers do unthinkingly self-cue when asked to respond in imagery tasks yet deny that they have imagery. Second, there was the idea that blindseers lack knowledge because of the absence of internalist reasons. This approach to individual differences would deny that non-imagers can be said to know facts about, for example, the congruence of Shepard figures, since lacking conscious reasons for making that judgment. Whatever one's intuitions about blindsight, in the case of imagery the implausibility of this verdict, given suitably reliable performance in the task, tells against this approach.

In the case of blindsight, a more concessive third answer emerged; namely the hypothesis that what blindseers lack is the capacity for acquiring *demonstrative* knowledge of (and so demonstrative reasons for acting on) particulars in their environment. In the case of the imagination, however, the analogous suggestion cannot provide a substantive explanatory role for conscious imagery. The reason is that conscious imagery does not introduce new particulars to the mind. Perceptual imagination is a faculty of *re*-presentation and *re*-combination. Insofar as particulars can be imagined, it is because they have previously been encountered in perceptual experience. Thus, in any case of conscious imagery the possibility of demonstrative thought about an individual will already have been secured in perceptual experience if it is a possibility at all. Non-imagers, who have enjoyed the same kinds of perceptual experience, will thus be in no worse a position to think demonstratively about perceptually encountered particulars even though they cannot imagine them. They are already enabled to think about such particulars, and so the renewed presence before the mind of the particulars in imagination has no explanatory work to do.

It may seem that we *can* imagine particulars that we have not previously encountered in perceptual experience. However, it is more plausible to think that we are able to recombine features we have previously experienced in a purely general way. Thus, in the absence of prior perceptual acquaintance, there will be no possibility of our imagining qualitatively identical but numerically distinct individuals across imaginative episodes, independent of a stipulative act of propositional imagination. Similarly, there will be no possibility of imagining one but not the other of two identical twins, neither of whom one has perceptually encountered, independent of an act of stipulative imagination. In short, conscious imagery never serves to enable demonstrative reference not already enabled by perceptual experience. A plausible account of the explanatory role of conscious experience in relation to perception is thus not available as an account of the significance of conscious imagery. The absence of a significant explanatory role for conscious imagery can now be seen to be consistent with a significant explanatory role for conscious perceptual experience. In consequence, even if we refuse to recognize a useful function for conscious imagery, it will not follow that consciousness *in general* lacks significance. In the next and final section I return to the antecedent of this conditional; namely, the issue of whether we really should think of conscious imagery as lacking a useful function.

4   Where to look for the significance of conscious imagery

If imagers and non-imagers do not differ in their success at imagery tasks and, furthermore, if they succeed because they share the same underlying representations which may be imagistic in format, how *do* imagers and non-imagers differ? Of course, imagers report their imagery. But they do not merely report it. They think of themselves as summoning, manipulating and inspecting imagery and of their doing so as prompting and grounding their task successes.[26] When an imager is asked how she knew that the first figure was incongruent with the second, she will answer by saying that she knew because she formed an image of the first figure, rotated it in her mind's eye and found it didn't line up with the second. She thus takes her imagery to explain and justify her answer.

In contrast, the non-imager will tell no such story. When a non-imager is asked how he came to his answer, he will presumably answer along the lines that he 'just did'. The non-imager's story, disclaiming reason and (internalist) justification for his response, is a commonplace in many contexts. Asked what you ate for dinner last night, you might be fully

capable of forming a detailed episodic memory of the delicious meal but nonetheless simply answer straight off without bothering. Asked whether a certain person was at a party last week, you might answer that she was, despite being entirely incapable of forming a visual (or more generally perceptual) memory of her. Similarly, we often tell the time, answer basic arithmetic puzzles or solve simple anagrams without being able to say any more about how we reached the answer other than that it just came to us or popped into our head.

What this reveals is that whilst matched success at an imagery task may implicate the very same underlying subpersonal information processing story with respect to representational imagery, it may mask a marked contrast between two quite different accounts of a subject's personal-level psychology. On the first account, a desire to answer a certain question leads the subject to engage in a certain complex imaginative activity the product of which is in turn taken to provide and justify an answer to the question. On the second account, a desire to answer a question yields an answer directly, an answer which the giver cannot justify (except indirectly). In terms of task success both stories are in one sense alike: the same answers are arrived at. And insofar as the pattern of answers and response times is the same, it is plausible that a shared information processing story is implicated. However, there is a crucial difference between the stories with regard to the existence and availability of reasons and self-understanding.

Such differences in the availability of reasons will, according to some theorists, entail substantial epistemological differences. For example, whilst on a reliabilist or other suitably externalist picture, the non-imager may well count as knowing the relevant answer in a given imagery task, on the kind of internalist or 'phenomenal mentalist' view defended by Smithies (in ch. 6 of this volume), it is questionable whether the non-imager does know the answer since lacking a phenomenally based justification. However, even if we are sceptical of insisting that the reliable non-imager does not know, it is clear that there is an important cognitive difference which needs marking between imagers who understand how they reach their answer from the inside and non-imagers who do not.

If this is the right way to think about the key difference between imagers and non-imagers, the difference is not merely at the level of verbal report. The difference is in the presence and availability of reasons. In this light, we can see that there is an ambiguity in Schwitzgebel's claim that 'people whose imagery is mostly conscious ought to perform somewhat differently on cognitive tasks than people whose imagery

is largely unconscious' (Schwitzgebel 2011, 51). In one sense, people whose imagery is mostly conscious do not perform very differently: the experimentalist records the same pattern of answers in the relevant tasks. In another sense, however they *do* perform very differently. For, considered at the personal-level, the performances of the imager and non-imager are grounded and justified in fundamentally different ways. Insofar as we care only about task performance in the first, 'objective' sense, conscious imagery is a 'cognitive "luxury"' (Neisser 1967, 157). But as can be seen by considering the differences in performance in the second sense, conscious imagery is no more an epiphenomenon than the icing on the proverbial cake. Both may lack value from a certain task-focused or nutritional perspective, but both clearly have significance from a broader cognitive or hedonic perspective, respectively.[27]

An important issue for investigation is the geography of this broader cognitive perspective. This is a task suited in part for philosophical investigation, as is already clear from the brief mention made above of disputes concerning internalism and externalism and the connection between reasons and knowledge. Another dimension along which to consider the wider significance of conscious imagery is in the *affective* lives of subjects. Imagers are likely to think of their capacity for conscious imagery as the potential source of positive and negative affect – for instance in fantasy and fearful apprehension. Relatedly, there are obvious differences between the ways in which non-imagers and imagers relate to the past, given the essential involvement of imagery in conscious episodic memory. (These differences need not emerge in tasks which test only whether the subject can answer certain factual questions about the past.) Possibly reflecting both these themes, there is some evidence of correlations between aversions and vivid imagery (Dadds et al. 2004) and between post-traumatic stress disorder and vivid imagery (Jelinek et al. 2010). This is not the place to explore these matters. What needs underlining here is that there is a potentially rich psychological landscape of differences to explore between those possessed of conscious imagery and those lacking it once we look beyond the narrow confines of mental imagery tasks.

5   Conclusion

I began with a puzzle concerning the apparent lack of correlation between objective task performance in imagery tasks and reported imagery. In response to this puzzle I made three key suggestions. First, I proposed that we distinguish between *representational* and *experiential*

(i.e., conscious) imagery, crediting all those who produce a certain pattern of task responses with representational imagery but crediting only professed imagers with experiential imagery. Second, I argued that, even if we take the lack of correlation between experiential imagery and task performance to show that experiential imagery lacks significance, it does not follow that consciousness in general does. To show this I appealed to one putative role for perceptual consciousness (viz., as a condition of demonstrative thought) which could not be a role for imagistic consciousness. Finally, I questioned whether we should in fact conclude that experiential imagery lacks significance on the grounds that it does not correlate with task performance in imagery tasks. Against this, I suggested that the significance of experiential imagery may be found only when one considers subjects' performances from their own point of view, in terms of their reasons, justification and understanding of them.[28]

Notes

1. Galton's work on mental imagery is summarized in Galton (1883/1907, 57–128). See also James 1890 which credits Fechner with the initial recognition of 'great personal diversity' in imagery (vol. II, ch. 18, 50–1). It should be noted that Galton's specific suggestion that 'men of science' are typically poor imagers is neither properly supported by his data nor likely true (see Brewer and Schommer-Aikins 2006).
2. For mental rotation tasks, see Shepard and Metzler (1971) and Shepard and Cooper (1982). Thomas (2012) contains an excellent introductory supplement. For visual scanning tasks, see Kosslyn (1973), Kosslyn et al. (1978), Kosslyn (1980), Finke and Pinker (1982) and Borst et al. (2006). See the next section for references to work on individual differences.
3. See studies based on Betts's (1909) Questionnaire upon Mental Imagery (QMI), revised by Sheehan (1967), and Marks's (1973) Vividness of Visual Imagery Questionnaire (VVIQ).
4. For criticism of Schwitzgebel on this score, see Humphrey (2011).
5. For Schwitzgebel, this is part of a larger theme concerning the unreliability of naive introspection. However, it is worth noting that even if we agreed with Schwitzgebel that underlying differences on a Galtonian scale were implausible, we would not need to blame introspection per se. Another possibility is that there is wide variation in our understanding of the *concept* of visual imagery (cf. Flew 1956; Thomas 1989). Thus, two subjects accurately introspecting the same kind of experience might differ as to whether they think such experience *counts* as visual imagery, just as, notoriously, two people might differ in their understanding of what counts as arthritis. Schwitzgebel shows awareness of this concern but, for reasons he doesn't make explicit, 'doubt[s] that the optimist about introspective accuracy can find much consolation' in it (2011, 53). These issues are closely connected to long-

standing methodological concerns about imagery questionnaires which go back to Galton's own subjects (see Burbridge 1994, 461, and for more general discussion, e.g., Kaufmann 1981).

6. Schwitzgebel also lists subsequent studies of reported imagery and objective task performance from 1995 to 2009. Of these, Schwitzgebel notes that 10 report a positive relationship, 9 a 'mixed' relationship and 21 no significant relationship. Since the publication of Schwitzgebel's book, at least two further studies have been published: Nouchi (2011) reports a positive correlation; Palmiero et al. (2011) obtain mixed results.

7. Thomas also comments that 'even where reproducible correlations have been found, it has often proven difficult to make much theoretical sense out of them' (2009, 450). His example is the fact that vivid imagers (as measured by Marks's VVIQ) appear to be *worse* than non-vivid imagers at recalling specific colour shades. Thomas is presumably referring to Heuer et al. (1986) and Reisberg et al. (1986). See also Reisberg and Leak (1987).

8. Thus Dean and Morris: 'little or no correlation has been found between measures based upon subjective reports of the conscious experiences of imagery and experimental tasks or spatial tests that are explained in terms of their use or manipulation of mental images' (2003, 246). And Borst and Kosslyn: 'subjective…ratings only sporadically predict performance in visuospatial tasks.…For example, researchers have found little or no correlation between rated vividness of imagery (using the Vividness of Visual Imagery Questionnaire, VVIQ, Marks, 1973) and the performance on spatial abilities tests' (2010, 2031–2032). See these papers and Schwitzgebel (2011) for references.

9. Schwitzgebel cites Ernest (1977), Richardson (1980) and Paivio (1986, 117).

10. Reisberg et al. (2003) direct us to Katz (1983, 42), Kerr and Neisser (1983, 213–4) and Kosslyn et al. (1985, 196). For discussion and further references, see also Faw (2009, 2–3), who quotes Levine et al. (1985, 391): 'The objective abilities can be considered descriptions of the subjective phenomenon'. Chara and Verplanck argue against the validity of Marks's VVIQ precisely on the basis that, 'If the construct validity is to be supported, we should expect…better performance by self-reported "good imagers" than "poor imagers" on a test of pictorial recall' (1986, 916).

11. This assumption substantially oversimplifies the empirical picture. One important issue is that imagery is a complex multicomponent process. E.g., there may be separate spatial and object-based processes (Kozhevnikov et al. 2005), as well as many distinct processes involved in generating, manipulating, inspecting and maintaining imagery (Kosslyn 1994, esp. chs 9–10). Traditional imagery questionnaires thus plausibly fail to distinguish the processes involved in different tasks, and better questionnaires may yet reveal significant relationships between introspected imagery and performance on different tasks (see Dean and Morris 2003; Kosslyn and Borst 2010). Moreover, some of the processes at work in standard imagery tasks are likely not exclusively visual. This raises the possibility that certain tasks are solved by 'non-imagers' using non-visual but nonetheless imagery-based strategies; e.g., haptic or motor imagery strategies, perhaps exploiting a common spatial code. For relevant background empirical discussion, see Reisberg et al. (1986), Heuer et al. (1986), Slee (1980) and also the literature on imagery in the

congenitally blind; e.g., Marmor and Zaback (1976), Carpenter and Eisenberg (1978), Kerr (1983), Zimler and Keenan (1983).

12. Schwitzgebel notes similar arguments go back at least to Angell 1910.

13. This is how Thomas (unpublished) describes the view of Marks (1986, 237). Cf. discussions of Anton's syndrome and anosognosia more generally.

14. In fact, is not just that Schwitzgebel gives us little clue as to *why* the relevant population should be so strongly and consistently committed to enormous mistakes about their inner lives. Schwitzgebel does not explicitly indicate *who* he thinks is wrong; i.e., what a 'normal' stream of conscious imagery *consists* of. It is most natural to think that his view is that we all have some modest degree of imagery and so error is especially pronounced amongst professed super-imagers (since they do no better than 'normal' imagers) and professed non-imagers (since they do no worse).

15. For this reference and several others, I am much indebted to Thomas (n.d.), as well as to the hugely helpful Thomas (2012).

16. Although clear advocates of the 'no function' view are thin on the ground, the issue was the source of a heated controversy in scientific circles a century ago. In addition to Thorndike and Winch, see Fernald (1912, 135–138). There is also the infamous case of the behaviourist Watson who seems to have been motivated to deny his own mental imagery, declaring imagery 'a mental luxury (even if it really exists) without any functional significance' (1913, 175). For discussion, see Faw (2009, 7–10) and Thomas (2012).

17. E.g., Marks writes, 'Imagery, by definition, is a mental experience and verbal reports therefore provide a necessary, albeit fallible, source of evidence' (1983, 245). See also Richardson (1969). Thomas (2012) also mentions McKellar (1957) and Finke (1989).

18. An early example is Neisser (1970), who proposes a distinction between 'imagery as an experience' and 'imagery as a process'. Thomas (2012), whom I follow here, puts the distinction in terms of *experiential* and *representational* notions of mental imagery. Thomas himself does not endorse the distinction and indeed elsewhere suggests that 'It is of the very nature of imagery to be conscious' (2003, §3.3). As Bence Nanay pointed out to me, a notion of imagery which does not imply conscious awareness is plausibly at play in van Leeuwen 2011, as well as explicitly in Nanay (2010).

19. That said, one's own conscious mental imagery may bias one's position in the debate (Reisberg et al. 2003).

20. Having made his distinction between imagery as experience and imagery as process, Neisser seems happy to embrace this consequence.

21. Schwitzgebel also argues that resolving the puzzle of individual differences along the lines developed in this section will force us to think of everyone's underlying imagery (conscious or not) as equivalent in detail to that reported in 'the grandest self-assessments'. But if that were so, Schwitzgebel suggests that 'it is surprising that we don't all perform substantially better on mental rotation tasks, visual memory tasks, and the like' (2011, 51). This objection is problematic. The grandest self-assessments typically compare imagery to ordinary perception. In this light, we ought to ask: how well should we expect subjects to do in rotation or memory tasks equipped with imagery as rich as perception? Yet then we need to ask: how rich is that? This is a famously controversial issue, an issue where the gap between our objective capacities

(e.g., in short-term recall, discrimination and identification tasks) and self-descriptions of richness is highly disputed. Arguably, then, no distinctive issue about imagination arises here.

22. Note that Dennett construes Block's case here in a very particular way, describing the *stimuli* as self-cueing, as opposed to the super-blindseer as self-prompting. Block's super-blindseer, at least as initially described, does not know to self-prompt *whenever something interesting appears in his scotoma* but, apparently, must constantly be prompting himself along all the dimensions that he is capable of guessing about. These are very different situations.

23. As with other examples in this literature (e.g., Marcel's thirsty subject who fails to reach for a glass of water located in his/her scotoma), we have to allow poetic licence: ordinary blindseers lack the form perception to identify lemons (and glasses of water). But 'that thing' will do.

24. On which, see Zeman et al. (2010). What Zeman et al. call 'blind imagi-nation' apparently involves the 'successful use of an alternative strategy to perform imagery tasks in the absence of the experience of imagery' (2010, 145). One piece of evidence for this is that their subject does *not* exhibit the standard reaction time effect in the mental rotation task. Acknowledging the size of this empirical assumption, I assumed above that this is not true of professed non-imagers.

25. This is one major disanalogy between non-imagers and *ordinary* blindseers, though one that is hardly surprising given the fact that imagery substantially involves visual processing areas which are presumably intact in sighted, non-clinical non-imagers.

26. Cf. Shepard and Metzler (1971, 701–702), and Kosslyn et al. (1978, 47, 51), though Kosslyn et al. in particular suggest that such introspective reports should be treated with scepticism.

27. It may still be objected that since the answers given are caused for both imager and non-imager by the same underlying representations, any role for conscious imagery is screened off. However, this objection assumes that we treat two answers as the same just when they are scored similarly by the experimentalist. As discussed, whilst this might be an entirely reasonable perspective to take as an experimentalist, it is not the only perspective, and it is not the subject's natural perspective. From the subject's perspective, there is a fundamental difference between an answer which is internally justified and one which is simply reliably produced by a subpersonal mechanism. If we focus on the probability of an *internally justified answer*, conscious imagery is not screened off by the presence of representational imagery.

28. I'm very grateful to comments and questions from Justin Fischer, Anil Gomes, Liz Irvine, Nick Jones, Rory Madden, Mike Martin, Bence Nanay, Robert O'Shaughnessy, Declan Smithies, Mark Sprevak, Lee Walters and (as always and especially) Hanna Pickard.

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