

Chapter Six

Do You Have Constant Tactile Experience of Your Feet in Your Shoes?

And Some Pessimistic Reflections about Theories of Consciousness

[U]p to this moment I have been focusing my attention on the philosophical problem of describing consciousness, and I have not been paying any attention to the feeling of the chair against my back, the tightness of my shoes, or the slight headache I have from drinking too much wine last night. Nonetheless, all of these phenomena are part of my conscious awareness.

– John Searle, *The Rediscovery of the Mind* (1992, p. 137-138)

Thus the hypothesis that we believe the evidence presented in this book supports is that there is no conscious perception without attention.

– Arien Mack and Irvin Rock, *Inattentional Blindness* (1998, p. 14, italics suppressed)

i.

Do you have constant tactile experience of your feet in your shoes? Constant auditory experience of the hum of traffic in the background? Constant visual experience of the frame of your eyeglasses? Or, when you aren't attending to such matters, do they drop out of consciousness, so that they're in no way part of your stream of experience, your phenomenology? Is consciousness *abundant*, the stream of experience bristling with

phenomenology in a wide variety of modalities simultaneously – visual, auditory, tactile, olfactory, imagistic, proprioceptive, emotional – or is it *sparse*, limited to one or a few things at a time?¹

Suppose you’ve driven the same route to work a thousand times. Today, you’re absorbed in remembering an unpleasant interaction with your department head. Traffic is light; no dangerous situation occurs; you drive habitually. You arrive at the parking area and seem to “wake up” – ah, I’m at work already! – with virtually no memory of having driven there. Consider: Did you have visual experience while you were driving, or not? You responded to events on the road: You stopped at the red light, you stayed in your lane. Visual input obviously had some influence on your behavior. But maybe visual input can influence behavior without the involvement of consciousness. Many psychologists believe that a very brief visual display, quickly masked and not consciously experienced, can shape one’s later responses, for example in deciphering or choosing words that accord with the masked display.² In popular imagination – if not perhaps in actuality (see Bornstein 1989; Trappey 1996) – a single frame of the phrase “Drink Coke” inserted into a film may have no effect on your visual experience yet propel you to the soda machine at intermission. Although absent-minded driving isn’t exactly like either of these cases, might you still have had *no sensory experience of the road* as you drove, or only very intermittent experience? The mere fact of behavioral responsiveness doesn’t settle the question, at least not without further argument.

Ordinary people’s intuitions differ. Researchers disagree. William James (1890/1981) and John Searle (1992), for example, endorse the abundant view, according to which the stream of experience involves both a center of attention and a broad

periphery of consciously experienced but unattended objects and background feelings. Julian Jaynes (1976), Dan Dennett (1969, 1991³), and Arien Mack and Irv Rock (1998) endorse the sparse view: Consciousness is limited to only one or a few objects, modalities, topics, or fields at a time. The unattended hum of traffic in the background is no part, not even a peripheral part, of your experience when you're sufficiently absorbed in other things.

Who's right? I hope you'll agree that this is a substantive question – even if the answer seems obvious – and one absolutely central to our understanding of consciousness. There's a huge difference between thinking that phenomenology abundantly outruns attention and thinking it doesn't.

ii.

You might wonder what I mean by “consciousness”. So far in this book I've given no formal definition of the term, leaning instead on examples and an intuitive understanding. The definitional issue arises acutely here, though, for this reason: Maybe you think it *is* obvious whether experience is sparse or abundant. If so, you might think that those who seem to disagree with you – being, presumably, smart and non-insane philosophers and psychologists – must really just be using *terms* differently, must mean something different by “consciousness”. There could be no disagreement in substance, really, about such an obvious issue.

I myself don't find it obvious which view is right (or whether maybe instead some intermediate view is right). Consequently I think we should expect disagreements in

substance. One central aim of this chapter is to convince you of the difficulty – virtual intractability, even – of the sparse-abundant issue, with (I hope) the side-effect of undermining the view that all disputes in this area must be merely terminological. Both sides, I think, generally *mean* the same thing by “consciousness” or “experience”; they just disagree about how broadly it spreads, and both sides have maneuvers available to explain away opponents’ contrary intuitions. To anticipate a bit: Advocates of the sparse view can suggest that advocates of abundance mistake the *ready availability* of experience in any modality for the actual presence of experience in each modality all the time. From the fact that I can now call to mind how my feet feel in my shoes, it does not follow that two seconds ago I was experiencing the tightness of my shoes. From the fact that I can suddenly notice that the clock tower has already chimed twice, it doesn’t follow that I consciously experienced those chimes when they occurred rather than nonconsciously processing them and storing them in memory. On the other side, advocates of abundance can remind advocates of sparseness that unremembered does not necessarily mean unexperienced, and they can stress that on their view unattended experience may often be vague, inarticulate, indistinct, or largely unactionable, yet be experience nonetheless. You may think one side or the other has the better of such arguments; but still, the very existence of such arguments suggests that adherents can attach to both sides, which is my present point.

The most obvious way to quiet the worry that the sparse-abundant dispute is entirely terminological would be to define “consciousness” clearly enough to put everyone on the same terminological page, then observe that the disagreement persists. Unfortunately, I can’t do this. The two best avenues for formal definition are closed. We

can't define "consciousness" *analytically* because consciousness is a foundationally simple concept indivisible into component parts. It's not like "bachelor" (a marriageable but unmarried man) or "quadrilateral" (a closed planar figure with four straight sides). Nor can we define consciousness *functionally* by appeal to the role it plays in a system (a "heart" is an organ that pumps blood, "currency" is whatever physical tokens serve as the medium of economic exchange), since the functional role of consciousness, if any, is still very much in dispute. (The dispute may even be fundamentally irresolvable: See both the Preface and the end of this chapter.) It may be helpful to define "consciousness" by *synonymy* – by "conscious experience" or "consciousness" I mean whatever it is by virtue of which (in Nagel's 1974 terminology) there's "something it's like" to be you, or a bat, and nothing it's like (presumably!) to be a rock or toy robot; I mean "subjective experience"; I mean "phenomenology" as the term is used in contemporary Anglophone philosophy of mind; I mean Ned Block's (1995b) "phenomenal consciousness", David Chalmers's (1996) "qualia". But definition by synonymy will only work if we mean the same thing by the synonyms, and it may not be clear that we do.

Though not entirely adequate, the best approach, I think, is to clarify by example and contrast: By "furniture" I mean tables, chairs, dressers, beds, that sort of thing, and not plates, doors, or toys; by "square" I mean these sorts of things (examples drawn on a page) and not these others. With enough positive and negative instances, hopefully one gets the idea. So, then, by "conscious experience" or (equivalently) "consciousness" or "phenomenology" I mean: sensations of objects to which one is paying attention, words uttered silently to oneself, deliberately formed visual images, thrills of emotion, and that sort of thing (including when they occur in dreams⁴); and *not* immune system response,

dendritic growth, early visual processing, undetectable subliminal processing, and that sort of thing. Now, while I hope someone confused by the terminology might latch on to the right concept from such a list, there is a glaring problem with the list as I've constructed it: To avoid begging the question in favor of sparseness or abundance, I've left off of it the kinds of cases that adherents of the two sides would tend to dispute, such as unattended peripheral stimuli. Consequently, a variety of concepts might satisfy the positive and negative instances, and I can't be sure we're all on the same page. However, I can at least urge this: On the sense of "conscious experience" I have in mind it is neither *true by definition* that unattended stimuli are conscious nor true by definition that they are nonconscious. It's an empirical question, even if some may think it an easy one, how broadly consciousness spreads and whether it outruns attention by a little, a lot, or not at all. "Conscious" does not simply *mean* focally conscious or acutely self-aware; nor does it follow by definition from the fact that we respond behaviorally to some stimulation of our sensory surfaces that we had sensory experience of that stimulus.

iii.

Those who see consciousness as abundant, such as James and Searle, generally provide little positive argument. They tend simply to state the position and expect the reader to agree. For example, James writes:

The next thing to be noticed is this, that every one of the bodily changes, whatsoever it be, is felt, acutely or obscurely, the moment it occurs.... Our whole cubic capacity is sensibly alive; and each morsel of it contributes its

pulsations of feeling, dim or sharp, pleasant, painful, or dubious, to that sense of personality that every one of us unfailingly carries with him (1890/1981, p. 1066-1067).

James invokes no further considerations in defense of the view than its intuitive appeal – here or (as far as I’m aware) anywhere else in his work.⁵ Siewert (1998), arguing for the abundance of visual experience specifically, prepares the ground somewhat more carefully, clarifying what’s at issue and what the abundant view is *not* committed to. He emphasizes that every detail needn’t be appreciated sharply or separately – an important qualification. But when it comes time for defense of abundance, so clarified and qualified, Siewert gives us no more than James or Searle. It’s as though he implicitly assumes that the only potential source of disagreement is misunderstanding, which once cleared up leaves the abundance of visual experience simply evident to reflection.

The problem with this, of course, is that not everyone believes that consciousness is abundant, even when the view is stated clearly. We don’t all share James’s and Searle’s intuitions on the matter. Some people believe that the shirt on one’s back and the shoes on one’s feet aren’t experienced – not even vaguely, inarticulately, peripherally – at every moment of the day; they believe one’s visual phenomenology may lapse entirely from time to time. This is not an obviously preposterous opinion. Others find themselves torn or uncertain, or inclined to see one sensory modality as abundantly ever-present and another as experienced only sparsely and sporadically. And of course even if there were a broad intuitive consensus favoring the abundant view, that consensus might be mistaken. Surely, then, it would be good to defend abundance by something more than its natural charm.

Some advocates of the sparse view likewise rely principally on folk intuition. David Armstrong (1981), for example, appears to think it simply evident that we lack visual experience in the absent-minded driving case. Julian Jaynes writes:

We are constantly reacting to things without being conscious of them at the time. Sitting against a tree, I am always reacting to the tree and to the ground and to my own posture, since if I wish to walk, I will quite unconsciously stand up from the ground to do so. Immersed in the ideas of this first chapter, I am rarely conscious even of where I am (1976, p. 22).

Jaynes compares the lack of consciousness here to the lack of consciousness in early visual processing and in blindness due to cortical damage – cases generally regarded as obviously and uncontroversially unconscious. He invites us to agree based on our own sense of our experience but does not otherwise defend these claims.

A war of philosophical intuitions thus threatens. Never to my knowledge has such a war had a happy outcome.

iv.

We might then look for empirical arguments favoring one view over the other, arguments that go beyond mere appeal to the reader's intuitive sense of her own experience. Those who see consciousness as abundant, as far as I know, offer either no positive arguments or question-begging ones, such as Searle's (1993) bald assertion that our capacity to shift attention to previously unattended stimuli proves that we had pre-existing conscious

experience of those stimuli.⁶ (What the capacity to shift attention shows, of course, is that we do some perceptual processing outside attention, not – at least not without considerable further argument – that that pre-attentive perceptual processing is *conscious*.)

Advocates of the sparse view often offer empirical arguments for their position, but these arguments, like Searle's argument for the abundant view, are badly question-begging. A favorite argument is this: Absent attention, we fail to parse, respond to, notice, or remember what one might ordinarily think would be salient stimuli – a stream of speech coming in one ear (Cherry 1953; Moray 1959) or a woman in a gorilla suit walking through a ball game (Simons and Chabris 1999). Therefore, it's said, we're "blind" (or "deaf" or "numb") to these stimuli; we don't experience them (e.g., Dennett 1991; Mack and Rock 1998; Wright 2005). Here's the flaw in that argument: It's one thing (indeed a very important and interesting thing) to show that we don't do much processing of unattended stimuli; it's quite another to say that we have *no experience whatsoever* of those unattended objects. The conclusion simply doesn't follow (and many psychologists refrain from drawing it). We may not *parse* the speech semantically (very much) or *represent* the black blob in the middle of the crowd as an ersatz gorilla, but we may still experience that unattended speech and gorilla in some more inchoate way (Simons 2000; Most et al. 2005). Furthermore, unless we really *are* blind, or deaf, or numb, we do process the unattended stimuli to some extent – as Searle points out, and as is acknowledged on all sides of the debate. We are drawn to the unexpectedly looming object, the unanticipated call of one's name, the familiar phone ring or doorbell that others can barely hear, the gentle tap on the shoulder. Such things must first register pre-

attentively in some way to call our attention. The question is whether whatever limited processing or responsiveness or preparedness to respond we have prior to attention is enough to underwrite actual sensory consciousness. The present argument (and similar arguments involving “change blindness”, e.g., Rensink 2000, 2004) doesn’t address that question.

Some of Mack and Rock’s experiments (e.g. Rock et al. 1992; Mack and Rock 1998) may give us pause. For example, subjects directed to judge the relative lengths of the arms of a cross presented very briefly – for a fifth of a second, followed by a mask – will often fail to report some other stimulus (a dot, a triangle, etc.) that is simultaneously and unexpectedly presented in a nearby visual region, against an otherwise uniform background. When asked immediately after seeing the display, they may say all they saw were the cross and the background. Mack and Rock describe these subjects as “inattentionally blind”: They had no experience whatsoever of the unexpected figure. The conclusion is tempting.

But on reflection, the Mack and Rock experiments should no more trouble those who see experience as abundant than does the obvious fact that someone deeply absorbed may fail to notice a distant (or even not-so-distant) shout, saying afterward that she heard nothing or heard only the uniform buzz of traffic. Several interpretations consonant with abundance suggest themselves. One might accept that the unexpected figure (or the shout) was not at all experienced, yet still hold that the uniform unattended background color (or traffic hum) *was* experienced: Perhaps the sensory systems failed to register anything of enough interest to merit more than “filling in” or representing the unattended field as uniform; it doesn’t follow that there’s no conscious experience of that uniformity.

Or perhaps the figure contributed in an inchoate and unparsed way to an experience reported as uniform but actually an immemorable jumble – part of a stream of visual experience fluctuating not only with major changes in the display, measured in fractions of a second, but also with each eye movement, blink, afterimage, accommodation, and glitch, maybe even with every spike and trough of neural or informational noise. Or maybe people's sensory representations were activated enough to underwrite some sort of experience, but not enough to trigger a behavioral response. The Mack and Rock experiments simply don't address these possibilities. Though people may deny having seen the unexpected figure, this in no way implies that experience is limited to the targets of attention.

What evidence do we have, then, on the crucial, foundational question about consciousness posed at the beginning of this chapter? Only conflicting folk psychological intuitions and badly question-begging arguments. In other words, we have essentially *no* evidence. Such is the infancy of consciousness studies.

v.

How should we approach the issue, then? Further studies of the relationship between attention and successful report of stimuli won't, I think, help much. We already have the key data: People have some, but only a very limited, sensitivity to unattended stimuli. The question remains: Is that sensitivity (whatever it is) enough to underwrite phenomenology? At this point, the interpretive questions loom larger than the flat empirical ones. People will (sometimes) deny having seen, heard, felt, unattended things;

but does that mean that those objects, or the fields containing those objects, or the entire unattended modality, was entirely unexperienced, rather than inchoately or immemorably or unactionably experienced? The typical attention-and-reportability study presupposes, rather than addresses, these larger interpretive issues, or else remains silent on them.

If we knew the neural basis of consciousness, we could perhaps use that knowledge to address the sparse-vs.-abundant question; but we don't know it. In fact – a point I'll return to later – we may never *be able* to know it until we determine whether experience is abundant, since (it seems) we need at least a rough understanding of what processes are conscious and not conscious before looking for a common neural basis among the conscious ones; and until we settle the sparse-vs.-abundant question we don't have even a rough understanding of what neural processes are the conscious ones.

Are we left, then, with introspection? – with simply *asking* ourselves, or experimental subjects, whether experience is sparse or abundant? Well, scholars *have* tried addressing the question introspectively – James, Jaynes, and Searle, for example – and they come to different conclusions. I assume that this is not because James and Searle actually experienced every morsel and modality while Jaynes lived largely in blankness.

Advocates of the sparse view have often remarked on another problem, too, that plagues attempts to address this question introspectively: the “refrigerator light” problem, so named after the mistaken impression a child might have that the refrigerator light is always on because it's on whenever he checks it (Thomas 1999; Block 2007). Jaynes puts the point nicely:

It is like asking a flashlight in a dark room to search around for something that doesn't have any light shining on it. The flashlight, since there is light in whatever direction it turns, would have to conclude that there is light everywhere. And so consciousness can seem to pervade all mentality when actually it does not (1976, p. 23).

Does it seem to me that I have tactile experience of my feet in my shoes? Yes it does, now that I think of it. That I have auditory experience of the hum of the computer? Yes, I guess I seem to be experiencing that now too. But of course I can't conclude from such observations that I constantly experience such things when I'm *not* thinking about them. The mere fact of thinking about whether I experience my feet in my shoes may itself *create* that experience. What we want to know is whether I was experiencing my feet in my shoes *before* the matter came to mind. But that's now in the irretrievable past; I've been thinking too much about introspection, about my feet; I'm corrupted.

The question is thus a rather difficult one to study. The most obvious methods fail.

vi.

But maybe we haven't introspected carefully enough. Maybe we can dodge the problem through better introspective method. After all, the sparse and abundant views posit radically different phenomenal worlds. It seems that there should be *some* introspectively discoverable difference between them.

To avoid the refrigerator light error, we might try this: Give participants beepers to wear during their normal daily activities, beepers that sound only at long intervals, when participants are likely to be immersed in other things. Instruct the participants to reflect, each time the beeper sounds, on what their experience was *immediately before* the beep, when (in most cases, presumably) they won't have been thinking about the sparseness or abundance of experience, or about their feet, or about the traffic in the background. Some participants might be asked to report everything in their experience; others whether or not they had visual experience; others simply whether they had tactile experience in the left foot.

A beeper is appealing because it has a sharp onset, targeting a specific moment of experience, while at the same time allowing subjects to become immersed in their normal, everyday activities. And because participants can be told in advance what to reflect on in the targeted experience, no seconds-consuming and potentially confusing verbal query is necessary. It thus combines the advantages of surprise and preparation. With a little practice, the participant ideally could reflect on her naturally occurring experience within a second of each sampled event (see Hurlburt and Heavey 2004; Hurlburt and Schwitzgebel 2007).

I tried exactly this, and in the remainder of the chapter I'll discuss the procedure, the results, and the questions that arise. I'm not convinced that this approach can resolve the question of the sparseness or abundance of experience; but unless we plan to disregard subjective report completely, it seems that knowing what people *say* about their experience when prompted to reflect on it is an essential starting point. I offer this chapter in much the same spirit as I offered Chapter 5: If we want to be serious about

consciousness, we must find some better methods for getting at it than casual observation by untrained introspectors. But the problems that ensue reveal the long and difficult path before us.

vii.

I loaned beepers to 21 people, about half philosophy graduate students and about half miscellaneous well-educated other folks. I divided them into five conditions: the *full experience* condition, the *full tactile* experience condition, the *full visual* experience condition, the *tactile left foot* condition, and the *far right visual field* condition. (I describe the experiment in more detail in Schwitzgebel 2007a.) I told participants in the full experience condition only that our aim was to explore everyday conscious experience generally; they did not know the specific purpose of the research. Participants in the other four conditions were fully informed and asked for their initial take on the sparse-vs.-abundant debate, which I explained using intuitive examples like those at the beginning of this chapter.

Participants wore the beeper for 3-4 hours a day, at their convenience, for four days over the course of a couple weeks. The beeper sounded at random intervals approximately 6-8 times during each 3-4 hour period, and each time it sounded the subject immediately noted in writing what she had been experiencing in the last undisturbed moment before the beep. Participants in the four informed conditions (full visual, full tactile, far right visual field, and tactile left foot) were emphatically instructed *first* simply to note whether they were having any conscious experience in the targeted

modality and only *after* that to consider specific aspects of their experience, if any, in that modality and potentially relevant features of the environmental situation. I also emphasized that participants should skip any sample that seemed too private or to which they could not instantly respond. Skipped samples were uncommon, and no participant reported skipping more than two samples in a single interview day.

Within 24 hours of each 3-4 hour period, I interviewed participants for one hour about their experiences. I asked them to report everything they could remember of the details of the experiences reported, and I had them describe their general environmental situation and what they were doing at the time (e.g., sitting in the passenger seat of a car, looking out the window at two women, thinking they looked young) as well as aspects of their situation that seemed directly pertinent to the targeted modality (e.g., in the tactile left foot condition what if anything they were wearing on their feet and how their feet were positioned), always focusing as precisely as possible on the last instant before the beep. My idea in asking for such detail was to communicate a serious interest in conscientious accuracy, to convey in the context of specific reports what sort of phenomena participants should be noting the presence or absence of, and to give the participants ample opportunity to clarify ambiguities in their reports, to resolve or discover confusions, to express concerns about the methods of the study, and to develop their own sense of the phenomena. In general, I encouraged theoretical discussion. I clarified as much as possible what is meant by “consciousness” or “experience” in hopes of avoiding question-begging conceptions. I played devil’s advocate, gently (I hope!) raising potential doubts and concerns both about reports of experience and about reports of lack of experience, giving them the opportunity to respond to those concerns.

Generally, the first time a participant in one of the visual conditions (the full experience, full visual, and the far right visual field conditions) denied visual experience in a sample, I introduced what I called the “phenomenal blindness” thought experiment. I explained phenomenal blindness as follows: There’s a difference between blindness as pure blackness (like in the dark, though see Chapter 8 for more on this) and blindness as genuine absence of visual experience, like the lack of visual experience you have of what’s behind your head. (Or does it seem to you like there’s a curtain of blackness back there?) A phenomenally blind person is someone blind in the absence-of-experience sense. Once I felt the participant understood this distinction, I asked the following question: At the sampled moment, could a phenomenally blind person, a twin of you in all respects except lacking visual experience, have had the same conscious experience as you at that moment? I mentioned that, of course, a real blind person might differ in several ways, including in her potential to respond to a looming object, in the quality of her visual experience, in a lack of visual imagery, etc. However, I asked participants to disregard such differences if possible. A few participants rejected the thought experiment as too much of an imaginative reach – I invited them to reject it, if they didn’t like it – but most participants said they found the comparison helpful. I stressed that my aim was just to ask as clearly as possible whether she completely lacked visual experience. I emphasized that either answer was okay and that it was also okay to say “I don’t know” or “I don’t remember”. I would occasionally return to this thought experiment if it seemed helpful. For participants in the tactile conditions I offered a corresponding “numbness” thought experiment, with a distinction between numbness positively felt and numbness as absence of tactile experience.

My interview approach of course utterly violated the ordinary methodological advice – ordinary by contemporary standards, that is (see Chapter 5) – that participants be as naive as possible. Regarding the sparseness or abundance of experience, I think it's practically impossible to be naive, to have no initial inclinations or implicit assumptions. Given that, I thought it better to introduce my participants to competing alternatives and sources of skepticism than to leave them to the silent guidance of their own initial or emerging theories.

At the end of the last interview, I asked participants to guess whether I was more inclined toward a sparse or abundant view (or, in my labels of the time, a “thin” or a “rich” view). I also asked whether their opinions had changed over the course of sampling.

viii.

From each participant I collected 9 to 30 samples (with a mean of 17), excluding samples not discussed in the interviews. (For most participants, an hour was insufficient time to carefully explore all the sampled experiences, especially in the first two interview days.) For analysis, I classified participants' answers into three categories: “yes or leaning yes”, “undecided or don't know”, or “no or leaning no”, usually getting the participant's explicit assent to the label. (Most participants also used “yes” and “no” in their written notes.) I excluded undecided samples from analysis and also samples in which the participant reported having been thinking about the experiment. For most participants, such exclusions were a small minority.

Table 1 outlines the main results. In sum, the majority of participants in the three visual conditions (which includes the full experience condition) – 8 out of 13 – reported visual experience in every single one of their samples. However, a significant minority, the other 5, reported no visual experience whatsoever in some of their samples, by the very stringent standard implied in the “phenomenal blindness” thought experiment described in section vii above. Although no one reported far right visual experience or tactile experience in every single sample, every participant reported such experiences in at least half her samples. Two participants reported occasional tactile left foot experiences (one reported it in 3 of 19 samples, another in 4 of 22) while two others reported such experiences very frequently (12 of 15 and 11 of 12).

TABLE 1

type of experience	conditions included	# of people reporting that type of experience in 100% of their samples	median reported rate of that type of experience	distribution of reported rates (one percentage rate for each participant)*
any visual experience	full experience, full visual, far	8 out of 13	100%	56%, 73%, 74%, 85%, 89%, 100%, 100%,

* The percentages in the full visual condition statistically differ from all other conditions (Mann-Whitney, one-tailed, $p < .05$).

	right visual field			100%, 100%, 100%, 100%, 100%, 100%
far right visual experience	far right visual field	0 out of 4	63%	50%, 55%, 71%, 89%
any tactile experience	full experience, full tactile [†]	0 out of 8	76.5%	50%, 56%, 69%, 75%, 78%, 79%, 86%, 89%
tactile left foot experience	tactile left foot	0 out of 4	49%	16%, 18%, 80%, 92%

Taken at face value, these results appear to conflict with *both* the sparse view and the abundant view. Advocates of abundance typically assume that we have *constant*, or very nearly constant, visual and tactile experience – probably even constant tactile experience in the left foot (recall James’s statement that every “morsel” is “sensibly alive”). The tactile data appear to contradict that claim. So also do some of the data from the visual conditions: Participants often denied peripheral visual experience, and some of them denied having any visual experience whatsoever in a substantial minority of samples.

Against the sparse view, every participant reported experience of unattended objects or in unattended modalities in some samples. I haven’t attempted to quantify this

[†] Participants in the tactile left foot condition were not asked to report their tactile experience in general so as not to interfere with their focus on the foot. In contrast, participants in the far right visual condition found it quite natural to discuss the general presence or absence of visual experience.

since the self-report of attention is fraught with perils and confusions I didn't even attempt to prevent or remedy; but I did explicitly ask participants about it from time to time. Every participant but one was unambivalently confident, at least once, of having had a conscious experience without attention – including those who began the experiment seemingly committed to a very sparse view of experience. Even if we disregard self-reports of attention, it seems unlikely that participants were attending to events in their far right visual field more than half the time or to tactile events in their left foot 16% or more of the time during the course of several hours of normal activities, unless wearing the beeper dramatically altered their run of experience.

Thus one might read the data as supporting a moderate view, a view somewhere between the very sparse and very abundant views normally espoused by those who write on this topic. My participants universally exited the experiment with a moderate view of some sort, thinking that experience extends well beyond the field of attention but does not include the entire field of every major modality anything like 100% of the time. Typically, they expressed some degree of what seemed to be genuine surprise at their results – those initially inclined to think of consciousness as sparse (10 of the 21 participants, based on the preliminary interview) surprised to seemingly find experience where they thought there'd be none, and those initially inclined toward abundance (11 of the 21) surprised at what they took to be the absence of experience in some cases. Most reported moderating their view by the end of the experiment.

I would love to be able to agree with the consensus of my participants. Unfortunately, I find myself overwhelmed with qualms. These qualms, I think, generalize beyond my own experiment and cast serious doubt on the scientific tractability

of the sparse-vs.-abundant dispute – and consequently on any theories that turn on resolving it, such as (I’ll argue) general theories of consciousness.

ix.

Before discussing the methodological worries, however, let me mention a concern about the theoretical viability of a moderate view. Theorists tend to split between seeing consciousness as very sparse or as very abundant. Here’s why (I think): To make sense, theoretically, of the moderate view, one must introduce an extra moving part into one’s theory of sensory consciousness. We already have good theoretical reasons, independent of any specific commitments about consciousness, to allow into our perceptual theories the phenomena of attention and supraliminal (that is, non-subliminal) perception. It’s easy and natural to suppose that conscious experience co-occurs with one of these – the former on the sparse view, the latter on the abundant. There isn’t as natural a theoretical space, however, for something that might explain why, if we accept a moderate view, some unattended sensory stimuli are consciously experienced and others aren’t. If perceptual consciousness isn’t causally inert (or even, on some theories, if it is), it ought to have some important, fundamental, cognitive-functional correlate. But what could that be, on the moderate view? The sparse view has attention; the abundant view has supraliminal perception; but for the moderate view nothing of broad currency in contemporary psychology seems to play quite the right role.

We can suggest things. Maybe there’s a kind of *diffuse* attention, distinct from focal attention, which is capable of being spread broadly across multiple sensory

modalities and objects, but still not across all major modalities all the time. Or maybe intense concentration or high-demand tasks pull enough resources away from non-focal sensory processing to prevent unattended stimuli from entering consciousness, while less intense concentration permits those stimuli to be (peripherally) experienced (Ward 1918; Lavie 2006; Hine forthcoming). Such views may be plausible. But still, we should be leery of embracing them without a broad range of corroborating support. Advocates of moderate views such as Victor Lamme (2003, 2005) and Koch and Tsuchiya (2007) have suggested other candidate functional roles that decouple consciousness and attention but do not imply that conscious experience is abundant (recurrent neural processing, summarizing information and making it widely available to the brain). Maybe such views can be sustained; maybe the functional roles will even map nicely onto introspective reports. That would be pretty nifty. But as I'll explain in the next section, I'm inclined to think that introspective reports on this topic are problematic almost beyond hope.

x.

I'll divide my concerns into two groups, concerns about *overreporting* and about *underreporting* – the first, of course, suggesting that experience is sparser than participants say, the second that it's more abundant.

Overreporting concern #1: The effects of wearing the beeper. Many participants expressed concern that participating in the experiment would cause them to reflect more about the relevant modality or region and thus experience it more, distorting their results

toward the abundant side. I grant the likelihood of some effect of this sort. However, since the experiment is not concerned with small differences, only a very large effect of this type would invalidate the general results – only a pervasive transformation of experience, moment to moment, for hours at a time. That doesn't seem especially plausible. Furthermore, it seems reasonable to suppose that if there *were* such a large effect we'd see either rising rates of experience (as participants were trained to think about that modality or region) or declining rates (as participants grew more accustomed to the beeper and let it affect them less), depending on the mechanism guiding the supposed beeper-caused transformation of experience. But average rates of reported experience were stable between the first and last days (8 participants reported more experience on the last day, 8 less, and 13 [mostly at ceiling] reported the same amount⁷). And of course I excluded from analysis samples in which participants reported thinking about the experiment – only eight of the total samples, less than half a sample per participant. Most participants reported quickly becoming absorbed in their ordinary activities, largely forgetting about the beeper until it sounded.

Overreporting concern #2: Bias. Experimenters must always hope that their own bias isn't driving their results, but rarely are they in a position to evaluate the likelihood of that. Experimenter bias effects are, of course, pervasive in psychological research (as Robert Rosenthal in particular has emphasized, from Rosenthal and Fode 1963 through Rosnow and Rosenthal 1997; see also the brief discussion in Chapter 3). Such effects seem especially likely to play a role in consciousness research and in research involving open-ended interviews. I came into the experiment not neutral between the theses but thinking that experience was probably abundant (though I found my conviction

somewhat shaken as the experiment progressed). So I sympathize with the advocate of the sparse view who suspects that it's mainly my bias driving the results and that the subjects of a more even-handed researcher would have reported sparser experience. One test of this, of course, would be for a sparse-minded researcher to replicate my methods. To assess my own bias, I did two things. First, at the end of the experiment I had subjects guess which view I favored. Only 7 of the 21 subjects guessed that I favored the abundant view, while 13 guessed that I favored the sparse view (one declined to guess). Second, I asked Russ Hurlburt to review some of my interview tapes. I sought Hurlburt's opinion in particular because he is the world's leading practitioner of open interviews on randomly sampled experiences, because he repeatedly emphasizes the importance of being open-minded in interviewing style (e.g., in Hurlburt and Heavey 2006; Hurlburt and Schwitzgebel 2007), and because he appears to favor a sparse view. He said he thought my interviews were even-handed. I conclude that at least my *overt* bias was not extreme. It's of course still possible that my bias affected responses covertly.

I originally also thought participant bias would be a major factor in the results. However I was fortunate to have participants evenly balanced in their initial inclinations toward sparseness or abundance (10 vs. 11). Also there was a surprisingly weak relationship between participants' initial inclinations and their final results. Participants inclined toward a sparse view were only slightly more likely to report relatively sparse results than were participants with an abundant view. Counting the full experience and far right visual field groups twice (once for each type of recorded experience [for the full experience subjects, any visual and any tactile; for the far right visual field subjects, any visual and far right visual]), I found that in 17 cases participants' results tended in the

direction of their initial inclinations, relative to the results of the group as a whole, and in 12 cases the results went against their bias – not a statistically significant tendency. For example, one subject who initially expressed a strong inclination toward the abundant view nonetheless reported visual experience in only five of her nine samples. I doubt either of these facts – the equal distribution of initial bias or the weak relationship between initial bias and final results – should entirely dispel concerns about participant bias, but I do think it's reasonable to be optimistic that it isn't *mainly* participant bias driving the results.

Overreporting concern #3: Timing errors. Participants might have reported more experience than they actually had either if they reached too far into the past, gathering up the last conscious experience, whenever it was, in the relevant modality or region, or if they inadvertently reported on their experience *after* the beep, experience that may have been created *by* the beep. I did repeatedly stress the importance of trying to home in as accurately as possible on the *last undisturbed moment before* the beep. For what it's worth, the participants all felt they could do this, most of the time, with reasonable if not perfect accuracy; but still, people are certainly subject to illusions of timing.⁸

Another version of this concern turns on the idea that the target experience may be affected by the beep even if the participant *accurately* reports the beep as being experienced only after the target experience. This needn't be as exotic a matter as backwards causation. The beep is presumably experienced only some time after it stimulates the ear – only after, perhaps, some tens of milliseconds of neural processing. Maybe that preliminary processing, before the beep is actually experienced, affects whatever is experienced as having happened immediately before the beep. Maybe, even,

experienced temporal order, when events are near enough together, is partly an after-the-fact reconstruction (see Dennett 1991). We could hardly expect participants to be able to assess such matters introspectively.

Overreporting concern #4: Stimulus error, reporting the plausible, or reporting the sensory store. Participants may have reported on states of the world rather than on their *experience* of the world, leading to overly abundant or otherwise erroneous reports; or they may have reported on what seemed *plausibly* to have been their experience rather than on the actual experience itself; or they may have reported the contents of their short-term sensory memory even if (on the sparse view) those memories are not of events sensorily experienced before the beep. For example, a participant asked to report on visual experience in the far right visual field may simply have reported on what *objects* she visually remembers having been to her right, regardless of whether those objects were actually experienced before the beep. Wearing the beeper in piloting this experiment, I sometimes had the following reaction: The beep sounds, I close my eyes (some participants did this, some didn't, I left it up to them), and I attempt to recall my immediately prior visual experience. There was a black street in front of me, green trees to my left. But am I simply now recalling the *objects* that I remember to have been before me – or perhaps what's in my short-term “iconic memory” or “sensory store” (see Sperling 1960; Massaro and Loftus 1996) – or am I recalling my *experience* of those objects? The two judgments are different – on the sparse view, very different – but it's no trivial task to pull them apart introspectively.⁹ Titchener and Boring call the mistake of reporting on outward objects rather than on one's experience of those objects “stimulus error” (or “R-error”). Their suggestions for how to avoid stimulus error,

however, are sketchy and not especially helpful in this particular context (see Titchener 1901-1905, 1910, 1912b; Boring 1921).

On behalf of my experiment, I offer these four facts as a *partial* response to this concern. (1.) Every participant (except perhaps one) appears to have understood the distinction between reporting experience and reporting remembered objects, at least on a superficial level; and each at least once denied experience of something in her sensory environment that *could* have been experienced (e.g., an object in her field of view, the contact between flesh and shoe). (2.) If participants generally reported on what was in their environment, that is, on what the abundant view would predict they would be experiencing, then we would see near ceiling results in every condition, which we don't. (3.) In the far right visual field condition, participants quite readily reported blurriness or vagueness in their experience – properties, of course, of the experience itself, not of objects in the outside world. (4.) Participants favoring a sparse view should, it seems, have been less prone than others to report in accord with an expectation that everything in their sensory fields would be experienced. Presumably they had no such expectation. They should have been quite ready to recognize a difference between knowing an object is nearby or having a lingering sensory representation of that object and having had a sensory experience of that object, since their view demands that the two often come apart. And yet their results looked very much the same as those of the participants favoring the abundant view (see overreporting concern #2 above).

Unfortunately, none of these four responses fully addresses the core problem, which has become increasingly lively to me, that it seems often to be practically impossible – except perhaps on the basis of questionable and circular assumptions about

the sparseness or abundance of experience – to disentangle ordinary sensory memories, perhaps indistinct, of features of the outside world (e.g., that the trees were green, the pavement black) from memories of one’s sensory experience of that world (e.g., that I had a visual experience of green and black).

Underreporting concern #1: Preference for mixed reports. Experimental subjects often prefer moderate or mixed responses to extreme ones. I attempted to counter this preference by stating explicitly in the interviews (in the four informed conditions) that it would be okay to respond entirely with yesses or entirely with noes and that in fact that would be interesting as support for the theoretical views at stake – but I doubt I was entirely successful. Since participants gave nearly uniform “yes” answers to general visual experience questions, pressure to mix it up can’t explain the entire pattern of the results, of course; but a friend of abundance might suggest that it’s only in the “obvious” central vision case that participants will have had the self-confidence to present an extreme pattern of data. (No parallel argument is available to the friend of sparseness. She’ll need something other than the middle-of-the-scale bias to explain the visual results that run counter to her position.)

If I browbeat people into changing their report from sparse to abundant and vice versa, that could also generate an overall pattern of intermediate data. There was, indeed, some risk of this, since I tried to counteract participants’ biases by occasionally raising concerns or pointing out the plausibility of the alternative view. Fortunately, an analysis of first-day vs. final-day results shows no evidence of massive browbeaten conversions. Twenty subjects stayed either above or below the median report rates for the type of

experience in question, and nine crossed median (again counting full experience and far right visual field participants twice, once for each of their coded reports).

Underreporting concern #2: Subtle experience. In the tactile left foot condition, one participant – a philosophy graduate student who reported tactile left foot experience in 11 out of 12 samples – typically said he had a *general* sense of the position and disposition of his body, its posture and contact with things. He usually claimed not to have experienced his left foot separately and distinctly, but only as a small and subtle part of this holistic bodily sense. This pattern of reporting apparently surprised him: He initially expressed an inclination to the sparse view. Indeed, within the full tactile and tactile left foot conditions, four of the participants (three initially sparse-biased, one initially abundant-biased) reported discovering a holistic bodily sense of this sort, and those four all had above-median results. Is this just a compelling theoretical idea that, once entertained, inclined these participants to invent experience to match it (see overreporting concern #4 above)? Or did this idea reflect a discovery of, and allow them to report, a subtle sort of background experience that others might easily miss?¹⁰

Underreporting concern #3: Memory error. I don't think we should be too concerned about *long-term* memory error. In the four informed conditions (that is, all but the full experience condition), the basic data point is very simple, and I permitted participants to consult their notes during the interview. If a participant gets it right in the first few seconds after the beep, it seems unlikely she'll misreport later. (There's obviously much more room for long-term memory error in the full experience condition, but fortunately those results harmonize with the results in the other conditions.) The bigger issue is this: What's the likelihood of failing to remember the targeted moment of

experience, or non-experience, between the time of its occurrence immediately before the beep and the act of judgment shortly after the beep?

It's noteworthy how much we fail to remember even over very short intervals, if our attention is not upon it as it occurs. Perhaps the most striking recent experiments on this topic are the "change blindness" experiments of Ronald Rensink and others (e.g., Rensink et al. 1997, 2000; Simons and Levin 1998). You look at a picture. It flickers and is replaced by a very similar picture, with one major change. For example, a large railing substantially changes position, or a large jet engine near the middle of the picture disappears and then, after another flicker of the picture, it reappears. It's often difficult to detect that change, even when the stimuli are presented repeatedly. (Many change blindness demonstration videos are available on the internet if you're not familiar with the phenomenon.) Or: You're having a conversation with a stranger. In the middle of the conversation, two people carrying a door briefly walk between you, and the stranger is surreptitiously replaced by another person in different clothing, with a slightly different build (but similar social category, for example, male construction worker). Many people fail to notice the change. Experiments like this – along with older experiments on the unreliability of eyewitness testimony (Münsterberg 1927; Loftus 1979; Haber and Haber 2000) and on the forgetting of mundane everyday details like the direction of Lincoln's face on the penny (Sanford 1917/1982; Nickerson and Adams 1979) – suggest that we may fail to encode or remember surprisingly large aspects of our perceived external environment.

Whether we likewise fail to encode or remember large tracts of our *stream of conscious experience*, as distinguished from our outward environment, is an open

question, but I see no reason to suppose it merits a different answer, especially if experience is abundant. If sensory experience is a complex, massively detailed flux, it may be at least as expensive and pointless to retain as are the unimportant or readily available environmental details we so easily forget. The beeper method brings to a practical minimum the delay between experience and reflection, but the experience and reflection still aren't simultaneous – they can't be, if we're to avoid the refrigerator light error – and that very non-simultaneity may be enough to guarantee the forgetting of substantial portions of experience that are never recorded even in short-term memory.

How should we assess these various concerns? Three strike me as fairly tractable, perhaps with further experiments: the effects of wearing the beeper, participant and experimenter bias, and the preference for mixed reports. The timing error issue seems a bit trickier. Perhaps it could be partly addressed by asking participants to focus on their experience not *immediately* before the beep but rather, say, one full second before the beep; but that seems likely to aggravate at least the memory issues, perhaps also stimulus error and bias. The subtle experience error and the stimulus error seem to me trickier still. The subtle experience error raises some of the same tangled issues as the combination tones case from Chapter 5: How do we know when someone is introspecting well enough that we can trust her assertion that she lacks some subtle experience? Though I was able to say a few things against the stimulus error worry, it seems to me that such reassurances should rightly leave an advocate of sparseness largely unmoved. The visual memory of a peripherally seen object and the memory of having visually experienced that object seem awfully hard to tease apart. And the short term memory

concern seems to me absolutely intractable, if we take its possibility seriously: How could anyone introspectively discern whether an experience, however recently past, never occurred or instead occurred but was never encoded into memory?

If all the concerns pointed the same direction, we could perhaps nonetheless reach some rough conclusions. For example, if the only really troubling concerns suggested underreporting, we might conclude that experience was *at least* as abundant as participants suggest. That would still leave us no basis for deciding between a moderate and a radically abundant view – no basis in a retrospective self-report experiment like this one, at least. (Whether there might be other bases for deciding, I'll address shortly.) Unfortunately, there are daunting concerns on both sides. Experience might still, for all we know given subjective reports like these, be anywhere from radically sparse to radically abundant.

xi.

The phenomenological difference between sparseness and abundance is vast. If defenders of abundance are right, then our stream of experience is aswarm with detail in many modalities at once, both inside and outside the field of attention; if defenders of sparseness are right, experience is limited to one or a few attention-occupying activities or objects at a time. On the first view, unconscious perception exists only in the margins if it exists at all; on the second, *most* of our perception is unconscious. On the first, we always have a complex flow of visual experience; on the second we may quite often have

no visual experience at all. What, it seems, could be easier than to decide between these two views? Shouldn't a moment's reflection settle the matter incontrovertibly?

The fact that it doesn't is striking, and methodologically very important. One might take the apparent evasiveness of what seems like it should be an obvious issue to suggest some merely linguistic or communicative trouble, a problem of speaking past each other, of disagreement or inconsistency in the use of words – an issue I raised in section ii. I doubt we can justifiably comfort ourselves with that thought. Forget about the interpretation of James and Jaynes and Searle, and just consider the issue in a single vocabulary. However you think of “consciousness”, it's an open question exactly how far consciousness spreads. If the methodological problems are as serious as I've suggested, then there should be a broad range of substantively distinct plausible views – perhaps even all the way from very sparse to very abundant. Such views remain live despite the phenomenological gulf between them because the refrigerator light error hobbles concurrent introspection and because stimulus error, memory error, and the potential subtlety of the target experiences make even carefully collected retrospective reports difficult to interpret.

Could this experiment, or another on the same topic, have been done appreciably better, so as to avoid these concerns? Can we construct, even if only in fantasy, a better experiment? Let's consider self-report methods first. Any concurrent self-report method – any method that asks the participant to report on his experience as it occurs – will be polluted by the introspective act itself. Any retrospective self-report method will invite concerns about short-term memory at least. Both approaches will likely accrue charges of participant bias, stimulus error, conceptual confusion, potential insensitivity to subtle

experiences. Different approaches will, perhaps, involve different trade-offs between these potential failings – stressing the possibility of subtle experience may increase sensitivity to those experiences but also increase the risk of confabulation; selecting unsophisticated subjects may reduce certain sorts of theoretical bias but raise the risk of conceptual confusion; etc. But no self-report method can, I think, effectively avoid the sorts of concerns raised here. My experiment, however flawed, is not *contingently* flawed.

How about more objective or theoretical methods? Could we do away with subjective reports – at least subjective reports on this particular issue – and simply, say, look at the brain or at patterns of behavior? Cognitive-behavioral approaches without the aid of self-report will not, I think, solve our problem. Either they operationalize “consciousness”, equating it by definitional fiat with some behavioral or cognitive pattern, or they simply beg the question. Does mere behavioral responsiveness, for example, or above-chance responding on retrospective forced-choice questions about the presence of stimuli, demonstrate “consciousness” of those stimuli? Not in any way that should move an advocate of the sparse view. Does failure to report stimuli outside of attention show that they weren’t consciously experienced? Not in any way that should satisfy an advocate of abundance. The problem is, we simply do not know enough yet about the relationships between cognition and phenomenology to take *any* objective cognitive-behavioral measure of consciousness as valid without begging the question at hand.

The same holds for purely neural approaches. One might think we could resolve the issue by discovering what neural features are shared by indisputably nonconscious

mental episodes and what neural features are shared by indisputably conscious mental episodes and then see whether our brain's response to unattended stimuli looks more like the former or more like the latter. Unfortunately, the gap between the indisputably conscious and the indisputably nonconscious is too wide to be bridged in this way. Early visual processing and early lexical processing are indisputably nonconscious (at least in mainstream opinion); focal visual attention and deliberate episodes of inner speech are indisputably conscious. There will be many neural and functional features the latter share that the former lack, and some of those features will be shared with tactile processing of an unattended foot. But which of those features are essential for consciousness? We don't know.

Furthermore, we may *never* know until we resolve the sparse-vs.-abundant dispute. As I mentioned in section v, the search for neural correlates of consciousness makes no sense unless we have in advance at least a *rough* idea of the sorts of mental states that are conscious, and we don't have even a rough idea of the sorts of mental states that are conscious until we settle the sparse-vs.-abundant question. Suppose we find a neural state that occurs when and only when a sensory process involves focal attention. Is that a neural correlate of consciousness? Not if experience is abundant; it might just be a correlate of attention. Suppose we find a neural state that occurs whenever there is sensory responsiveness. Is that a neural correlate of consciousness? Not if experience is sparse; it might just be a correlate of sensory sensitivity. Suppose we find a neural state that correlates with something like *diffuse* attention (as postulated in section ix). To declare that to be the neural correlate of consciousness, thus adopting a moderate view, begs the question against both sparse and abundant views, unless further

arguments can be marshaled; but those further arguments must either turn on self-report, which as we saw appears to be highly problematic in this domain, or on further behavioral, cognitive, or neural measures, which will be equally question begging.

xii.

If there were a theory of consciousness so elegant and so nicely articulated with available scientific data that it compelled acceptance independent of the sparse-vs.-abundant question – that is, independent of any knowledge of how broadly consciousness spreads – we could perhaps turn to it to resolve the dispute. But there is no such theory. An obstacle to constructing such a theory is that the sparseness or abundance of experience appears to be a part of the basic data *in light of which* a theory of consciousness must be constructed. Arguably, we must know whether experience is sparse or abundant *before* we can justifiably embrace a general theory of consciousness.

Consider some actual theories. Bernard Baars (1988, 1997) has advanced a “global workspace” theory of consciousness, according to which sensory content is conscious just in case it’s in the narrow theater of working memory, where only a small amount of attended content can be manipulated at a time and broadcast across the cognitive system. Francis Crick (1994) argues that the neural correlate of consciousness is synchronized 40 hertz neural oscillations in the subset of neurons corresponding to an attended object. Rafael Malach (2006) suggests that consciousness may emerge from the tightly integrated activity of anatomically local neural groups, regardless of their interaction with other cognitive processes. David Chalmers (1996) suggests that

consciousness may be present wherever there is information processing (and thus virtually everywhere). Built right into these views virtually from the start is a commitment to a view of consciousness as sparse (Baars, Crick), or abundant (Malach, Chalmers). Such theories will not and should not seem convincing to researchers with different antecedent opinions on the sparse-vs.-abundant question. Those of different inclination may quite reasonably regard such theories as, at best, theories of something *else*, not consciousness per se – perhaps focal attention, perhaps availability as a potential target of attention, perhaps information processing.

The distribution of consciousness across the range of animals and machines raises similar issues, at least for those theories of consciousness that purport to treat consciousness in general and not just human consciousness: Such theories will build in from the start commitments on the distribution of consciousness, commitments likely impossible to ground independently of the theory, given the difficulty in evaluating non-human behavior and biological processes for signs of phenomenology. Problems of this sort may be simply insurmountable. And if so, a methodologically well justified scientific consensus on a theory of consciousness may be beyond our reach.

The ingenuity of scientists almost always in the long run embarrasses naysayers about science, so maybe I shouldn't be so pessimistic. Maybe I should say only this: The obstacles are formidable.

¹ In earlier work (Hurlburt and Schwitzgebel 2007; Schwitzgebel 2007a), I used the terms “rich” and “thin” instead of “abundant” and “sparse”. But people complained to me that “rich” and “thin” don’t sound like opposites (consider Steve Jobs); and the terms have been used widely by philosophers to mark other distinctions (even by me in Chapter 5, where I described auditory experience as “rich” if it has many aspects). Thus the new terminology.

² E.g. Marcel 1980; Merikle et al. 2001; Snodgrass et al. 2004. But for critiques of this literature see Holender 1986; O’Brien and Opie 1999; Holender and Duscherer 2004.

³ Usually Dennett seems to espouse the sparse view, and he has confirmed this in conversation. However on p. 137 of his 1991 book, he seems to tilt the other way on the absent-minded driving case, and on the following page he seems to express the view that at least in some cases there may be no fact of the matter. In general, I don’t see how all of Dennett’s statements about consciousness can be reconciled, an issue I explore in Schwitzgebel 2007b. (Dennett responds to these concerns in the same journal issue.)

⁴ Although clearly there’s a usage of “conscious” on which people are not conscious when they are dreaming, that is not the usage employed in this book or in most contemporary philosophy of mind. Unless you have a very unusual view of dreaming (like Norman Malcolm’s [1959] maybe; see Chapter 1, note 6), you will probably grant that dreams are experienced; there’s “something it’s like” to dream, perhaps involving imagery or perception-like phenomenology as well as felt emotions or quasi-emotions.

To grant that is just to grant that dreams are conscious, in the relevant sense of “conscious”

⁵ However, on p. 430 of the same work James writes: “The pressure of our clothes and shoes, the beating of our hearts and arteries, our breathing, certain steadfast bodily pains, habitual odors, tastes in the mouth, etc., are examples from other senses, of the same lapse into unconsciousness of any too unchanging content”. This may either qualify or contradict the passage on p. 1066-1067, though it still fits nicely with a relatively abundant view, since it posits excessive constancy rather than inattention as the cause of lapse into unconsciousness. See also p. 402-403, where James discusses the differences between sense experiences with and without attention.

⁶ Block, Koch, and others (Block 2007; Koch and Tsuchiya 2007; Srinivasan 2008), while not defending broadly abundant views, argue empirically against at least very sparse views. Block argues, partly introspectively and partly empirically, that the conscious experience of a briefly presented visual display (for example on a computer) extends considerably beyond the focally attended features that can be reported. Koch and Tsuchiya mention that people can report the gist of a briefly presented visual scene (saying, for example, whether the scene contains an animal) even when their attention is largely consumed in a demanding task presented elsewhere in the display. But such discussions don’t actually touch the issue at hand. As Koch and Tsuchiya stress, experimental results (or phenomenological observations) in such paradigms at best show consciousness in the *near*-absence of attention: There may be some attention spread across the entire visual display, even if attention is most concentrated on the central task. What’s more directly pertinent to the question of this chapter is whether subjects

experience the frame of the computer monitor, or the picture on the wall behind the computer, or the pressure of their flesh against the chair, when they are concentrating intensely on a computer display. On such matters, Block is silent and Koch falls back on intuition rather than empirical argument (2004, p. 165). See also Mole 2008 for an intuitive defense of a moderate view.

⁷ The total of 29 reflects the fact that I counted the full experience and the far right visual field participants twice each – the full experience participants for both their visual and tactile reports and the far right visual field participants for both their full visual and their far right visual field reports. See also the second note to Table 1.

⁸ See James 1890/1981; Geldard and Sherrick 1972; Libet 1985; Dennett 1991; Nijhawan 1994; Spence et al. 2001; Danquah et al. 2008. Boring 1929/1950 describes 19th century astronomers' appreciation of illusions of timing, as the increasing accuracy of astronomical observation started to expose individual astronomers' different impressions of when, to a tenth of a second according to the heard beats of a clock, a star passed a telescopic cross-wire. Boring portrays this discovery in astronomy as playing an important role in the emergence of reaction time studies in psychology.

Pertinent to the remainder of the paragraph, although it is sometimes argued, for example in Danquah et al. 2008, that visual processing is slower and more subject to temporal illusion than auditory or tactile processing, the findings on this topic appear to me to be fairly inconsistent.

⁹ Chapter 5's discussion of whether we introspect combination tones relates to the present issue, especially note 9.

¹⁰ One might suggest that as experiences become more subtle and less intense, it becomes a vague, indeterminate matter whether conscious experience is present or not, and this vagueness in the target phenomena may be responsible for some of the variability in the reporting. Now I myself have difficulty making sense of the idea that consciousness is a vague phenomenon: Though I'm willing to grant that most concepts are vague enough to admit of borderline cases, I can't seem to conceive of vague cases of consciousness, cases in which I'd be tempted to say that it's indeterminate whether a state is conscious or not. Even a little bit of consciousness, it seems – a tiny gray patch, a barely felt twinge – is determinately a case of consciousness (Searle 1992; Antony 2008). (Note that the *content* of a conscious state may be indeterminate, as perhaps in the case of a sketchy image, while it's nonetheless determinately the case that the state itself has a phenomenal character.) On the other hand, I'm inclined to think that consciousness *must* be a vague phenomenon, at least ontogenetically and phylogenetically, despite my difficulty conceiving of vague cases: Why should consciousness suddenly pop into existence at some particular point in the course of evolutionary change or at some particular point in the course of fetal or infant development, given that the physical and behavioral changes that seem most pertinent to consciousness are gradual (Dennett 1991; Papineau 1993)? Perhaps this apparent inconsistency reveals a flaw in my conceptualization of consciousness, or, to the extent I'm typical, in the contemporary everyday or mainstream philosophical conceptualization. In any case, even if we allow that it may be a vague matter whether unattended peripheral stimuli are consciously experienced, that does not resolve the difficulties at hand in this chapter, and in fact seems likely to worsen them, for now we have three possibilities (or a spectrum of

possibilities) with respect to the consciousness or not of some stimulus: determinately conscious, determinately nonconscious, or somewhere in the gray area between. The problems of memory, stimulus error, etc., discussed in this section by no means assure that all contentious cases would straightforwardly belong in the gray area.