PHENOMENAL CONSCIOUSNESS AS SCIENTIFIC PHENOMENON? A CRITICAL INVESTIGATION OF THE NEW SCIENCE OF CONSCIOUSNESS

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Phenomenal consciousness poses something of a puzzle for philosophy of science. This puzzle arises from two facts: It is common for philosophers (and some scientists) to take its existence to be phenomenologically obvious and yet modern science arguably has little (if anything) to tell us about it. And, this is despite over 20 years of work targeting phenomenal consciousness in what I call the new science of consciousness. What is it about this supposedly evident phenomenon that has kept it beyond the reach of our scientific understanding? I argue that phenomenal consciousness has resisted scientific explanation because there is no such phenomenon: What is in fact phenomenologically obvious has not resisted scientific explanation, exposing phenomenal consciousness as an unneeded and unwarranted theoretical construct that is not supported by the scientific evidence. I show this through an investigation of the new science. I detail how these researchers understand "phenomenal consciousness," tie this understanding to the recent philosophical debates, and critically assess the reasons given for believing that such a scientific phenomenon exists.

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INTRODUCTION: IGNORANCE AND OBVIOUSNESS

Consider the opening line to Daniel Stojar's (2006) recent, well-received volume on the problem of consciousness:

> Apart from its phenomenological obviousness, the two central facts about conscious experience are these: It is philosophically puzzling, and we are scientifically ignorant with respect to it. (v)[1]

Stoljar's goal is to use the second fact to counter the first, undermining the philosophical puzzlement generated by the main conceivability arguments in philosophy of mind (Chalmers, 1996; Jackson, 1982).[2] But Stoljar's statement also raises a question for philosophy of science that cannot be laid to rest by calling on scientific ignorance, because that question concerns our scientific ignorance itself. The question is: How is it that there is something[3] that is both obvious[4] and that science has nothing to say about?

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[1] Or, consider Ned Block's response to a question from Susan Blackmore (2005) asking about what we have learned about phenomenal consciousness: "I do think we've learned very little about the scientific explanation of phenomenal consciousness. It's something that we all have available to us on the basis of our experience, but as far as learning anything very serious about its nature goes, I think we don't know much." (26-27).

[2] Stoljar's approach is to use the fact of our scientific ignorance of phenomenal consciousness to cast doubt on whether we are actually able to imagine the scenarios that give rise to the philosophical puzzlement. Stoljar holds that the reasoning that generates the puzzlement is premised on imagination, but that "ignorance has an impact on imagination" (2006, vi). He continues: "What in our ignorance we *believe* ourselves to imagine and what we in fact imagine are distinct. In particular, the possibilities we believe ourselves to imagine do or would have objectionable consequences, but we do not imagine them in the relevant sense, and those possibilities we do genuinely imagine don't imply anything objectionable. And this, I argue, solves the philosophical problem of conscious experience. Imagination leads us into the problem; ignorance leads us out of it." Be that as it may, it suggests a further question: Why hasn't science led us out of our ignorance?

[3] What Stoljar calls "conscious experience" and I will refer to as *phenomenal consciousness*, following Block (1995).

[4] Phenomenological obviousness will be discussed at length as we proceed. For the time being, however, we can treat it as a species of *pretheoretical obviousness*: Something is phenomenologically obvious if it is obvious just through observation or introspection alone.

The question is pointed, not because it is unheard of for a phenomenon to resist scientific explanation—many complex occurrences, such as the acquisition of syntax by children, for example, remain largely beyond our understanding—but because phenomenal consciousness seems to resist our standard forms of explanation in both *outline* and in *detail*. It is often held that we not only do not know how actually to explain phenomenal consciousness, but that we do not even know how possibly to explain it; that is, that we do not even know what an explanation of phenomenal consciousness should look like or how to go about giving one.[5] Of course, one might again see parallels in the history of science, comparing our present ignorance with regard to phenomenal consciousness to earlier struggles to explain life or disease, for example. Certainly, present ignorance does not imply that we will necessarily remain ignorant. Nonetheless, as our knowledge has increased, as we have gained an explanatory grip on phenomena like life and disease, the holdouts have become more noticeable. In particular, the question of how phenomenal consciousness has so thoroughly resisted our best efforts to explain it comes to the fore.

Surely in this modern era such a gap in our scientific knowledge is somewhat puzzling. How should we understand this holdout against scientific progress? There are a number of answers that one might give to this question. First, one might respond that it reinforces the philosophical puzzlement that Stoljar hopes to undermine. That is, one might argue that the fact that we remain scientifically ignorant with respect to phenomenal consciousness shows that the philosophical puzzlement is well placed; it might reflect that phenomenal consciousness is irreducible, or that it is closed to scientific explanation, or perhaps that it is simply beyond our

[5] For example, psychologist Nicholas Humphrey (2006, 3-4) writes: "I admit that, although I have engaged in 'consciousness studies' for thirty years, I too feel some perverse pride in the fact that consciousness has held out against all attempts to treat it as just one more biological phenomenon. I take comfort in the thought that if and when we do finally get a scientific explanation, it will have at least to be an explanation unlike any other."

cognitive capacities to explain. If the puzzlement were not well placed, the argument runs, then it would be highly unlikely that we would remain scientifically ignorant with regard to phenomenal consciousness at this point in time. That we do not know how to go about scientifically explaining it suggests that we might well be faced with an explanatory gap that we cannot cross.[6]

Second, one might resist this pessimistic conclusion and answer that Stoljar's facts indicate that further scientific research into phenomenal consciousness is needed. Thus, one might point out that the best way to combat ignorance about a phenomenon is to investigate it more seriously. It might then be urged that the way to combat ignorance about phenomenal consciousness is to support the new science of consciousness.

Third, one might respond by questioning the existence of the phenomenon itself. The fact of our scientific ignorance might be taken to provide motivation for reconsidering whether there really is any such thing phenomenal consciousness in the first place. The idea is that it strains credulity to think that today, given our current knowledge and the striking success of modern science, there remains such a phenomenon that is both *phenomenologically obvious* and that we are *scientifically ignorant* of in both outline and detail. Again, our scientific ignorance of the supposed phenomenon does not establish that it does not exist; rather, it provides motivation for considering the possibility. Our failure to make scientific progress on the "problem" gives us reason to rethink the concept of phenomenal consciousness.

The third answer gains credence when we realize that over the past quarter century there has been a surge of interest in the scientific study of phenomenal consciousness, resulting in what I will refer to as the "new science of consciousness." This discipline is growing, attracting

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[6] This might be because the gap is simply uncrossable, or because it is uncrossable by us due to our cognitive limitations (McGinn, 1991). While Joseph Levine (1983) does not conclude that the explanatory gap is uncrossable—he writes that "one cannot conclude from my version of the [Cartesian] argument that materialism is false" (354)—he does gesture suggestively toward that claim.

research money, and populated with serious and well-respected brain scientists investigating what Stoljar refers to as conscious experience. As such, if Stoljar has his facts right—if despite more than 20 years of work in the new science, we remain truly scientifically ignorant about conscious experience—then this provides motivation for engaging with the possibility that there is no such thing. In turn, this gives us reason to critically investigate the science directed toward explaining this supposed scientific phenomenon. If there is no compelling evidence that such a phenomenon exists, then there is no call for a science of it. I will argue that this is the case.

Of course, new scientists feel that they have good reason to believe in the reality of phenomenal consciousness. Like Stoljar, they typically take it to be phenomenologically obvious, to be something that everyone knows. If this is correct—if Stoljar's claimed fact is indeed a fact—then my denial of the reality of phenomenal consciousness is misguided. After all, there is an obvious difficulty with any position based around the denial of what is obvious. I agree: Done incautiously denying the existence of phenomenal consciousness can seem counterintuitive to the point of absurdity. Rather than simply accept the charge of being counterintuitive (as Dan Dennett often does, for example[7]), I hold that the better strategy is to take a closer look at the observational data that is thought to show that it is obvious that phenomenal consciousness exists. I argue that what is in fact phenomenologically obvious in an

[7] For instance, in *Consciousness Explained* (1991) Dennett states, "I don't view it as ominous that my theory seems at first to be strongly at odds with common wisdom." (37). A similar point is found in his (2005) volume: "'But Dan, your view is so *counterintuitive*!' No kidding. That's the whole point. Of course it is counterintuitive; nobody ever said that the true materialist theory of consciousness should be baldly intuitive. I have all along insisted that it may be *very* counterintuitive." (128). Or, again, in an interview with Susan Blackmore (2005): "Right now it's a struggle to get people working in consciousness even to think about abandoning their intuitions. They have these powerful, seductive intuitions about how it has to be, or how it can't be, that are just wrong. Nothing new there! We've always had false intuitions about the way the world is, and counter-intuitive science has come along and changed them. But in this case, we don't yet know which intuitions to abandon and why. So the problem is very much a problem of persuasion and self-persuasion and a sort of self-manipulation of one's own imagination, which is scary to many people. So instead they try to have a theory which doesn't require them to tweak their intuitions at all, and then they end up down one cul-de-sac or another, because the theories that are not counter-intuitive are just wrong." (81).

ordinary perceptual episode, such as looking at a ripe tomato, is *not* the existence of phenomenal consciousness as it is understood in the new science. Rather, phenomenal consciousness is a highly theoretical concept that goes well beyond what is manifest in perception. As such, to offer an alternative understanding of what is manifest in perception is not necessarily to deny anything that is phenomenologically obvious; it is, instead, to question the theoretical understanding of our perceptual episodes that generates the supposed problem that the new science targets.

DETERMINING WHAT IS THOUGHT TO BE OBVIOUS

To effectively challenge the theoretical understanding of everyday perceptual episodes found in the new science literature requires that we carefully articulate the concept of phenomenal consciousness that new scientists employ. What we find is that they lay claim to a problem that has been a primary concern of philosophers. Not surprisingly, this problem is the one that Stoljar is concerned with in stating his three facts above.

As such, before proceeding, it is worth considering Stojar's articulation of the supposed phenomenon of phenomenal consciousness ("conscious experience") that is at the heart of the three facts he gives. In looking at his understanding of phenomenal consciousness we want to pay close attention to what might be taken to be phenomenologically obvious in the primary example he provides. Stoljar writes:

> Suppose I am looking at the gray filing cabinet in the corner of my office. In one natural use of the term, we may say that this event—my seeing the gray filing cabinet—is an *experience* that I have. Of course this experience has many properties. It occurs in time. It has a place in an overall causal structure of events. It stands in interesting relations to other psychological events and states, to neurological and other factors, to my social and physical environment, to my behavior and history, and so on and so forth…. However, according to the

> phenomenal conception, there is one fact about the experience more important than the others: *that there is something it is like to have it*. According to the phenomenal conception, this fact about my seeing the filing cabinet is what makes it an experience. (2006, 18-19)

Note two points. First, the conscious experiences are taken to be mental states. They are something that you *have* in some sense and they stand in relations to *other* psychological events and states—the "other" clearly implying that conscious experiences are also psychological events or states. Conscious experiences are *phenomenally conscious mental states*.

Second, Stoljar holds that these supposed phenomenally conscious mental states have many qualities (properties) and focuses on articulating one type of quality in particular—what I will refer to as *phenomenal qualities* (*qualia* for short). He indicates that phenomenally conscious mental states have phenomenal qualities that *make* those mental states phenomenally conscious. These qualities are referred to in standard, if vague, fashion by asserting that there is "something it is like" to have the mental state (Nagel, 1974). But what exactly the quality at issue *is* for the phenomenally conscious mental state noted is not specified. What is the *something* that it is thought to be like to have this mental state? Following the standard line, I assume that this elusive "something" is specified by the quality of the filing cabinet that is noted: Seeing the *gray* filing cabinet involves acquaintance with the quality of grayness. This quality is taken to be a quality that the mental state *has*—it is a *mental quality*. This is not to say that the grayness is the only (supposed) phenomenal quality that might be highlighted in this episode; likely Stoljar would also want to note the variety of shades of color seen, maybe the seen dimensionality of the filing cabinet or its perceived location, perhaps visual cues to its texture. Nonetheless, the quality that Stoljar highlights is the color of the filing cabinet and this follows a

common focus in philosophy of mind, where colors are often given as the prototypical example of phenomenal qualities.[8]

In light of Stoljar's assertion that it is a fact that phenomenal consciousness is phenomenologically obvious, it is important to carefully consider the example that he provides. We need to ask: Just what is phenomenologically obvious during the event of looking at the filing cabinet? Certainly it was obvious to Stoljar that he saw gray and this is not something that I want to deny; but, this alone does not make it obvious that Stoljar had a phenomenally conscious mental state, as his episode of perception could be reasonably understood in other ways. In particular, when I look at a gray filing cabinet it is not obvious to me through observation or introspection that the grayness that I am acquainted with is a quality of my mental state. But if qualities like the grayness associated with the filing cabinet are not part of the "something it is like" to have the supposed phenomenally conscious mental state, then I am at a loss as to what that something is thought to be.[9]

One goal of this dissertation is to establish that the existence of phenomenal consciousness, as it is understood in the new science, is not phenomenologically obvious. I will show that claims about the obviousness of phenomenal consciousness do not offer compelling support for the existence of this phenomenon. Further, if we do not simply take the existence of

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[8] To return to Block (see Footnote 1), consider his emphasis on "technicolor phenomenology" in specifying the phenomenon that cognitive science has made no progress toward explaining: "What I mean by consciousness, at least in this context, is the technicolour phenomenology; the 'what it's like'. Not everybody has that sense in mind; there are always different senses of consciousness; but that's the thing that's really interesting. Sometimes when people talk about consciousness they mean something about higher-order thought, or access, or monitoring, or self-reflection. Those look like the kind of thing we're making progress on in cognitive psychology, but what's really hard is something there's no progress on in cognitive psychology, namely the phenomenology. That's where the problem with the explanatory gap comes in—why is the neural basis of a certain phenomenal experience the neural basis of that rather than something else, or nothing?" (in Blackmore, 2005, 24-25).

[9] It is often acknowledged that specifying "what it is like" to have a phenomenally conscious mental state is difficult and it might be objected that I am expecting too much, here. Nonetheless, it seems that we are entitled to *some* indication of the qualities at issue, even if the specification of those qualities is left somewhat vague. I assume that Stoljar is best read as providing such an indication in noting the color of the filing cabinet.

phenomenal consciousness for granted, then we find that the case for it is not nearly so compelling as has been thought. We find that the case for the existence of phenomenal consciousness does not rest on scientific evidence, but on appeals to controversial philosophical arguments such as variations on the traditional argument from hallucination. As such, the claim that the new science is a *science* of phenomenal consciousness that will help us to explain this supposedly mysterious phenomenon also rests on an unstable philosophical foundation. This casts serious doubt on the scientific credentials of the new science of consciousness.

DISSERTATION PLAN

This dissertation includes six substantive chapters. The first two are largely expository. In Chapter 1, I explore the new science of consciousness, focusing on why new scientists think that they are part of a *new* science. In Chapter 2, I further detail how new scientists understand the central explanandum that they target, showing how this relates to talk of "phenomenal consciousness" and "qualia" in philosophy of mind. I argue that although there are differences to be found, the new science understanding of "qualia" derives from the philosophical discussions and coincides with one common line found in that literature.

Chapters 3 through 6 are critical. Having articulated the supposed phenomenon of interest to the new science, I consider what the scientific evidence for it might consist in. In Chapter 3, I discuss the distinction between data and phenomena in scientific work. I show that the new scientist cannot simply rely on the scientific data as it is standardly understood, but must call on what is typically referred to as "first-person data" to attempt to establish the existence of the phenomenon. I then distinguish between two types of claims about first-person data—*strong*

first-person data claims (claims that the author is specifically acquainted with qualia) and *weak first-person data claims* (claims that the author is acquainted with qualities that are not necessarily qualia)—and argue that there is a problem with calling on either type of claim to infer the supposed scientific phenomenon. The problem with strong first-person data claims has to do with convincingly establishing the accuracy of those claims. The problem with weak first-person data claims is that they are insufficient for purposes of establishing the existence of the target phenomenon.

In Chapter 4, I argue that we should not believe new scientists when they claim to have strong first-person data. What I show is that phenomenal consciousness is *not* simply evident just in perception (that it is not phenomenologically obvious in Stoljar's terminology). I do this in a number of ways, using the methods of experimental philosophy in addition to more traditional approaches. On the basis of this I argue that we should not accept that new scientists have strong first-person data; at most we should grant that they have weak first-person data that have been mistakenly put forward as being strong first-person data.

In Chapter 5, I argue that weak first-person data (in combination with the scientific data) are insufficient to establish the existence of the supposed scientific phenomenon of phenomenal consciousness. This is shown by means of a contrast with three alternative accounts—*naïve realism* and two variations on it (*disjunctivism* and what I call *eliminative disjunctivism*). I conclude that new scientists must supplement the data with a substantive philosophical thesis, then argue that doing so is problematic for the new science in at least three ways. First, new scientists are often disdainful of the use of philosophical arguments to establish weighty claims about our world, raising concerns about their use of philosophical arguments to establish the scientific phenomenon of phenomenal consciousness. Second, once the door is opened for

philosophical arguments, it is unclear that new scientists can admit only the arguments they want; as such, they must deal with philosophical arguments indicating that we cannot explain phenomenal consciousness neurobiologically more seriously than they typically do. Third, the philosophical arguments that can be drawn from the new science literature are contentious and it is not clear that their conclusions should be accepted.

In Chapter 6, I turn from the more abstract considerations of the previous chapters, to a concrete illustration of the new science in action. I focus on the search for neural correlates of consciousness (NCC), considering the data collected in the most prominent experiments in this literature. Although the NCC project has been widely thought to be the first step in the new science of consciousness, I argue that the data collected in these experiments are not best interpreted in terms of the supposed scientific phenomenon of phenomenal consciousness.

1.0 THE NEW SCIENCE OF CONSCIOUSNESS

Over the course of the past quarter century it has become increasingly common for scientists and philosophers to make calls for a new science of consciousness. I take this phrase from one new scientist in particular. In 1996 psychologist Max Velmans talked about "creating a *new science of consciousness* which attempts to integrate the findings of traditional 'third-person perspective' science with the 'first-person' evidence of human experience" (xi, italics added). Velmans is far from unique in thinking that he is part of a new science that is set apart by the use of supposed first-person data, however. The goal of this chapter is to show this, detailing how new scientists understand their science. As such, this chapter is primarily expository; I will express the basic shape of this science as understood by its advocates and practitioners, setting the stage for a consideration of its merits. Specifically, I illustrate that prominent researchers at the center of the new science see themselves as part of a new endeavor to tackle what they take to be a great, perhaps the greatest, scientific mystery of our time.

In calling for a new science of consciousness, the implication is that there is a phenomenon—*consciousness*—that warrants serious scientific attention, but that brain scientists have been ignoring. New scientists understand "consciousness" in a way that corresponds with what Daniel Stoljar calls *conscious experience* (see the introduction) and what I will refer to as *phenomenal consciousness*. The supposed problem that the new scientists target is to explain how the brain *creates* or *gives rise to* a wide variety of qualities that we are acquainted with in

everyday life, such as colors, shapes, sounds, smells, textures, pains, itches, and so on. These qualities are thought to be *phenomenal qualities*, or *qualia* for short, reflecting the belief that they are produced by the brain. Phenomenal consciousness is then understood in terms of such qualia: A mental state is phenomenally conscious just in case it has qualia. This preliminary characterization of the target phenomenon for the new science should suffice for purposes of introducing the new science in this chapter. This characterization is then further developed in Chapter 2, relating the new science understanding of phenomenal consciousness to the philosophical literature.

I begin in Section 1.1 by showing that the new science has been seen as being new by those who engage in it. They see it as being new in large part because they set out to scientifically explain a phenomenon that has generally been ignored in the brain sciences in the wake of the cognitive revolution. As such, new scientists must establish that the phenomenon that they target actually exists. This is not an issue that new scientists have typically taken seriously, but it is the problem that I focus on starting in Chapter 3. Beyond establishing that the phenomenon of interest exists, however, new scientists must also show that this phenomenon is open to scientific explanation—that is, they must show that it is a *scientific phenomenon*. On this score the new science faces opposition from two primary directions (the *methodological direction* and the *philosophical direction*). These are detailed in Sections 1.2 and 1.3 respectively. Finally, in Sections 1.4 and 1.5, I survey a few of the more prominent figures at both the center and the fringe of the new science.

1.1 THE NEW IN THE NEW SCIENCE

The "new science" moniker is potentially misleading: It is neither the case that consciousness is a new subject of scholarly inquiry (as it is a prominent topic in philosophy), nor that it is a new topic of scientific inquiry (having occupied introspectionist psychologists, for example). In fact, we can see the new science as *reclaiming* a problem that scientists had largely abandoned in the wake of the cognitive revolution. Expressed very broadly, the problem has to do with the relation between the mind and the brain. This problem has both a long philosophical history and has been a focus of scientific research outside of the new science. The phenomenon of interest in the new science is more specific than this, however: New scientists want to understand the relation of the brain to a subset of mental states that have greatly occupied philosophers in the 20th century—those mental states held to have phenomenal qualities and thereby to be phenomenally conscious.

Using a now-standard (if frustratingly elusive) phrase in philosophy of mind, it is thought that there is "something it is like" to be in phenomenally conscious mental states; these states are taken to have distinctive "feels" that one is acquainted with and that can be expressed in first-person reports. These "feels" (phenomenal qualities or qualia) are thought to be both important and mysterious, making them a tempting target for brain researchers. Further, it is held that qualia are important both generally[10] and to biology in particular.[11] The new science aims to

[10] For example, Bernard Baars and Katherine McGovern (1996, 63) hold that "without consciousness we are nothing," while Jeffrey Gray (2004, 4) writes: "Conscious experiences constitute the most important aspect of our lives. Without them, existence would be, literally, meaningless." Or, again, in the words of Nicholas Humphrey (2006, 2): "Consciousness matters. Arguably, it matters more than anything." With regard to science in particular, Francis Crick and Christof Koch (2004, 273) state: "The explanation of consciousness is one of the major unsolved problems of modern science. After several thousand years of speculation, it would be very gratifying to find an answer to it."

[11] As Nobel Prize winning biologist Sir Francis Crick bluntly asserts (2004, xiii): "Consciousness is the major unsolved problem in biology." He then notes that "there is no present consensus on the general nature of the solution" and states his understanding of the problem: "How do what philosophers call 'qualia,' the redness of red and the painfulness of pain, arise from the concerted actions of nerve cells and their associated molecules? Can

provide a scientific explanation of these supposed qualia that are thought to be so important and yet frustratingly mysterious.

Assuming that phenomenal consciousness exists, new scientists must show that this phenomenon can be investigated scientifically. They must establish that phenomenal consciousness is a legitimate scientific phenomenon. This task places the new scientists in opposition to those who hold that phenomenal consciousness is not open to scientific investigation. Such opposition comes from two primary directions—what I call the *methodological direction* of opposition and the *philosophical direction* of opposition.

The methodological direction of opposition centers on the claim that the only data that can be legitimately used in science are objective data. This is an objection to the new science because new scientists by and large hold that to investigate phenomenal consciousness they must go beyond the objective data; in fact, they see their science as being new, in part, because they claim to use what is often referred to as "first-person data." For example, we saw above that Max Velmans holds that new scientists need to integrate the findings of traditional third-person science (what is often called *third-person data*) with the first-person evidence of our own experiences. This supposed evidence is *first-person data* and, as will be discussed in greater detail in Chapter 3, I take these data to be episodes of acquaintance.[12] Accepting this, we can

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qualia be explained by what we now know of modern science, or is some quite different kind of explanation needed? And how to approach this seemingly intractable problem?" (2004, xiii). This focus on offering a neural explanation of qualities like *redness* and *painfulness* is definitive of the new science, as we will see. As Crick puts it with long-time collaborator, Christof Koch (2003, 119): "The most difficult aspect of consciousness is the so-called 'hard problem' of qualia—the redness of red, the painfulness of pain, and so on. No one has produced any plausible explanation as to how the experience of the redness of red could arise from the actions of the brain."

[12] I use "acquaintance" here in essentially the Russellian sense (although remaining neutral on any suggestion that what one is acquainted with in perception are sense-data), as for example when he writes in the *Problems of Philosophy* (1999 [1912], 31): "We shall say that we have acquaintance with anything of which we are directly aware, without the intermediary of any process of inference or any knowledge of truths. Thus in the presence of my table I am acquainted with the sense-data that make up the appearance of my table—its colour, shape, hardness, smoothness, etc.; all these are things of which I am immediately conscious when I am seeing and touching my table.

distinguish between different types of *first-person data claims* based on what the subject of a given episode takes herself to be acquainted with. New scientists typically claim to have *first-person data about phenomenal consciousnes*s (each researcher claiming to undergo episodes in which they are acquainted with qualia). New scientists then call on these claimed episodes of acquaintance to justify interpreting the first-person reports of their subjects as reporting on qualia.[13] Each subject is thought to have their own first-person data, those data are taken to be data about their supposed phenomenally conscious mental states, and at least in certain cases their first-person reports are held to reliably report on their claimed first-person data.

New scientists must also respond to what I am calling the philosophical direction of opposition. As noted in the introduction, not only do we not know how actually to explain the supposed scientific phenomenon of phenomenal consciousness at this point, but it seems that we do not even know how possibly to explain it. Specifically, it is not clear what such an explanation should look like and, thus, not clear how we should go about crafting an explanation of phenomenal consciousness. Even accepting that the supposed phenomenon exists, this raises a potential problem: That we are scientifically ignorant with regard to phenomenal consciousness raises the possibility that explaining it is beyond our cognitive capacities (McGinn, 1991) or that our standard forms of explanation do not apply to it (Chalmers, 1995). Phrased as an objection to the possibility of explaining phenomenal consciousness scientifically, this is the philosophical direction of opposition.

The particular shade of colour that I am seeing may have many things said about it—I may say that it is brown, that it is rather dark, and so on."

[13] Of course, new scientists are not the only researchers to make use of *first-person reports* in their work; nonetheless, they are notable in their use of their use of their own first-person data to interpret such reports as reporting on phenomenal consciousness.

New scientists have noted this opposition, although they seldom take the philosophical arguments for it seriously. For example, new scientists often note that philosophers have expressed concern that phenomenal consciousness poses a *Hard Problem* in David Chalmers's terminology: The worry is that phenomenal consciousness cannot be explained in terms of mechanistic or functional interactions and that if this is correct, then it would mean that new scientists will be unable to give a satisfying neurobiological explanation of the phenomenon. While new scientists accept that phenomenal consciousness poses a hard problem—*in the sense of posing an extremely difficult problem*—they typically do not accept that it poses a Hard Problem in Chalmers's sense. They instead assert that it has not yet been shown that our standard forms of scientific explanation cannot be applied to phenomenal consciousness; they then proceed under the assumption that a compelling neurobiological explanation of it is possible.

1.2 THE METHODOLOGICAL DIRECTION OF OPPOSITION

In investigating the supposed scientific phenomenon of phenomenal consciousness, new scientists have needed to convince other scientists that explaining it is a serious scientific topic. Neuroscientist Susan Greenfield expresses this opposition nicely:

> Until relatively recently, philosophers have had a monopoly on exploring this subjective aspect of the mind: the mystery and apparent miracle of how things actually *feel* to an individual. Such flimsy, subjective phenomena are traditionally an anathema to us newcomers in the study of the brain, the scientists. Brought up as we are on the basic rule of being objective, we prefer to tinker around with the physical brain. But by disregarding the obvious yet frustrating fact that consciousness is a highly private event, scientists are throwing out the baby with the bathwater. (2000, 2)

What we find is that scientists (and philosophers) have voiced a methodological objection to the scientific study of consciousness: These critics see science as being constrained by what is intersubjectively testable and therefore eschew the use of private methods in scientific research. If science is so constrained, and if the study of phenomenal consciousness requires moving beyond public methods and their corresponding objective data, then it seems that there can be no new *science* of consciousness. As such, new scientists must either argue that public methods are sufficient for studying phenomenal consciousness or that scientific investigations can legitimately make use of private methods. Although they are not always clear on the point (as will be illustrated in Chapter 3), new scientists by and large take the latter path, accepting that the scientific study of phenomenal consciousness requires the use of first-person data.

Thus, Greenfield suggested above that a new science of consciousness is possible, but that it requires accepting the private nature of phenomenal consciousness. In general, it is held that the supposed "something it is like" that marks a given mental state as being phenomenally conscious can only be directly known by the person who has the mental state. As neuroscientist Christof Koch puts it (2004, 4):

> Consciousness is an intensely private matter. A sensation cannot be directly conveyed to somebody else but is usually circumscribed in terms of other experiences. Try to explain your experience of seeing red. You'll end up relating it to other percepts, such as "red as a sunset" or "red as a Chinese flag" (this task becomes next to impossible when communicating to a person blind from birth).

In this example, it is the *redness* that is the "something it is like" and Koch holds that this supposed phenomenal quality can only be known, directly, by the subject. As we will see, new scientists hold that the privacy of such qualia contributes to the mysteriousness of phenomenal consciousness and requires the adoption of non-standard evidence for its study.

Consider how neuroscientists Gerald Edelman and Giulio Tononi (2000, xi) express the above point:

> Consciousness has been seen as both a mystery and a source of mystery. It is one of the main targets of philosophical inquiry, but only recently has it been accepted into the family of scientific objects that are worthy of experimental investigation….
>
> There is something special about consciousness: Conscious experience arises as a result of the workings of each individual brain. It cannot be shared under direct observation, as the physicist's objects can be shared. Thus, studying consciousness presents us with a curious dilemma: Introspection alone is not scientifically satisfactory, and though people's reports about their own consciousness are useful, they cannot reveal the workings of the brain underlying them. Yet, studies of the brain proper cannot, in themselves, convey what it is like to be conscious. These constraints suggest that one must take special approaches to bring consciousness into the house of science.

Edelman and Tononi reluctantly accept that to study phenomenal consciousness one must allow that each person knows her own phenomenal consciousness through introspection (each person supposedly has her own first-person data about her own phenomenal consciousness) and that they can express this knowledge in their first-person reports. The first-person reports are themselves treated as data, but more importantly they are also taken to indicate something about the person's supposed phenomenal consciousness—the first-person reports are said to be used to infer that the subject is acquainted with various qualia. And, as we will see in Chapter 3, to make this inference new scientists must claim to call on their *own* supposed first-person data.

That a subject says this or that can, of course, be confirmed by others. The person's statements can be recorded, transcribed, and analyzed. In other words, first-person reports are third-person data—they are objective data and nobody disputes that they can legitimately be used in science. Doing so is nothing new and scientists often call on such data. Nonetheless, new scientists hold that restricting the data to the first-person reports is to throw the baby out with the bathwater (as Greenfield expressed it in the above quotation): To study phenomenal

consciousness new scientists must interpret the first-person reports as reporting on first-person data and to justify this interpretation they must call on their own supposed first-person data.

Not surprisingly given their claimed reliance on first-person data, new scientists have seen themselves as doing something that is at odds with their training, something daring, even risky. They not only tackle a topic that has been considered anathema to science, but explicitly break the venerable scientific principle of only using data collected through public methods in the process. Thus, many new scientists have seen themselves as engaging in a revolutionary endeavor. Neuropsychologist Bernard Baars is explicit on this point:

> Ever since the *nova scientia* of Galileo and Copernicus began the revolutionary rise of modern physics, new sciences have been proclaimed with some regularity. Most of these announcements turn out to be false alarms. But today we actually find ourselves at one of those rare nodal points in the evolution of human understanding: For the first time in the hundred years since William James's *Principles of Psychology*, serious brain scientists are exploring conscious experience—often under obscure labels, but now with far better evidence and theory than ever before. (1997, vii)

The comparison to the *nova scientia* is no accident. New scientists like Baars have seen themselves as pushing against an established scientific regime that is dismissive of their interests, largely because it is dismissive of their methods.[14] While the consequences have not been quite so dire as house arrest, showing an interest in phenomenal consciousness has nonetheless been seen as a risky career move. As neuroscientist Antonio Damasio put it, "studying consciousness was simply not the thing to do before you made tenure, and even after you did it was looked upon with suspicion" (1999, 7). Phrased more optimistically by Francis Crick (2004, xiv): "A few years ago one could not use the word 'consciousness' in a paper for, say, *Nature* or *Science*,

[14] Some have seemed rather incredulous about this fact. For example, Francis Crick writes (1994, 13): "Since the problem of consciousness is such a central one, and since consciousness appears mysterious, one might have expected that psychologists and neuroscientists would now direct major efforts toward understanding it. This, however, is far from being the case. The majority of modern psychologists omit any mention of the problem, although much of what they study enters into consciousness. Most modern neuroscientists ignore it."

nor in a grant application. But thankfully, times are changing, and the subject is now ripe for intensive exploration."

1.3 THE PHILOSOPHICAL DIRECTION OF OPPOSITION

As the quote from Francis Crick in the previous paragraph illustrates, new scientists have come to believe that the prospects for their revolution are promising. The same optimism infuses the responses of new scientists to the second direction of opposition that they face—the philosophical direction of opposition. The new scientists' understanding of the philosophical direction of opposition centers on the objection that phenomenal consciousness cannot be explained in the mechanistic or functional ways found in neurobiological explanations. They often express this in terms of David Chalmers's claim that phenomenal consciousness poses a Hard Problem.

The new scientists' optimism in the face of the philosophical direction of opposition is well illustrated by the opening paragraph to psychologist Jeffrey Gray's volume, *Consciousness: Creeping Up on the Hard Problem* (2004, vii):

> Consciousness has become a very fashionable topic. It wasn't always so. A paper I wrote in 1971 about what is now called the 'Hard Problem' (David Chalmers' catchy phrase, gratefully borrowed for the title of this book) received a grand total of two reprint requests. Indeed, at that time, with behaviourism still dominant in psychology and positivism in philosophy, the topic of consciousness was virtually taboo. My 1971 paper questioned the then popular view ('mind-brain identity theory') that states of consciousness could simply be identified with brain states, so bringing to a peaceful close problems that had bothered philosophers ever since they had begun putting their concerns onto papyri. To me, alas, this solution was simply a philosophical cop-out from what, in the long run, was bound to become the scientific version of the Hard Problem.

Interestingly, Gray went on to note that the new science's time had finally come (vii): "The long run may now be over. The problem of consciousness has entered science with a bang, celebrated in a spate of recent books by eminent authors (not to mention new scientific associations, new journals and hundreds upon hundreds of articles)." This sense of making progress—not necessarily in explaining the supposed scientific phenomenon of phenomenal consciousness, but in gaining acceptance for their attempts to do so—is common in the new science.

With regard to the philosophical direction of opposition, the new scientists' optimism shows itself most clearly in attempts to turn Chalmers's Hard Problem on its head: Explaining phenomenal consciousness is taken to be a difficult problem, but not one that is beyond science's ability to solve. As such, Gray suggests that the new science is focused on solving *the scientific version of the Hard Problem*; researchers in the new science aim to give a neurobiological solution to the *supposed* Hard Problem of phenomenal consciousness.

It is worth looking at Chalmers's initial discussion of the Hard Problem, as it will help us to draw out the philosophical direction of opposition. He writes (1995, 200-202):

> The easy problems of consciousness are those that seem directly susceptible to the standard methods of cognitive science, whereby a phenomenon is explained in terms of computational or neural mechanisms. The hard problems are those that seem to resist those methods….
>
> The really hard problem of consciousness is the problem of *experience*. When we think and perceive, there is a whir of information-processing, but there is also a subjective aspect. As Nagel (1974) has put it, there is *something it is like* to be a conscious organism. This subjective aspect is experience. When we see, for example, we *experience* visual sensations: the felt quality of redness, the experience of dark and light, the quality of depth in a visual field. Other experiences go along with perception in different modalities: the sound of a clarinet, the smell of mothballs. Then there are bodily sensations from pains to orgasms; mental images that are conjured up internally; the felt quality of emotion, and the experience of a stream of conscious thought. What unites all of these states is that there is something it is like to be in them. All of them are states of experience.

> It is undeniable that some organisms are subjects of experience. But the question of how it is that these systems are subjects of experience is perplexing. Why is it that when our cognitive systems engage in visual and auditory information-processing, we have visual or auditory experience: the quality of deep blue, the sensation of middle C? How can we explain why there is something it is like to entertain a mental image, or to experience an emotion? It is widely agreed that experience arises from a physical basis, but we have no good explanation of why and how it so arises. Why should physical processing give rise to a rich inner life at all? It seems objectively unreasonable that it should, and yet it does.

Taking Chalmers to be talking about phenomenal consciousness when he speaks of "experience" and about qualia when he speaks of "something it is like" or "the felt quality of redness," in saying that phenomenal consciousness poses a Hard Problem, he is saying that qualia cannot be explained in the standard mechanistic ways found in the brain sciences. Equating such mechanistic explanations with functional explanations, Chalmers continues (203): "What makes the hard problem hard and almost unique is that it goes *beyond* problems about the performance of functions." In line with this, new scientists like Gray take Chalmers to be ruling out the possibility of giving a neurobiological explanation of phenomenal consciousness *a priori*, before the scientists have had an adequate crack at solving the problem.

Central to the new scientists' understanding of the Hard Problem is the idea that Chalmers treats phenomenal consciousness as an epiphenomenal add-on—something related to the brain but also something that has no causal impact on it and that is therefore beyond what can be accounted for neurobiologically. One way to express this point is by calling on one of Chalmers's favorite thought experiments, *philosophical zombies*. Chalmers holds that we can conceive of a "zombie" that is physically identical to him, down to the smallest particle, but that lacks phenomenal consciousness (Chalmers, 1996). Such a zombie-Chalmers would have all of the same neurobiological mechanisms that the real Chalmers has and his brain would perform all of the neurobiological functions that the real Chalmers's brain does. Since zombie-Chalmers

lacks phenomenal consciousness, however, if such a zombie is conceivable—*and if conceivability implies possibility*—then phenomenal consciousness cannot be explained in terms of neurobiological mechanisms and functions: The neurobiological explanations given for Chalmers would equally apply to zombie-Chalmers.

In general, new scientists are not sympathetic to the zombie argument, often asserting that phenomenal consciousness must play a causal role in the production of behavior and, thus, that a zombie-Chalmers is not actually possible. For example, Jeffrey Gray writes (2004, 71): "There is a trivial way in which [the idea of a philosophical zombie] is so clearly wrong that it is difficult to see how anyone could ever espouse it. To begin with, books about the problem of consciousness could not be written if conscious experiences had no causal effects, for their production is one such effect." In arguing that phenomenal consciousness must play a causal role in the production of behavior, Gray is asserting that it does not pose a Hard Problem. He holds that it must be possible, at least in theory, to articulate the causal role of phenomenal consciousness and to explain how it plays this role in neurobiological terms.

Nonetheless, new scientists do not generally deny that phenomenal consciousness *currently seems* to pose a Hard Problem. That is, they by and large accept that at the present time we do not know how to give a neurobiological explanation of phenomenal consciousness. What they deny is that philosophical arguments establish that the phenomenon actually does pose a Hard Problem. New scientists do this not so much by carefully engaging with the arguments given by philosophers like Chalmers, but by optimistically emphasizing science's track record.

To illustrate, note that while Gray holds that phenomenal consciousness must play a causal role in the production of behavior, he also grants that we currently have no idea how this could be the case and takes philosophical zombies to illustrate the point (2004, 65):

> [Zombies are] a philosophical invention intended to cover the possibility that there may exist beings which act just like humankind but do not experience any qualia. It is a stark illustration of our lack of understanding of the functions of consciousness that no-one is at present sure whether zombies could or could not exist in reality. That is to say, we do not have a theory from which it can be deduced what kinds (if any) of information processing or behaviour could or could not be executed in the absence of qualia.

While Gray accepts that due to our current ignorance, phenomenal consciousness can seem to pose a Hard Problem, he denies that this will necessarily persist as scientists attempt to explain the phenomenon. As such, he replaces Chalmers's pessimistic Hard Problem with an optimistic twist on it—what he calls the scientific version of the Hard Problem. Gray writes, "there is a Hard Problem, it is a problem for science and not philosophy, and it will almost certainly require a radically new theory for its solution" (6).

The central aim of the new science is to solve Gray's scientific version of the Hard Problem; that is, to develop a compelling neurobiological explanation of the supposed scientific phenomenon of phenomenal consciousness. As we will see repeatedly in looking at the central figures in the new science in the following section (and as will distinguish them from some of the figures at the fringe of the new science discussed in Section 1.5), it is a core working assumption of these researchers that phenomenal consciousness is a biological phenomenon that can be given a biological explanation. As Nicholas Humphrey (2006, 75) writes: "Consciousness is made of a certain kind of physical activity inside the subject's head. And this activity, we can assume, has been designed by natural selection, using nothing other than the resources of a biologically evolved nervous system." As the product of physical activity in the brain, it is assumed that phenomenal consciousness is open to neurobiological explanation.

Thus, Susan Greenfield's (2000, x) central question for the new science of consciousness is, "how does the brain generate the firsthand experience of feeling, of consciousness?" Or,

again: “how exactly does nervous tissue cause consciousness?” (12). Benjamin Libet (1996, 96) asks, “how do cerebral neurons produce conscious experience?” Gerald Edelman and Giulio Tononi (2000, xi) ask: “How does consciousness arise as a result of particular neural processes and of the interactions among the brain, the body and the world?” Specifically, they ask (xii): “How can we understand different subjective states—so-called qualia—in neural terms?” In keeping with this, Edelman and Tononi state that their goal is to “describe the neural mechanisms that give rise to consciousness, to show how the general properties of consciousness emerge as a result of the properties of the brain as a complex system, to analyze the origins of subjective states or qualia” (xii). What we find again and again is that the goal of the central figures in the new science is to show how the brain supposedly causes (generates, gives rise to) qualia. In this they set themselves against the philosophical direction of opposition that finds expression in Chalmers’s Hard Problem.

1.3.1 The Hard Problem as Setting the Agenda for the New Science

While new scientists, by and large, deny Chalmers’s conclusion, his articulation of the Hard Problem was a central event in the shaping of the new science. In a way, we can see Chalmers as helping to create the new science by setting the agenda for it: The new science coalesced around the goal of giving a neurobiological solution to the problem that Chalmers said could not be solved neurobiologically. His articulation of the Hard Problem was also an important event in the renewal of interest in phenomenal consciousness in philosophy of mind over the last quarter of the 20th century. Following on Thomas Nagel’s (1974) discussion of what it is like to be conscious, this interest has often focused on phenomenal qualities and the resulting “qualia debates” have been surprisingly public, gaining attention beyond the confines of academic

philosophy. As such, it is not coincidental that the rise of the new science overlaps with this period of philosophical interest: The philosophical interest itself played a notable role in the emergence of the new science of consciousness. In fact, several of the prominent philosophical figures in the qualia debates—David Chalmers, Dan Dennett, John Searle, Ned Block, and so on—are frequently cited in the discussions in the new science.

My concern in this chapter is to investigate the new science as it has come to be seen by its central advocates. At the same time, the new science has not been static and the understanding of "consciousness" employed by these researchers has sharpened over the years. In particular, in the decade prior to Chalmers's articulation of the Hard Problem, the discussion had not yet coalesced around the core problem of explaining phenomenal consciousness. Nonetheless, there was still a clear sense that consciousness was both important and problematic. In his contribution to Blakemore and Greenfield's early volume in the new science, for example, neuroscientist Horace Barlow expressed this sentiment nicely (1987, 361): "Like many others, I feel intuitively certain that consciousness is of paramount importance, and it therefore becomes an intriguing task to search for and try to define this role."

Despite this, the scientists found alongside Barlow in that volume were rather unclear about exactly what sense of the term "consciousness" they were primarily concerned with. This is not too surprising, as the term is notoriously slippery, having many different meanings and being related to many different problems.[15] As might be expected, in the 1980s many of what later came to be called "the easy problems" were run together with the problem of explaining the

[15] As Ned Block (1995, 227) colorfully expresses the point, the concept of consciousness is a mongrel: "The concept of consciousness is a hybrid, or better, a mongrel concept: the word 'consciousness' connotes a number of different concepts and denotes a number of different phenomena. We reason about 'consciousness' using premises that apply to one of the phenomena that fall under 'consciousness,' other premises that apply to other 'consciousnesses,' and we end up with trouble."

supposed scientific phenomenon of phenomenal consciousness in the budding new science.[16] Would-be new scientists variously discussed the distinction between being awake and asleep or comatose, being conscious of something, being able to report on something, and occasionally the problem that would become central to the new science in the 1990s—explaining phenomenal consciousness.

In Blakemore and Greenfield's volume, philosopher Colin McGinn articulated this sense of the term most clearly, discussing "the 'qualitative content' of conscious experience—seeing red, feeling a pain, etc." (1987, 287). While this focus on the qualities that we are acquainted with in episodes of perception would come to dominate the emerging new science, at the time only a few authors clearly focused on this sense of the term.[17] This changed with Chalmers's articulation of the Hard Problem. He provided a description of the basic problem that many new scientists felt themselves to be struggling with, along with a catchy moniker that new scientists could adopt, even while rejecting the thrust of Chalmers's argument. In many ways these scientists were primed for the supposed problem of explaining phenomenal consciousness; many held that sensory qualities were secondary qualities—that the colors, sounds, etc., that we are

[16] As Chalmers would put the point (1995, 201): "There is not just one problem of consciousness. 'Consciousness' is an ambiguous term, referring to many different phenomena. Each of these phenomena needs to be explained, but some are easier to explain than others." For the easy problems, he lists: "the ability to discriminate, categorize, and react to environmental stimuli; the integration of information by a cognitive system; the reportability of mental states; the ability of a system to access its own internal states; the focus of attention; the deliberate control of behaviour; the difference between wakefulness and sleep." (201).

[17] For example, a few of the scientists contributing to Blakemore and Greenfield's volume clearly felt the pull of the problem of explaining phenomenal consciousness. For example, Barlow went on to discuss the "more elementary forms of consciousness such as 'raw' redness" (1987, 369). Despite offering an account of "consciousness," he saw such subjective sensations as remaining deeply mysterious: "Having defended the view that consciousness involves communication, even in the case of raw sensations, I want to make it clear that I do not think this communicative role explains it. There would probably be something mysterious about the subjective sensation of redness that would remain after one had a complete account of the underlying mechanisms, even if this account included a description of the mechanisms relating it to social interaction and communication. This 'something' seems likely to lie beyond the range of current scientific approaches, but linking it to the extraordinary complexities of social interaction at least relieves one of the urge to attempt explanations in over-simple physiological terms." (372).

acquainted with do not exist in the external physical world, but are created by the brain—and were thus ready to investigate qualia.

The result was that the Hard Problem provided a focus for the new science, distinguishing it from the traditional brain sciences with their easy problems.[18] Physician Stuart Hameroff expresses this beautifully in an interview with Susan Blackmore (2005, 115-116):

> It was at Tucson 1—the first Tucson conference—in 1994. It was the first ever international interdisciplinary conference on consciousness and we had it all planned out. The first day was philosophy, the second day was neuroscience, the third day was cognitive science, and so on.
>
> On the first day a very well known, famous philosopher spoke first and he gave a very boring talk, the second speaker was kind of dull, and so I was getting worried—like the playwright's opening night, you know—that this was gonna flop. Then the third speaker was an unknown young philosopher named David Chalmers, who got up there with hair down to his waist, in a T-shirt and jeans, and gave the best talk I'd ever heard on the topic of consciousness. He talked about the easy problems of consciousness (which include reporting, perception, and things like that), and then the hard problem of conscious experience, which is 'what it's like to be', or qualia, or raw sensations.
>
> After that there was a coffee break and I went out among the people, as one of the organizers of the conference, listening in like a playwright on opening night. And people were just buzzing about Dave's talk and the "hard problem," as he called it. I think that moment really galvanized an international movement in consciousness, because the problem was identified. From then on we knew what distinguished the field from cognitive science and other fields that deal with how the brain works. They don't attempt to grasp the difficult problem of consciousness itself.

As Hameroff captures, there has been a general sense that Chalmers had articulated the problem that a few brain scientists had been concerned with beginning roughly a decade earlier. And there was a sense that it was their concern with this problem that distinguished the emerging new science of consciousness from the related brain sciences. The exact sense in which the new

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[18] Let me, of course, hasten to add that these problems—problems such as how we are able to discriminate between, categorize, and then react to environmental stimuli—are not in themselves *easy* (far from it); rather, they are only taken to be easy in comparison to the problem of explaining phenomenal consciousness.

science is *new* had been defined: The new science aims to solve the *extremely difficult* problem of scientifically explaining the supposed phenomenon of phenomenal consciousness.

1.4 THE CENTER OF THE NEW SCIENCE

We have just seen that a growing body of brain scientists see themselves as part of a new discipline aimed at offering a biological explanation of the supposed scientific phenomenon of phenomenal consciousness. This science is seen as being new both because of the (supposed) phenomenon it targets and the (supposed) data that it employs in investigating it. Before proceeding it is worth considering a few of the prominent figures in this new science of consciousness. I do so by distinguishing between some central brain scientists who think that a biological explanation of phenomenal consciousness can be given and those figures who think that the problem requires the acceptance of some form of dualism or the adoption of new physical principles. I begin with the central figures and a natural place to start is with Sir Francis Crick, Nobel laureate and co-discoverer of DNA.

1.4.1 Francis Crick

In many ways, Francis Crick signaled the arrival of the new science of consciousness with his popular volume, *The Astonishing Hypothesis: The Scientific Search for the Soul* (1994). In the preface to that volume he wrote that “the message of this book is that now is the time to think scientifically about consciousness (and its relationship, if any, to the hypothetical immortal soul) and, most important of all, the time to start the *experimental* study of consciousness in a serious

and deliberate way" (xii). The book also offers a useful illustration of the main themes of the new science. In considering Crick's call for the experimental study of consciousness there are a number of questions to be asked. Chief amongst these: What is meant by "consciousness"? Why think that the brain sciences have ignored consciousness or that a new science is needed to tackle it? And, why think that consciousness is an actual phenomenon deserving of study?

To begin: What does Francis Crick mean by the term "consciousness"? Unfortunately, he declines to give a definition, preferring to offer examples. This is a strategy that we will encounter over and over again.[19] Crick writes:

> You do not win battles by debating exactly what is meant by the word battle. You need to have good troops, good weapons, a good strategy, and then hit the enemy hard. The same applies to solving a difficult scientific problem. (1994, xi)

The goal of the new science of consciousness is not to *be conscious*, however, but to *understand consciousness*; and, while, defining "battle" is unlikely to help you fight them, it seems plausible that this will help you study them. That is, it is reasonable to hold that a clear articulation of the phenomenon of interest is central to the study of that phenomenon. In fact, Crick accepts this. As he writes later in the book, "to come to grips with the problem of consciousness, we first need to know what we have to explain" (13). So, again, we can fruitfully ask: What does Crick mean by the term "consciousness"?

Crick holds that "in a general way we all know what consciousness is like" (1994, 13); he writes that "everyone has a rough idea of what is meant by consciousness" (20). Despite this, no especially clear specification is forthcoming, although the view of consciousness discussed

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[19] In fact, some deny that a proper definition can be given. For example, in responding to the question of what's so mysterious about consciousness, psychologist Susan Greenfield responds: "The fact that it's a subjective phenomenon that we can't really define properly. Everyone knows what it is, but we can't use the normal operational definitions for defining it; and therefore it's very hard to know how to even frame the question as to how a subjective inner state is associated with something physical." (in Blackmore, 2005, 92).

above (the *qualia view*) can be gleaned from the text.[20] One hint of what Crick means can be extracted from his view that contemporary brain science has ignored consciousness. Given this it is initially surprising to find Crick focusing on "some of the problems of the visual system of mammals—that is, how we see things" (23); this is surprising because vision is *not* a topic that has been ignored by modern psychology and neuroscience. As Crick notes (23-24):

> There are two rather surprising aspects of our present knowledge of the visual system. The first is how much we already know—by any standards the amount is enormous. Whole courses are given on the psychology of vision (for example, under what conditions apparently smooth movement is produced by the rapid succession of still pictures on the cinema screen), the physiology of vision (the structure and behavior of the eye and the relevant parts of the brain), and the molecular and cell biology of vision (nerve cells and their many component molecules). This knowledge has been acquired by the painstaking efforts of many experimenters and theorists, over many years, studying both humans and animals.

This is all straightforwardly work on how we see things. There is of course still much that we do not know and a great deal more work to be done. But, what major problem in this area is simply being ignored? Crick continues:

> The other surprising thing is that, in spite of all this work, we really have no clear idea how we see anything. This fact is usually concealed from the students who take such courses. Surely after all that careful work and all those elaborate arguments it would be bad form to suggest that we still lack any clear scientific understanding of the process of vision. And yet, by the standards of the exact sciences (such as physics, chemistry, and molecular biology), we do not yet know, even in outline, how our brains produce the vivid visual awareness that we take so much for granted. (1994, 24)

What is this "vivid visual awareness" that is produced by the brain and that has been ignored by mainstream psychology and neuroscience?

The obvious suggestion is that Crick is talking about phenomenal consciousness and phenomenal qualities, a suggestion that is born out by his subsequent work on the topic, as seen in the quotes given above (e.g., 2004, xiii). Specifically, it seems that he holds that vision

[20] Note that Crick's volume was written prior to Chalmers's articulation of the Hard Problem.

involves the production of a colored, multi-dimensional model of the world that is (in some sense) viewed, not by a Cartesian soul, but by the brain itself (1994, 24-25):

> Given this hypothesis [that "it's all done by neurons"], *the problem of seeing takes on a totally new character*. In short, there must be structures or operations in the brain that, in some mysterious way, behave as if they correspond somewhat to the mental picture of the homunculus. But what could they possibly be?

The problem that Crick targets is then to give a naturalistic explanation of these supposed mental pictures—a neuronal explanation of the "vivid internal picture of the external world" that each of us is thought to have (9).

This "problem" of how the brain produces vivid internal pictures of the world in visual perception is an instance of the problem of explaining phenomenal consciousness. Crick is concerned with how neural activity supposedly gives rise to the various qualities that we seem to be acquainted with in visual perception:

> Philosophers have been especially concerned with the problem of qualia – for example, how to explain the redness of red or the painfulness of pain. This is a very thorny issue. The problem springs from the fact that the redness of red that I perceive so vividly cannot be precisely communicated to another human being…. This does not mean that, in the fullness of time, it may not be possible to explain to you the *neural correlate* of your seeing red. In other words, we may be able to say that you perceive red if and only if certain neurons (and/or molecules) in your head behave in a certain way. This may, or may not, suggest *why* you experience the vivid sensation of color and why one sort of neural behavior necessarily makes you see red while another makes you see blue, rather than vice versa. (1994, 9)

The new science is set as *new*, by Crick, because it targets this philosophical problem.

1.4.2 Gerald Edelman

Crick's focus on explaining qualia is also found in other prominent new scientists. Consider the views of another Nobel laureate, neuroscientist Gerald Edelman. In the preface to his popular

volume, *Wider than the Sky: The Phenomenal Gift of Consciousness* (2004), Edelman writes: "Over the past twenty-five years, I have written a number of books and papers on the subject. My conviction that consciousness is susceptible to scientific study has been supported by a sharp increase in the number of publications and scientific meetings on the subject." (xi). Specifically, Edelman holds that phenomenal consciousness is susceptible to scientific explanation:

> A scientific analysis of consciousness must answer the question: How can the firing of neurons give rise to subjective sensations, thoughts, and emotions? To some, the two domains are so disparate as to be irreconcilable. A scientific explanation must provide a causal account of the connection between these domains so that properties in one domain may be understood in terms of events in the other. This is the task I have set myself in this small book. (xiii)

Edelman's goal is to develop a biological theory of phenomenal consciousness; that is, "to show how a neural mechanism entails a subjective conscious state, or quale, as it is called" (3).[21]

In other words, like Crick, Edelman is ultimately concerned with offering a solution to the scientific version of the Hard Problem discussed in the previous section:

> I will attempt to explain how conscious scenes and qualia arise as a result of brain dynamics and experience. At the outset, though, it is important to understand what a scientific explanation of conscious properties can and cannot do. The issue concerns the so-called explanatory gap that arises from the remarkable differences between brain structure in the material world and the properties of qualia-laden experience. How can the firing of neurons, however complex, give rise to feelings, qualities, thoughts, and emotions? Some observers consider the two realms so widely divergent as to be impossible to reconcile. The key task of a scientific description of consciousness is to give a causal account of the relationship between these domains so that properties in one domain may be understood in terms of events in the other. (2004, 11–12)

Edelman wants to explain how the brain produces the qualia that he thinks make up the unified scenes that we are acquainted with in perception. As such, he is not just concerned with how people are able to discriminate between objects in the world, how they can recognize or respond

[21] Note that in this quote Edelman seems to use the term "quale"—the singular of "qualia"—to refer to a phenomenally conscious mental state, not a quality of that mental state (although elsewhere, such as in the quote below, he used "qualia" in the more standard sense).

to this or that, but with how the brain supposedly creates the bundles of qualities that we are acquainted with.[22] And, for Edelman, this means that the scientists must make use of their own claimed first-person data to interpret the first-person reports of other people as expressing their acquaintance with phenomenal qualities: "The study of consciousness must recognize the first-person, or subjective, point of view. As a third-person observer studying another person's consciousness, I must assume that that person has mental processes similar to my own." (140).[23]

1.4.3 V. S. Ramachandran

A similar understanding of the new science is found in neuropsychologist V. S. Ramachandran's recent volume *A Brief Tour of Human Consciousness* (2004). While Ramachandran's approach to consciousness can be distinguished from those scientists we have discussed so far, in that he focuses on what we can learn from the study of neurological dysfunction, his goal is in keeping with the core of the new science. He writes:

> The overall strategy is to investigate neurological dysfunction caused by a change in a small part of a patient's brain and ask: Why does this patient display these curious symptoms? What do the symptoms tell us about the workings of the normal brain? Can a careful study of these patients help us explain how the

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[22] For example, he writes in an earlier volume (1992, 114): "Qualia constitute the collection of personal or subjective experiences, feelings, and sensations that accompany awareness. They are phenomenal states – 'how things seem to us' as human beings. For example, the 'redness' of a red object is a quale. Qualia are discriminable parts of a mental scene that nonetheless has an overall unity. They may range in intensity and clarity from 'raw feels' to highly refined discriminanda. These sensations may be very precise when they accompany perceptual experiences; in the absence of perception, they may be more or less diffuse but nonetheless discernible as 'visual,' 'auditory,' and so on."

[23] As Edelman emphasizes in his 1992 volume: "Given the fact that qualia are experienced directly only by single individuals, our methodological difficulty becomes obvious. *We cannot construct a phenomenal psychology that can be shared in the same way as a physics can be shared*." (114). He makes clear in that volume that the new science is in a bit of a bind. It aims to be both scientific and to investigate a phenomenon that is not open to standard intersubjectively verification. Edelman writes: "But in investigation consciousness, we cannot ignore qualia. The dilemma is that phenomenal experience is a first-person matter, and this seems at first glance, to prevent the formulation of a completely objective or causal account." (1992, 114-115).

> activity of a hundred billion nerve cells in the brain gives rise to all the richness of our conscious experience? (ix)

Again, it is the qualities that we are acquainted with in perception that are the central concern (as signaled in the above passage by the term "richness"). Ramachandran goes on to ask (25): "How does the activity of neurons—mere wisps of protoplasm—in the visual areas of the brain give rise to all the richness of conscious experience, the redness of red or blueness of blue?"

As with Crick and Edelman, Ramachandran associates sensory qualities like redness with the brain, taking them to be produced by the brain; as such, it is natural for him to ask why our making visual discriminations is accompanied by acquaintance with such mysterious phenomenal qualities. Ramachandran refers to the underlying problem as the "qualia question" and it has a familiar focus. He writes:

> The qualia question is, how does the flux of ions in little bits of jelly—the neurons—in our brains give rise to the redness of red, the flavor of Marmite or paneer tikka masala or wine? Matter and mind seem so utterly unlike each other. One way out of this dilemma is to think of them really as two different ways of describing the world, each of which is complete in itself. Just as we can describe light as made up either of particles or as waves—and there's no point in asking which description is correct, because they both are, even though the two seem utterly dissimilar—the same may be true of mental and physical events in the brain. (2004, 96)

Ramachandran's ultimate goal is to produce an account of how the brain produces such supposed phenomenal qualities as colors and flavors.

Any number of researchers could be added to this section to further illustrate the central trends of the new science. Notably, an extended discussion could be given of the figures mentioned earlier—such as Baars, Greenfield, Koch, Tononi, Velmans, Damasio, Gray, and Humphrey, among others—to much the same effect. It is perhaps more fruitful, however, to turn instead to some important figures that are associated with the new science, but who diverge in one way or another from the central themes of the new science illustrated above.

1.5 THE FRINGE OF THE NEW SCIENCE

We have just considered several of the most prominent advocates of the new science. Each of these scientists has had a hand in forming the central views of the discipline. But the new science can be construed more or less broadly. In addition to such central figures one could readily include a number of prominent researchers who have advocated for a new science of consciousness of some sort, but whose views fall outside the mainstream thinking of the discipline. For example, one could include brain scientists like John Eccles who deny that phenomenal consciousness can be fully explained in neurobiological terms. In this, Eccles can be seen as accepting that phenomenal consciousness poses a Hard Problem in Chalmers's sense, as opposed to adopting the scientific version of the Hard Problem that is the target for mainstream new scientists. Alternatively, one could include prominent physicists like Henry Stapp and Roger Penrose who link the seeming mystery of consciousness to the paradoxes of modern physics. While my focus will be on the more central cases of brain scientists operating with a naturalistic (or non-dualistic) framework, as reviewed in the previous three sections, outliers like Eccles and Penrose have also played a role in shaping the new science. In this section I briefly review a few key figures at the fringe of the new science.

1.5.1 John Eccles

While the work on phenomenal consciousness by Nobel Prize winning neuroscientist Sir John Eccles primarily shows up in the new science literature by way of contrast (Eccles being a firm

interactionist dualist),[24] his work has nonetheless been influential in generating interest about consciousness in the brain sciences and his conception of consciousness is informative. Following on the work of Karl Popper (Popper and Eccles, 1977; Popper, 1994), Eccles holds that there is a "world of conscious experiences, or of the mind, not only of our immediate perceptual experiences, visual, auditory, tactile, pain, hunger, anger, joy, fear, etc., but also of our memories, imaginings, thoughts, planned actions, and centrally thereto of our unique self as an experiencing being" (1994, 4; see also, Eccles, 1989). The focus is largely on episodes of perception, and, as he states in his joint volume with Popper, his "interest is focused on the neural events that are necessary for giving a conscious experience" (1977, 252). Eccles spells this out for vision in the following terms: "In some quite mysterious way the retinal picture appears in conscious perception, but nowhere in the brain can there be found neurons that respond specifically to even a small zone of the retinal image or the observed picture." (261).

While the above passages are in line with the views of mainstream proponents of the new science, Eccles also holds views that diverge quite significantly from theirs. Thus, a primary concern of his is that "the dominant theories of the mind-brain relationship that are today held by neuroscientists are purely materialistic in the sense that the brain is given complete mastery" (1994, 4). Not surprisingly, Eccles goes on to ridicule Francis Crick and Christof Koch's (1990) hope that following on developments in the brain sciences "much of the mystery of consciousness may disappear." He considers this to be "science fiction of a blatant sort" (1994, 30). Later Eccles scorns the belief that "consciousness can be downgraded to a materialist performance," writing (171): "So contemporary philosophy and neurophilosophy become a materialist cacophony of structuralism and functionalism culminating in roboticism!"

[24] As Colin Blakemore and Susan Greenfield note, "most brain researchers of today would find the explicit dualism of Descartes little more than an historical joke" (1987, 289).

1.5.2 Physicists

A number of physicists have also been active in pushing for a scientific theory of consciousness. For example, Henry Stapp argues in his volume, *Mind, Matter, and Quantum Mechanics* (1993), that there is a link between quantum mechanics and phenomenal consciousness. Specifically, he holds that "the decisive break in the problem of mind and matter was the advent of quantum theory" (112). In his opinion this has opened up the possibility of making scientific progress on the problem of consciousness:

> the complete absence of any rational place for consciousness in the classical conception of nature that dominated science for over three hundred years has left a deep imprint on science, in the form of a tradition that asserts that consciousness must lie forever outside the domain of science. That prejudice survives even today, in spite of the fact that efforts to comprehend quantum theory have persistently led to an entanglement of quantum theory with consciousness, and in spite of the fact that the growing mass of empirical data relating conscious process to brain process now cries out for scientific explanation. (118)

According to Stapp, consciousness has not been adequately addressed by scientists, not so much because of their physicalist outlook, but because they are operating with the wrong physics. Not surprisingly, Stapp is concerned with qualia; for example, he writes (152): "We are conscious of, for example, Beethoven symphonies, and sunsets. How can such a felt experience be the 'feel' of some events in the brain?"

Of course, Stapp is not alone among physicists in arguing that phenomenal consciousness cannot be adequately dealt with using the tools of classical mechanics.[25] Perhaps the most

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[25] For example, Amit Goswami bemoans that "we have come to accept materialism dogmatically, despite its failure to account for the most familiar experiences of our daily lives" (1993, 1). Against this, he puts forth a mysticism-inspired brand of idealism (51): "According to monistic idealism, the consciousness of the subject in a subject-object experience is the same consciousness that is the ground of all being. Therefore, consciousness is unitive. There is only one subject-consciousness, and we are that consciousness." Similarly, Evan Harris Walker aims to toll "the death knell of the false doctrine of materialism, writing that "quantum mechanics requires that we take into account the fact that conscious observers exist as unique entities, as a part of the total reality of the world" (2000, 133). Not

prominent work linking this supposed phenomenon to modern physics is by mathematician and physicist Sir Roger Penrose (1989, 1994, 1997). In his (1997) volume he argues that consciousness is a mystery, being resistant to physical explanation:

> It seems to me that there is a fundamental problem with the idea that mentality arises out of physicality—this is something which philosophers worry about for very good reasons. The things we talk about in physics are matter, physical things, massive objects, particles, space, time, energy and so on. How could our feelings, our perception of redness, or of happiness have anything to do with physics? I regard this as a mystery. (94)

Although Penrose declines to define what he means by "consciousness," his examples suggest that it is the concept of phenomenal consciousness that he has in mind.[26] This is perhaps most clear in collaborator Stuart Hameroff's expression of their shared view. Hameroff holds that the supposed production of qualities like colors by brains is the central concern:

> So I would say that the image you have in your brain right now of looking at me, trying to understand what I'm saying, the surrounding, and our environment, is like a painting (if you will allow me a metaphor) and the qualia, the proto-conscious qualia that I'm talking about, are like the paints on a palette. The artist doing a painting has a palette with all these different, simple, primitive colours, and he or she integrates them into a complex scene. (in Blackmore, 2005, 119)

Hameroff believes that "our brains are able to access the qualia at this fundamental level, but only a particular type of quantum process is able to do that" (119).

In this vein it should be noted that philosophers have also explored the links between modern physics and consciousness. Notably, Michael Lockwood (1991) opens with a discussion of why he is writing about these two subjects in one book, answering that they inform each other.

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surprisingly, the problem he focuses on is the problem of qualia: "Consciousness is the blue of the sky; it is C#, the taste of sweetness as it fills the mind, the smell of gardenia, the pain of love that is lost, the experienced murmuring brook as it is, the moon reflected in the pool. Consciousness is also the experience of images, ideas, words, and thoughts that play on the mind as we read a novel, as we remember the past, or as you now read these words. It is the feel of this book's cover, the texture of the paper, the weight of the volume, the space that separates your eyes from the black type on this page." (151).

[26] Penrose writes (1997, 98-99): "What is *consciousness*? Well, I don't know how to define it. I think this is not the moment to define consciousness, since we don't know what it is. I believe that it is a physically accessible concept; yet, to define it would probably be to define the wrong thing."

First, quantum mechanics challenges the philosophical tendency to "take matter for granted, assuming that it is mind rather than matter that is philosophically problematic" (ix). He writes:

> Quantum mechanics has robbed matter of its conceptual quite as much as its literal solidity. Mind and matter are alike in being profoundly mysterious, philosophically speaking. And what the mind-body problem calls for, almost certainly, is a *mutual* accommodation: one which involves conceptual adjustment on both sides of the mind-body divide. (x)

Second, he argues that consciousness has a role to play in understanding quantum mechanics: "What the quantum-mechanical measurement problem is really alerting us to, I shall argue, is a deep problem as to how consciousness (specifically, the consciousness of the observer) fits into, or maps on to, the physical world." (x). While Lockwood diverges from the central figures in the new science in that he looks to quantum mechanics for a solution, he targets the same problem. Lockwood refers to this as "the problem of phenomenal qualities," by which he means the problem of explaining how the brain supposedly produces the qualities that he is acquainted with in perception—"for example, the red that is so to speak, *in me* when I look at that tomato—what, for a Hobbesian brand of materialist, might be dubbed 'the red in the head'" (6).

1.6 CONCLUSION

In this chapter I have shown that a new science of consciousness has developed over the past quarter of a century and have explored the central tenets of this discipline. I have focused on the views of the mainstream proponents of the new science, showing that these researchers aim to give a neurobiological explanation of what they take to be a great scientific mystery—the claimed occurrence of phenomenally conscious mental states and their qualia. The problem of giving a compelling scientific explanation of this supposed phenomenon was then cast against

two directions of opposition—the methodological direction and the philosophical direction. The methodological direction concerns the use of private methods in science, while the philosophical direction was drawn out through a discussion of David Chalmers's Hard Problem of consciousness. We saw that while new scientists worry about the use of private methods, they nonetheless hold that they have first-person data and assert that such data can legitimately be used in science. Similarly, while the central proponents of the new science do indeed find the problem of explaining phenomenal consciousness to be hard, they take this as a *challenge* not as a *prohibition*. The challenge that these new scientists take up is to explain how the brain supposedly produces sensory qualities.

2.0 QUALIA IN THE NEW SCIENCE AND PHILOSOPHY

We saw in Chapter 1 that a growing body of researchers is involved in what I have called the new science of consciousness. The new science is *new* not only because these scientists aim to explore a supposed scientific phenomenon that has been largely ignored in the brain sciences in the wake of the cognitive revolution, but because they claim to employ first-person data in studying it. Further, we saw that new scientists are explicitly grappling with what has been thought to be a prominent philosophical problem and that their choice of vocabulary reflects this. Bluntly, they want to explain how brains supposedly produce phenomenally conscious mental states and their qualia. We have seen a number of examples of how new scientists use terms like "qualia" and have operated with a preliminary characterization of them. But this is an area where it is best to be clear and explicit. As Barry Maund wisely notes (2008, 269): "Any discussion of qualia that hopes to make progress needs to explain the terminology carefully." My goal in this chapter is therefore to develop the preliminary characterization given in Chapter 1, then to relate it to the philosophical discussions that the new science draws on.

Here is how I will proceed. In Section 2.1, I articulate the standard understanding of "qualia" in the new science. In Section 2.2, I turn to the philosophical discussions, showing that the standard understanding can be identified in that literature as well, although "qualia" is also used in other ways. In Section 2.3, I consider two issues related to this terminological diversity. Finally, in Section 2.4, I illustrate that the meaning of "qualia" is typically drawn out through

examples in both the new science and philosophy, arguing that these examples indicate that a broad range of mental states are thought to have qualia.

2.1 THE STANDARD UNDERSTANDING IN THE NEW SCIENCE

In Chapter 1, I gave a preliminary characterization of the supposed scientific phenomenon of phenomenal consciousness that new scientists aim to explain neurobiologically. That preliminary characterization needs to be fleshed out.

There is a standard understanding of the phenomenon that can be drawn out of the new science literature. On this understanding, a creature is phenomenally conscious if it has *phenomenally conscious mental states*, where this indicates that there is "something it is like" for the creature to have those states. Prototypical examples of such states are seeing red and feeling pain. The "something it is like" is then typically specified by noting various qualities that we are acquainted with—the redness that is seen or the painfulness that is felt, for example. These qualities are thought to be directly produced by the brain.[27, 28] This is often expressed by saying that the qualities at issue are qualities of mental states or that the mental states have those qualities, although it is unclear exactly how the mental states are thought to possess the qualities (it is not typically held that mental states are red, for instance). The important point for our purposes, however, is that neuronal activity is thought to be necessary for the existence of the qualities at

[27] By "directly" I mean to exclude cases such as the boxer who produces pain in an opponent by punching her, for instance: While the boxer's brain is involved in producing the behaviors that lead to the pain, new scientists hold that the opponent's brain gives rise to the qualia of painfulness that she feels subsequent to the damage done by the boxer.

[28] While I will follow the new scientists in referring to qualia as being produced by *brains*, this reflects their focus on certain animals and their belief that in these animals neuronal activity gives rise to the mind. More neutrally we might replace "brain" with "mind" in the description of qualia.

issue because it is held that it produces those qualities. It is in virtue of this belief that the qualities are said to be *qualia*. As such, not all qualities are qualia: For a quality to be a quale, the brain must give rise to it. I will express this by saying that qualia are *mental*.

Being mental, qualia are *mind-dependent*: Since qualia are qualities that are directly produced by brains, their existence depends on those brains. While being mind-dependent is necessary for being a quale (if something is *mind-independent*, then it is not a quale), it is not sufficient for being a quale—something might be mind-dependent without being directly produced by a brain. Further, a quality might be directly produced by a brain without it being a quale. Being mental is not sufficient for a quality to be a quale; rather, being mental is necessary for a quality to be a quale on the standard understanding in the new science. As such, we also need to specify which supposed mental qualities are thought to be qualia.

I find that specifying which qualities are thought to be qualia is one purpose of the lists of examples that are so frequently given in the literature—examples like the redness seen in looking at a ripe tomato or the painfulness felt in stubbing one's toe. We saw several examples of such lists in Chapter 1 and this will be illustrated further in Section 2.4. What are typically noted are particular episodes of the author being acquainted with qualities and these qualities are of some familiar types: Specifically, the basic types that we are acquainted with in normal waking perception, where this is construed broadly so as to include not just vision, audition, and so on, but also bodily sensations such as pains and hunger, felt emotions, and felt moods.[29] I will refer to the qualities noted in this way as *sensory qualities*. Doing so, we can say that the standard understanding of "qualia" in the new science is that they are sensory qualities that are mental.

[29] Note, however, that new scientists also hold that we can be acquainted with these types of qualities in other circumstances as well, such as during dreams or hallucinations.

Three further points of clarification are in order. First, while sensory qualities are often illustrated via particular episodes of acquaintance, I will treat acquaintance separately. In other words, I leave the question open as to whether sensory qualities exist when nobody is acquainted with them. Sensory qualities might be thought to exist without anybody being acquainted with them in at least a couple of ways, depending on whether sensory qualities are thought to be mental or instead mind-independent: It could be held that sensory qualities are mind-independent qualities of entities in the world outside the brain and that we can become acquainted with those qualities through perception; alternatively, it could be held that sensory qualities are mental, but that acquaintance with them involves something more than the brain directly producing those qualities—something that could be missing in some cases (e.g., Block, 2007). While the latter view is an option for new scientists, it is not one that they generally embrace and I will largely ignore the possibility of qualia that nobody is acquainted with in what follows.

Second, while mind-independent sensory qualities are not qualia (not being directly produced by brains), they might nonetheless be said to be "mind-dependent" in another sense: Insofar as we identify sensory qualities by being acquainted with them, and refer to them in terms of types that are derived from our acquaintance, sensory qualities might be said to be "mind-dependent" in the sense that they are instances of mind-dependent types. The idea is that we are not acquainted with sensory qualities just as they are in the world, but that we are acquainted with them as being members of non-natural kinds—kinds that reflect the peculiarities of our perceptual systems.

To illustrate, suppose that we had an objective way to describe sensory qualities that was not based on our own personal episodes of acquaintance with them. Suppose, further, that these descriptions were more finely grained than those we can give by just relying on our own personal

episodes of acquaintance. We might refer to these fine-grained sensory qualities as *simple sensory qualities* (leaving open the possibility that in time we might arrive at better or more finely grained descriptions). Compared to these simple sensory qualities, sensory qualities individuated by means of acquaintance would be relatively coarse: Relying on acquaintance alone we would not be able to distinguish between all of the simple sensory qualities described. Thus, when a given person is acquainted with a sensory quality as an instance of specific type, it might be that the type can be described in terms of a set of simple sensory qualities that the person cannot distinguish between. (Alternatively, it might be that this type is best described in terms of combinations of simple sensory qualities and that the person cannot distinguish between those combinations.) If this set (or set of sets) of simple sensory qualities is not a grouping that we would have considered natural based just on the objective system used to describe those qualities, however, then we might conclude that the sensory quality type is not a natural kind—to describe the type we would need to investigate the perceptual discriminations that the person makes. As such, we might say that the sensory quality that she is acquainted with is "mind-dependent" in the sense that she is acquainted with it as being of a type that would not exist if not for her brain being the way that it is.

That new scientists hold that qualia are mind-dependent—in the sense that follows from their being directly produced by brains (i.e., being mental), not in the alternative sense of "mind-dependent" noted above—should be clear from the discussion in Chapter 1. Specifically, we saw that new scientists hold that qualia pose a mystery for biology in that it is currently unclear whether our standard forms of mechanistic and functional explanation apply to them. In other words, new scientists accept that qualia *seem* to pose a Hard Problem. If qualia were simply thought to be "mind-dependent" in the sense of our being acquainted with sensory qualities as

instances of mind-dependent types, however, then they would not even *seem* to pose a Hard Problem: We currently understand a great deal about how pattern recognition can be performed mechanistically and have built machines that can classify inputs with respect to whatever types we can specify; further, we know a good deal about how our brains do this in perception.

The third clarification that should be made is that it is possible to hold that a sensory quality is represented by a mental state and yet to deny that it is a quale. To illustrate, note that representations are not typically instances of the type of thing they represent (for example, a photograph of the Eiffel Tower is not itself a tower). Further, the things represented need not have all of the properties that their representations do (for example, the Eiffel Tower is not thin or rectangular). As such, it is possible to hold that a sensory quality is represented by a brain, taking the representation to be mental, and yet to deny that the sensory quality represented is mental. In other words, to be a quale a sensory quality must *itself* be directly produced by a brain, not merely be represented by a mental state that was directly produced by a brain.

Of course, one could hold that sensory qualities are directly produced by brains *and* that this involves the production of representational mental states. For example, it might be held that mental states have sensory qualities in virtue of representing other qualities, possibly including mind-independent qualities out there in the world (such as the light reflected by an object in the perceiver's environment, for example). Or it might be held that mental states have sensory qualities in virtue of those mental states, or sensory qualities, being represented by yet other mental states. Regardless of how this type of view is spelled out, though, the important point to note for our purposes is that such representational accounts take sensory qualities to be directly produced by brains and then seek to explain those qualia at least in part in terms of representational mental states. One can accept that sensory qualities are sometimes represented

by mental states, however, without holding that their being so represented plays a role in the production of the sensory qualities.

2.1.1 Locating the Standard Understanding in the New Science

I hold that the characterization of qualia as sensory qualities that are mental reasonably captures how new scientists understand the term and that this characterization can legitimately be said to capture the *standard understanding* in the new science. That this is the case is sometimes difficult to see in the new science literature, however. One reason is that terms like "qualia" are sometimes used indiscriminately to refer to both mental states and their qualities.[30] A second reason is that new scientists seldom explicitly talk about mental states, instead tending to use the term "experience" (variously discussing "subjective experiences," "conscious experiences," "phenomenal experiences," and so on). While this can potentially generate confusion, the key point to note is that the "experiences" that new scientists are interested in are taken to be directly created by or to arise from the experiencing subject's brain; as such, they can be readily discussed in terms of phenomenally conscious mental states. Further, the new scientists want to explain "what it is like" to have such supposed phenomenally conscious mental states and this is indicated by noting the sensory qualities that we are acquainted with in supposedly having those mental states. In other words, they want to explain the presumed occurrence of qualia on the standard understanding detailed above.

[30] We saw an example in Chapter 1 for a new scientist (Gerald Edelman). This sometimes occurs in the philosophy of mind literature as well. For example, John Searle writes that "the term for qualitative states is 'qualia'" (2004, 59).

This is most clear if we consider how the use of "experience" and "what it is like" by new scientists contrasts with their use in ordinary conversation. Consider the following entries given for "experience" in the *New Oxford American Dictionary, Second Edition*:

> n. An event or occurrence that leaves an impression on someone: *for the younger players it has been a learning experience*.
>
> v. [trans.] Encounter or undergo (an event or occurrence): *the company is experiencing difficulties*.

Both entries involve an agent participating in or observing an event; when the term is used as a noun, it specifies the event and when it is used as a verb, it specifies the agent's participation in or observation of that event. Imagine the following event: You are looking at a lush field of wild flowers and at one brilliant red flower in particular. For most of us, this would be considered a pleasant *experience*. Here the experience is just the event, the episode of your life in which you looked at the flowers. It is pleasant because you are *experiencing* a beautiful scene. Here we focus on your participation in the event, on your seeing the flowers or your *experience of* the flowers. This event extends beyond you; while you are crucial to the experience, as participant, the field and the flowers are not part of you—they are what you are experiencing and others could readily join you and share in this pleasant experience. The experience itself, on this common understanding, is not well described as a mental state, even though mental states are part of it.

Likewise, phrases such as Thomas Nagel's (1974) "what it is like" have a related neutral sense when asked of a given experience (on the everyday use of the term). "What was it like to look at the field of wild flowers?" "It was pleasant; they are quite beautiful." While the question is asking about something subjective, it is not clearly asking about the supposed qualia in virtue of which the experience of seeing the wild flowers is thought to involve a phenomenally

conscious mental state. It is instead asking for your opinion about or assessment of the experience (the event of looking at the wildflowers). In fact, the personal judgment asked for will often be about the object of the experience. (Serve someone a nice wine and ask her "what it is like" and you will likely get back an assessment of the wine coupled with a description of it.)[31]

Set against the neutral readings of "experience" and "what it is like," the new science usage is rather different, as should be clear from the passages discussed in Chapter 1. Consider, for example, Christof Koch's volume, *The Quest for Consciousness* (2004). Koch opens by musing about a particular sensory quality that he is acquainted with:

> I had already taken an aspirin, but the toothache persisted. Lying in bed, I couldn't sleep because of the pounding in my lower molar. Trying to distract myself from this painful sensation, I pondered why it hurt. I knew that an inflammation of the tooth pulp sent electrical activity up one of the branches of the trigeminal nerve that ends in the brainstem. After passing through further switching stages, pain was ultimately generated by activity of nerve cells deep inside the forebrain. But none of this explained why it felt like anything! How was it that sodium, potassium, calcium, and other ions sloshing around my brain caused this awful feeling? (xv)

The primary motivating puzzle for Koch is to explain how this sensation—the sensory quality of painfulness—could be *created* by his brain. He asks (xv): "How is it, then, that neural activity can give rise to the sensation of a burning pain? Is there something magical about the brain?" In other words, Koch is concerned with explaining a supposed phenomenally conscious mental state and specifically with the sensory quality that is thought to be had by that state, marking it as being phenomenally conscious.

Koch is concerned with one of the supposed *elements* of the larger event of his undergoing a toothache; and, this element—the quale of painfulness—is associated with the mind/brain. This is the language he uses in defining the term "qualia": they are "the elements

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[31] See Bennett and Hacker (2003, 277-281) for a similar discussion of this phrase.

that make up conscious experience" (2004, 296) or "the elemental feelings and sensations making up conscious experience (seeing a face, hearing a tone, and so on)" (343). While this talk of "elements" is perhaps more suggestive of *constitutive parts*, Koch is best read as taking qualia to be *qualities*. His view seems to be that phenomenally conscious experiences are comprised of such qualities. Koch is sometimes rather explicit in this regard:

> Throughout recorded history, men and women have wondered how we can see, smell, reflect upon ourselves, and remember. How do these sensations arise? The fundamental question at the heart of the mind-body problem is, *what is the relation between the conscious mind and the electro-chemical interactions in the body that give rise to it?* How do the salty taste and crunchy texture of potato chips, the unmistakable smell of dogs after they have been in the rain, or the feeling of hanging on tiny fingerholds on a cliff a couple of meters about the last secure foothold, emerge from networks of neurons? These sensory qualities, the building blocks of conscious experience, have traditionally been called *qualia*. The puzzle is, how can a physical system have qualia? (1-2)

This corresponds rather closely with the standard understanding of the term "qualia" discussed above—Koch is concerned with sensory qualities that emerge from networks of neurons. As we proceed, I will treat Koch as representative of the new science in this; I will assume that new scientists like Koch are interested in explaining the supposed occurrence of qualia on the standard understanding given above.

The previous passage also suggests a point that I noted in Chapter 1: New scientists take the existence of qualia to be evident from one's own daily life and therefore to be beyond dispute. Thus, Koch suggests that people have wondered about the puzzle of qualia "throughout recorded history." He goes on to write (2004, 7): "Given the centrality of subjective feelings to everyday life, it would require extraordinary factual evidence before concluding that qualia and feelings are illusory." This leads him to "consider first-person experiences as brute facts of life" (7). Koch is representative of the new science in this regard as well: In Daniel Stoljar's

terminology, new scientists hold that the existence of phenomenal consciousness is phenomenologically obvious.

2.2 THE STANDARD UNDERSTANDING IN PHILOSOPHY

New scientists did not coin the term "qualia," nor did they come to the standard understanding of it on their own. As such, it is worth noting that the same understanding is often suggested by the discussions of qualia in the philosophical literature. Further, like new scientists, these philosophers frequently take the existence of such qualia to be beyond dispute. In this section, I briefly illustrate the point. My goal is not to perform a thorough examination of the use of the term "qualia" in philosophy of mind, but to indicate that its use in the new science is in keeping with at least some of the discussions in the philosophical literature.

Consider Peter Carruthers's (2000, 15) treatment of what he calls the *liberal sense* of the term "qualia":

> Many philosophers use the term "qualia" liberally, to refer to those properties of mental states (whatever they may be) in virtue of which the states in question are phenomenally conscious. On this usage "qualia," "subjective feel" and "what-it-is-likeness" are all just notational variants of one another. And on this usage, it is beyond dispute that there are such things as qualia.

Here, qualia are understood to be *properties of mental states* and their existence is said to be *beyond dispute*. So far, this is compatible with the standard understanding of "qualia" in the new science, although Carruthers might be understood in other ways. Thus, based on this passage alone it could well be argued that he does not take the qualities (properties) at issue to be sensory qualities, but instead takes them to be some other type of quality altogether. If this were correct,

then Carruthers's understanding of "qualia" would diverge significantly from the standard understanding in the new science.

While the above passage is unclear about what the qualities at issue are, Carruthers also lists off a number of examples of such qualities and these examples play a critical role in articulating what he means by "qualia." As will be discussed further in Section 2.4, this is a common strategy in both philosophy of mind and the new science. Carruthers writes (2000, 13):

> Most people think that the notion of phenomenal consciousness can only really be explained by example. So we might be asked to reflect on the unique quality of the experience we enjoy when we hear the timbre of a trumpet-blast, or drink-in the pink and orange hues of a sunset, or sniff the sweet heady smell of a rose. In all of these cases there is something distinctive which it is *like* to undergo the experience in question; and these are all cases of states which are phenomenally conscious.

Note that the qualities that Carruthers gives as examples in this passage are all sensory qualities—the "unique qualities" that he illustrates presumably just being the sounds, colors, and smells that he describes. While it remains possible to argue that he uses the term "qualia" to refer to some other qualities that are distinct from the sensory qualities listed, this is hardly the most natural reading.[32] Carruthers is most naturally read as using the term "qualia" in a way that corresponds with the standard understanding in the new science: Qualia are sensory qualities that are mental.

Carruthers then contrasts this liberal sense of the term "qualia" with a *restricted sense*. While he holds that qualia exist in each sense, he believes that this is open to dispute for the restricted sense, but not for the liberal sense:

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[32] Perhaps authors like Carruthers find some other qualities to be evident in such experiences and it is those qualities that are thought to be qualities of mental states. If so, however, I do not know what qualities they are talking about nor do I know the purpose of the examples listed. If something else is meant, then I find it fair to ask that they find a better way of pointing this something out or give up on listing everyday examples. This is discussed further in Section 2.4.

> I propose, myself, to use the term "qualia" much more restrictedly (as some other writers use it), to refer to those putative intrinsic and non-representational properties of mental states in virtue of which the latter are phenomenally conscious. On this usage, it is not beyond dispute that there are such things as qualia. (2000, 15)

On the restricted sense of the term, being a sensory quality that is mental is not sufficient for being a quale—the sensory quality must *also* be intrinsic and non-representational. While this restricted sense of the term "qualia" indicates that the standard understanding in the new science is not the only game in town, the contrast suggests that it is nonetheless a common one.

Likewise, Barry Maund (2008) distinguishes between what he calls the *neutral sense* and the *strong sense* of the term "qualia." He holds that there is room for debate concerning the existence of qualia in the strong sense, but not the neutral sense. Like Carruthers's description of his liberal sense of the term, Maund's neutral sense corresponds closely with the standard understanding of "qualia" in the new science. He writes:

> It does seem that, at some level, there is little problem in understanding what qualia are, and of knowing that they exist. For example, each of us has a wide range of experiences of very different character: the taste of a ripe juicy peach, the smell of newly mown grass, the feel of soft velvet, the seeing of a setting sun: In each of these cases, I am the subject of a mental state with a distinctive subjective character. There is something it is like for me to undergo each state, some phenomenology that it has. (269)

The examples that Maund gives of (supposed) qualia are typical examples of sensory qualities and these qualities (characters) are said to be had by mental states. Again, one natural reading of this is that he takes qualia to be sensory qualities that are mental. And, like Carruthers, Maund takes the existence of such qualia to be beyond dispute: He asserts that there is little problem in knowing that qualia exist.

A similar account is found in the work of Ned Block. For example, in his (2004) qualia are taken to be qualities of certain mental states; they are indicated by noting distinctive sounds,

smells, pains, and so on; and, again, these supposed qualia are thought to be beyond dispute. Block writes:

> Qualia include the ways things look, sound and smell, the way it feels to have a pain, and more generally, what it's like to have experiential mental states…. Qualia are experiential properties of sensations, feelings, perceptions and, more controversially, thoughts and desires as well. But, so defined, who could deny that qualia exist?

As with Carruthers and Maund, Block's understanding of "qualia" seems to correspond with the standard understanding in the new science—qualia are sensory qualities that are qualities (properties) of mental states. He then contrasts this understanding with several controversial senses of the term that he opposes.

Essentially, Block objects to definitions of "qualia" that place them beyond the reach of our typical forms of explanation in the brain sciences:

> Although the existence of subjective experience is not (or anyway should not be) controversial, "quale"—which is more clearly a technical term than "subjective experience"—is more often used by those who are inclined to reject the common-sense conception of subjective experience. Here is a first approximation to a statement of what is controversial: whether the phenomenology of experience can be exhaustively analyzed in intentional, functional or purely cognitive terms. Opponents of qualia think that the phenomenology of an experience can be exhaustively analyzed in terms of its representational or intentional content ("representationism"); or that the phenomenology of experience can be exhaustively analyzed in terms of its causal role ("functionalism"), or that having a subjective experiential state can be exhaustively analyzed in terms of having a state that is cognitively monitored in a certain way or accompanied by a thought to the effect that I have that state. If we include in the definition of "qualia" the idea that the phenomenology of experience outruns such intentional, functional and cognitive analyses, then it is controversial whether there are qualia. (785)

One way to put this is that on the uncontroversial sense of the term "qualia" that Block prefers, the aim of the new science of consciousness is not incoherent by definition. He holds that it might turn out that qualia are not open to scientific explanation, but it might not, and as such he objects to this being written into the definition of the term. Looked at from this perspective, it is

not surprising that new scientists would understand “qualia” in a way that corresponds with Carruthers’s liberal sense, Maund’s neutral sense, and Block’s uncontroversial sense of the term—after all, their goal is to give a neurobiological explanation of the supposed scientific phenomenon of phenomenal consciousness.

2.3 CONFUSION CONCERNING “QUALIA”

While each of the examples given in the previous section illustrate that the standard understanding of “qualia” in the new science can be located in the philosophical literature, they also indicate that philosophers have used the term in other ways. Given this, it is perhaps not surprising that some philosophers would assert that “the philosophers’ concept of qualia is a mess” (Dennett, 2005, 87) or that others would feel the need to respond to the claim that “there is no such thing as ‘the notion of qualia’ to bear any philosophical weight” (Kind, 2001, 143). As my primary concern is with the new science, we can largely ignore such disputes. Nonetheless, confusion over the term “qualia” is relevant to my investigation in at least two ways. First, some of the philosophical arguments that are sometimes thought to show that “qualia” exist actually just assume the point on the standard understanding of the term in the new science. Second, it has been claimed that disputes concerning the existence of qualia must reflect terminological confusion, since many have thought that qualia are phenomenologically obvious and therefore beyond dispute. Since I will be arguing that new scientists have not made a compelling case for the existence of the supposed scientific phenomenon of phenomenal consciousness, it is important that I indicate how the occurrence of qualia (on the standard understanding in the new

science) can be denied even though many have thought that they are phenomenologically obvious.

2.3.1 The Standard Understanding and the Knowledge Argument

In the following chapters I will argue that new scientists have not made a compelling case for the existence of the supposed scientific phenomenon of phenomenal consciousness. As such, I will need to respond to the philosophical arguments that have been given in support of the claim that qualia exist. I do so in Chapter 5. Not all of the arguments that have been thought to make the case for the existence of qualia are relevant to my critique of the new science, however. The problem is that some of the most prominent arguments concerning "qualia" in the philosophical literature actually just assume the existence of qualia on the standard understanding in the new science and then argue for a conclusion about their nature—such as that they are non-physical. The result is that arguments that might have seemed to favor the new science do not and must instead be dealt with by the new science.

For example, consider Frank Jackson's classic article on "Epiphenomenal Qualia" (1982). If we understand the term "qualia" in line with the standard understanding, then we find that Jackson's argument does not depend on the existence of qualia. The reason is that while the argument does depend on the existence of sensory qualities, it does not matter whether or not those qualities are *mental* qualities. Rather, Jackson simply assumes that these qualities are qualities of mental states. He writes:

> I am what is sometimes known as a "qualia freak". I think that there are certain features of the bodily sensations especially, but also of certain perceptual experiences, which no amount of purely physical information includes. Tell me everything physical there is to tell about what is going on in a living brain, the kind of states, their functional role, their relation to what goes on at other times

> and in other brains, and so on and so forth, and be I as clever as can be in fitting it all together, you won't have told me about the hurtfulness of pains, the itchiness of itches, pangs of jealousy, or about the characteristic experience of tasting a lemon, smelling a rose, hearing a loud noise or seeing the sky.
>
> There are many qualia freaks, and some of them say that their rejection of Physicalism is an unargued intuition. I think that they are being unfair to themselves. They have the following argument. Nothing you could tell of a physical sort captures the smell of a rose, for instance. Therefore, Physicalism is false. By our lights this is a perfectly good argument. (127)

Whether or not you find this to be a compelling argument that Physicalism is false[33], what should be noted is that this argument does not necessarily hinge on the existence of *qualia* (on the standard understanding), but merely on the existence of *sensory qualities* like the smell of a rose. Jackson assumes that such sensory qualities are qualia—he goes looking for the smell of a *rose* in physical information about a living *brain*—but all that he argues for is the claim that Physicalism cannot fully capture the qualities at issue.

The same holds for the knowledge argument built around the story of Mary the color-deprived neuroscientist.[34] Jackson writes (1982, 130):

> What will happen when Mary is released from her black and white room or is given a colour television monitor? Will she *learn* anything or not? It seems just obvious that she will learn something about the world and our visual experience of it. But then it is inescapable that her previous knowledge was incomplete. But she had *all* the physical information. *Ergo* there is more to have than that, and Physicalism is false.

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[33] It is not perfectly clear what the capitalized term "Physicalism" entails for Jackson, but he associates it with the thesis that "all (correct) information is physical information" (1982, 127). Of physical information he writes: "It is undeniable that the physical, chemical and biological sciences have provided a great deal of information about the world we live in and about ourselves. I will use the label 'physical information' for this kind of information, and also for information that automatically comes along with it." (127).

[34] The background for the Mary story runs as follows: "Mary is a brilliant scientist who is, for whatever reason, forced to investigate the world from a black and white room via a black and white television monitor. She specializes in the neurophysiology of vision and acquires, let us suppose, all the physical information there is to obtain about what goes on when we see ripe tomatoes, or the sky, and use terms like 'red', 'blue', and so on. She discovers, for example, just which wave-length combinations from the sky stimulate the retina, and exactly how this produces via the central nervous system the contraction of the vocal chords and expulsion of air from the lungs that results in the uttering of the sentence 'The sky is blue'." (Jackson, 1982, 130).

The conclusion of the argument is that Physicalism is false (or, perhaps better, that sensory qualities like redness are not fully physically reducible); nonetheless, this argument is often taken to tell us something about qualia (on some understanding of the term). But that the qualities at issue are qualia (on the standard understanding of the term) is simply assumed and plays no actual role in the argument. As Jackson immediately continues:

> Clearly the same style of Knowledge argument could be deployed for taste, hearing, the bodily sensations and generally speaking for the various mental states which are said to have (as it is variously put) raw feels, phenomenal features or qualia. The conclusion in each case is that the qualia are left out of the physicalist story. (130)

Note, however, that this conclusion only follows if you assume that the sensory qualities that Mary learns about are qualia.[35]

2.3.2 Disputing what is Beyond Dispute

To argue that new scientists have not made a compelling case for the existence of the supposed scientific phenomenon of phenomenal consciousness, I need to dispute what many have thought is beyond dispute. As such, I open myself up to the charge that I must understand "qualia" in a different sense than the new scientists do. And, in fact, this is a charge that is sometimes leveled against those who have disputed the existence of qualia in the philosophical literature. Put more positively, some philosophers have found disputes over the existence of qualia to be puzzling

[35] Tim Crane makes a similar point about the knowledge argument: "It is plain that the knowledge is knowledge of a property, since many people can know what red looks like. So using 'qualia' just to mean the properties which can only be known by experiencing them, we can ask: what are qualia properties of? Many philosophers assume that they are properties of experiences. But this does not follow from the fact that knowledge of them requires experience. One could say that colours are properties of public material objects, but they are properties which can only be fully understood when experienced." (2001, 184). One need not go this far, however, and can simply say that these properties are qualities that can be known by directly perceiving them. The knowledge argument can then be taken to simply show that there is a difference between knowing a quality by directly perceiving it and knowing it via description. Whether this point implies that Physicalism is false, however, is unclear.

and have sought to explain this puzzle in terms of confusion concerning the term "qualia." For example, Maund (2008, 269) notes that the term is used in a variety of ways and takes this to explain a "puzzling feature" that he finds in some discussions of qualia: "Some theorists find them so obvious as to not require justification, while others reject them as if they belong to the powers of darkness."

To give another example, Tim Crane (2001) has suggested that the puzzle noted by Maund indicates that the problem of phenomenal consciousness in modern philosophy is not well-posed. He writes (2001, 170):

> To have a clear understanding of this problem, we have to have a clear understanding of the notion of qualia. But despite the centrality of this notion in formulating this aspect of the mind-body problem, it seems to me that there is a not a clear consensus about how the term "qualia" should be understood, and to this extent the contemporary problem of consciousness is not well-posed. The difficulty here can be vividly brought out at first by considering the fact that there seems to be a real dispute about whether qualia exist at all. Anyone with the slightest familiarity with the recent debate will be aware that some philosophers take the existence of qualia to be an obvious fact, while others deny their existence. So, we find Ned Block responding to the question, "what is it that philosophers have called qualitative states?" with the quip: "As Louis Armstrong said when asked what jazz is, 'If you got to ask, you ain't never gonna get to know.'" But, we find Michael Tye and Gilbert Harman arguing that there are no qualia in visual experience, and Daniel Dennett denying the existence of any qualia whatsoever.

This leads Crane to ask (2001, 171): "What is going on? How can there be such extreme disagreement about what is obvious?" He takes this question to be especially pointed, noting that the existence of qualia is not thought to be obvious in the sense that the conclusion of an argument might be said to be obvious given the assumption of various premises, for example, but that the existence of qualia is thought to be *pretheoretically obvious*.[36]

[36] It is worth noting that if you instead thought of qualia as scientific phenomena inferred from data and theory (see Chapter 3), then puzzlement over disputes about their existence is likely to seem misplaced: Certainly, such disputes have occurred over other supposed scientific phenomena and the occurrence of such disputes is arguably typical.

Crane expresses the point in terms of disputes about the existence of qualia being about the *appearances themselves* and therefore not about a *theoretical posit*. He writes:

> At first sight, this dispute might seem to be a straightforward ontological matter, like a dispute about the existence of numbers or universals. But closer reflection shows that the dispute cannot be exactly like this. For the normal route to introducing numbers or universals into an ontology is that they explain some phenomenon on which is agreed on all sides to exist and require an explanation: mathematical practice, or apparent sameness of kind. The claim is that we should believe in these entities because they explain the obvious truths about the "appearances," broadly understood. But the truths about qualia, by contrast, are supposed to be truths about the *appearances themselves*, about how things seem to us in experience. And it is reasonable to expect that how things seem to us should not be a theoretical posit, but a pre-theoretical starting point: a point from which to embark on a debate, where things are relatively obvious to all its participants. (2001, 170-171)

If the existence of qualia on the standard understanding is pretheoretically obvious—or, more specifically, if it is *phenomologically obvious* in Daniel Stoljar's terminology, being evident just in undergoing normal waking episodes of perception—then it would seem that the existence of qualia in such episodes is truly beyond dispute. Given that I will nonetheless dispute the existence of such qualia, it might then be argued that I must be confused and perhaps, more specifically, that I must be confused about the meaning of the term "qualia." I do not believe that this is the case.

For purposes of discussion, let's grant that it makes sense to talk about the "appearances themselves" as Crane does in the above passage. The idea seems to be that we are presented with something in perception (an appearance) that is not itself tainted by theory.[37] Now suppose that we each consider an appearance (presumably we would each be considering our own appearance, but leave that to the side). In judging that the existence of qualia is obvious just in the

[37] I do not think that this is an accurate way to describe perception, as I find it to be a more active process of arriving at judgments about the world than this suggests. My reasons for this will hopefully become clear in Chapter 3. Nonetheless, for present purposes and for the sake of argument, we can simply grant that in perception we are presented with appearances themselves.

appearance—and, thus, that it is pretheoretically obvious and, more specifically, that it is phenomenologically obvious—we need an understanding of what qualia are and then need to judge that something about the appearance is clear evidence that such qualia exist. That the existence of qualia is phenomenologically obvious in considering the appearance might be plausible for some appearances if "qualia" expresses a relatively primitive concept. For example, in considering a ripe tomato viewed in optimal lighting conditions, that the color seen is of the red type can be reasonably said to be phenomenologically obvious. (Of course, for other cases—say if the object is further away and the light is low—this might not be so obvious.) But for less primitive concepts there is more room for error: Theory often has a way of sneaking into our judgments about when non-primitive concepts apply.

Consider the term "witch." Imagine two observers of a witch trial, one who believes that witches exist and one who does not. Further, imagine that the first observer believes that it is a sure sign that a woman is a witch if she does not float when dunked and that the second observer does not believe this. Now suppose that the trial occurs, a woman is dunked, and that she does not float. The first observer might take it to be obvious just in watching the trial (and observing that the woman does not float) that she is a witch, the other will disagree. Their disagreement would not simply hinge on what is observed, however, but also on what the observers infer from what they observe—and this involves the observers' beliefs about witches (or their theories of witches as we might put it). Nonetheless, the first observer might insist that it is obvious *just in watching the trial* that the woman is a witch; after all, he saw the evidence—she didn't float! Here, the "evidence" is (relatively) pretheoretically obvious, but that the fact that the woman didn't float is evidence of her being a witch is not pretheoretically obvious from the trial alone.

I take something similar to be going on in some disputes about the existence of qualia: The supposed evidence is phenomenologically obvious, but that this is actually evidence of the existence of qualia is not phenomenologically obvious. This distinction is easy to miss, however, and like the believer in witches, some believers in qualia make a mistake about what is pretheoretically obvious, attaching the obviousness to the judgment based on the supposed evidence rather than just the evidence itself. Imagine that a believer in qualia and a disbeliever in qualia are both looking at a nearby ripe tomato in good light. Further, imagine that they agree that it is phenomenologically obvious to each of them that they are acquainted with redness. This is the supposed evidence—the analog of observing the dunked woman fail to float in the above example. As in that case, I am suggesting that if the believer in qualia takes it to be phenomenologically obvious that she is acquainted with a quale of redness in looking at the ripe tomato, she is misplacing the obviousness—mistakenly moving from a sensory quality of the red type being obvious to the judgment that it is obvious that the sensory quality is a quale.

The point is that it is possible to dispute what some take to be beyond dispute. With respect to the case at issue, it is possible to dispute that the sensory qualities that we are acquainted with in normal waking episodes of perception are qualia. This can be done by denying that the existence of qualia is actually phenomenologically obvious in such episodes. Of course, that I can deny this does not mean that I am right to do so. At minimum, I need to make the case that it is at least reasonable to dispute that the existence of qualia is phenomenologically obvious in normal waking episodes of perception. I do this in Chapter 4.

2.4 LISTING OFF EXAMPLES

It is characteristic of the standard understanding in the new science that qualia are thought to be found in a diverse range of perceptual episodes. This is often noted as a characteristic feature of the supposed phenomenon of phenomenal consciousness. For example, after listing off a number of mental states (visual, auditory, tactile, and so on), David Chalmers writes that "what unites all of these states is that there is something it is like to be in them" (1995, 201). In fact, philosophers and new scientists often explicitly eschew definitions of "phenomenal consciousness" or "qualia" in favor of listing off examples. The resulting lists are generally quite broad, typically including many seemingly divergent episodes. We have seen several examples of this already in this chapter. For example, we saw Carruthers list-off hearing a trumpet-blast, seeing a sunset, and smelling a rose; Jackson notes feeling pains, itches, or jealousy, in addition to tasting a lemon, smelling a rose, hearing a noise, and seeing the sky; and in addition to feeling his toothache, Koch discusses tasting potato chips, smelling dogs, and feeling tiny fingerholds as you hang from a cliff.

A preference for lists over definitions is seen throughout both the philosophical and the new science literatures. Thus, David Papineau (2002, 13) writes: "The idea [of phenomenal consciousness] is best introduced by examples rather than definitions. ('If you gotta ask, you're never gonna know.')" Ned Block (1995, 230) argues that the best we can do by way of definition is to point out instances of the phenomenon:

> Let me acknowledge at the outset that I cannot define [phenomenal consciousness] in any remotely noncircular way. I don't consider this an embarrassment. The history of reductive definitions in philosophy should lead one not to expect a reductive definition of anything. The best one can do for [phenomenal consciousness] is in some respects worse than for many other concepts, though, because really all one can do is *point* to the phenomenon.

New scientists are no different. We saw a similar sentiment from Francis Crick in Chapter 1. Or consider Max Velmans's (2000, 6) justification for the practice: "As with any term that refers to something that one can observe or experience, it is useful, if possible, to begin with an ostensive definition—that is, to point to or pick out the phenomena to which the term refers and, by implication, what is excluded."

If we follow the authors noted above and treat the lists that litter the literature as giving ostensive definitions of the phenomenon, then the presumed breadth of phenomenal consciousness and qualia is clear. To offer just a few more of the many, many examples:

> The term… [is] most commonly understood to mean the qualitative, phenomenal or "felt" properties of our mental states, such as the throbbing pain of my current headache, or the peculiar blue of the afterimage I am experiencing now. Though it seems undeniable that at least some of our mental states have qualia, their existence raises a number of philosophical problems. (Levin, 1998, §0)

> Conscious experiences have a qualitative aspect. There is a qualitative feel to drinking beer, which is quite different from the qualitative feel of listening to Beethoven's Ninth symphony. Several philosophers have found it useful to introduce a technical term to describe this qualitative aspect of consciousness. (Searle, 2004, 59)

> Sensory perception has distinctive and robust qualities, what philosophers call qualia: colors, textures, the taste of salt, sour and sweet, smooth and rough touch, wetness, sharp and dull pain, focused and vague pleasures, the dull variety of stomachaches, jolts of fear and blazing anger, itches and muscle pains, melodies and rhythms, the acrid odor of gunpowder, musical harmony and dissonance, the crack and rumble of a thunderstorm. (Baars, 1997, 63)

> What, then, about defining "consciousness"? If we cannot begin with a solid definition, how do we get agreement on what phenomenon we are trying to study? Roughly, we use the same strategy here as we use in the early stages of any science: delineate the paradigm cases, and then try to bootstrap our way up from there. Using common sense, we begin by getting *provisional* agreement on what things count as *unproblematic* examples of consciousness.
>
> First in the set of prototypically conscious states are a range of *sensory perceptions*, such as seeing a bird fly, feeling the pain of a burn, hearing a police siren. The *somatic* sensory experiences pertaining to touch, vibration, pressure, limb position, body orientation, and body acceleration are also included in the

> prototype. Smells and tastes round out the list of sensory perceptions. (Churchland, 2002, 133)
>
> To give the more general formulation [of our basic questions], we will have to have a term that will cover qualities of all the kinds we have mentioned, such as colors, pitches, tastes, smells, degrees of pressure and warmth, shapes (e.g., of afterimages or apples), pain qualities, itches, sexual pleasantness, nausea, and other qualities like these. This term is "phenomenal qualities". The resulting general formulation… is "How do phenomenal qualities come into a full accounting of what happens when a person is having a perceptual experience or sensation?" Since some philosophers have special understandings of the terms used in this general formulation, I stipulate that it is to be understood simply as a way of encompassing the example given and others that are like it in the way the items on this list are alike:
>
> How does flavor come into a full accounting of tasting a spoonful of honey? How does sound come into a full accounting of hearing a harp string? How does warmth come into a full accounting of feeling a fevered patient? How does pain(fulness) come into a full accounting of what happens when someone stubs a toe? How does red come into a full accounting of what happens after staring at a flag printed in the complementaries of its usual colors? (Robinson, 2004, 8–9)

Considered naïvely, these lists are rather disconnected. (Is it really so clear that looking at a red rose is anything like feeling one of its thorns prick your finger, for example? Is it really so obvious that the redness of the rose has anything significant in common with the painfulness of the prick?) Nonetheless, these lists reflect how "qualia" is typically understood. For example, note that Francis Crick asserts that qualia are (equally) "the redness of red and the painfulness of pain" (1994, 9). Or as Richard Gregory writes, "the most mysterious features of perception are the qualia of consciousness: experiences of red, green, pain, and so on" (1997, 192). What we find is that an exceedingly diverse range of episodes are thought to have something fundamentally in common—they are all thought to involve mental states with distinctive qualia. According to Colin McGinn, phenomenal consciousness is an inclusive phenomenon that covers "the having of sensations, emotions, feelings, thoughts" (1999, 2–3); as we saw above, Ned

Block holds that "qualia are experiential properties of sensations, feelings, perceptions, and more controversially, thoughts and desires as well" (2004, 785).

Setting the controversial cases aside, phenomenally conscious mental states are typically divided into a number of types in the philosophical literature. The most common type is *perceptual experiences* (seeing red, smelling orange), followed by *bodily sensations* (feeling pain, itches, hunger; see Levin, 1998). Although more controversial, *felt emotions* such as fear and joy are often added to the list, as are *felt moods* such as elation and depression (see Tye, 2003). Phenomenally conscious mental states are then often contrasted with states like belief and desire that are thought to lack qualia (or, if they are thought to have qualia, the qualia are taken to be non-essential to that state being the type of state that it is). As Peter Carruthers expresses the contrast (2000, 6):

> There are many conscious mental states which seem to lack distinctive feels—for example, beliefs and abstract (as opposed to bodily) desires. Perhaps it may be replied that these states are *dispositions*—dispositions to engage in acts of *thinking*, which have felt properties. But even if (many) acts of thinking do have felt properties (by figuring in "inner speech," say), they do not seem to be conceptualized in terms of those properties. And the idea of "purely propositional" (unfelt) thinking does seem to be a conceptual possibility; indeed many people believe it to be actual.[38]

This effectively captures why the inclusion of thought in these lists is controversial. Many doubt that there are necessarily sensory qualities involved in thinking; but, insofar as thought involves inner speech or visual imagery, for example, those episodes can be included in the above classification.

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[38] It is worth noting that it is unclear why it should matter that acts of thinking are not *conceptualized* in terms of having felt qualities (properties). Surely, what matters here is whether these mental states *actually have* such qualities. Regardless, the point that I wish to draw from Carruthers's discussion is that insofar as mental states like thinking are thought to involve inner speech and the inner speech is thought to involve qualia, then these states can be reasonably included with perceptual experiences in the above classification.

Taken together, these qualities—perceptual experiences and bodily sensations, as well as felt emotions and felt moods—are what I have been calling sensory qualities and the listing of such qualities, and especially perceptual experiences and bodily sensations, is common in discussions of qualia in both the new science and the philosophical literatures. Minimally, new scientists hold that perceptual experiences and bodily sensations are qualia. Nonetheless, even for these relatively uncontroversial cases, we can note both more and less controversial instances—this time with regard to whether or not a person is actually acquainted with the sensory qualities at issue: That I am acquainted with an instance of a given type of perceptual experience in a normal waking episode of visual perception of a nearby object in good lighting conditions, for example, is surely less controversial than that I am acquainted with an instance of that type of perceptual experience when the object is far away or when the lighting conditions are poor; likewise, it is surely less controversial that I am acquainted with an instance of a given type of perceptual experience in an episode of normal waking visual perception than that I am acquainted with that type of perceptual experience when I am hallucinating or dreaming. As such, new scientists are *at the very least* committed to the view that I am acquainted with qualia in uncontroversial cases of normal waking perception in good conditions.

2.5 CONCLUSION

In this chapter I expanded on the characterization of the supposed scientific phenomenon of phenomenal consciousness given in Chapter 1. I have drawn out a standard understanding of the term “qualia” in the new science literature and shown that this corresponds rather closely with what a number of philosophers have said about qualia: *Qualia are sensory qualities that are*

mental. Further, while many hold that the existence of such qualia is beyond dispute, we have seen how you could go about disputing that qualia exist on this understanding. Thus, you do not need to deny that people are acquainted with sensory qualities like colors, sounds, tastes, and so on, in episodes of normal waking perception to deny that qualia exist—you merely need to deny that such sensory qualities are directly produced by the people's brains.

3.0 FIRST-PERSON DATA AND SCIENTIFIC PHENOMENA

I turn now to a critical examination of the new science of consciousness. We have seen that new scientists seek to explain the supposed scientific phenomenon of phenomenal consciousness. They hold that we are each phenomenally conscious, having mental states with qualia at least during episodes of normal waking perception. New scientists then seek to explain how our brains produce these supposed qualia. For them to do so, however, qualia must actually exist in the first place. My critique focuses on the reasons offered for believing that they do.

We have seen that new scientists claim to infer the supposed scientific phenomenon of phenomenal consciousness not just from the reports of others, but also rely on claims about their own claimed episodes of acquaintance with sensory qualities (first-person data). While I will grant for the sake of argument that new scientists do *sometimes* have first-person data, I argue that their use of first-person data claims in inferring the supposed scientific phenomenon is nonetheless problematic. I show this by means of a dilemma: Either new scientists characterize their first-person data in a strong fashion (which leads to a problem) or else they characterize their first-person data in a weak fashion (which leads to a problem). If characterized in a strong fashion, then there is good reason to doubt the accuracy of the new scientists' first-person data claims; but, if they are instead characterized in a weak fashion, then the first-person data claims are insufficient for the inference in question.

I begin in Section 3.1 by briefly discussing the distinction between data and phenomena in scientific work, focusing on the exposition given by Jim Bogen and James Woodward. For purposes of clarity, I refer to data in this sense as *scientific data*. I then show that first-person data are not scientific data. Nonetheless, in Section 3.2, I grant that claims about first-person data can be legitimately used in the new science so long as new scientists use *caution* in doing so. In Section 3.3, I respond to the potential objection that despite what we saw in Chapter 1, new scientists do not need to call on first-person data claims to legitimately infer the supposed scientific phenomenon of phenomenal consciousness. In Section 3.4, I distinguish between two ways of characterizing first-person data. In undergoing an episode of acquaintance, the subject of that episode might simply take herself to be acquainted with sensory qualities; alternatively, she might take herself to be specifically acquainted with qualia (to be acquainted with sensory qualities *as being* qualia). When someone claims to have first-person data characterized in the first way, she makes *weak first-person data claims*; when she claims to have first-person data characterized in the second way, she makes *strong first-person data claims*. In Section 3.5, I call on this distinction to pose the dilemma for the new science noted above.

I then discuss the first horn of the dilemma in the following chapter, showing that phenomenal consciousness is not phenomenologically obvious. I conclude that new scientists cannot use strong first-person data claims while showing caution with respect to the use of private data. As such, they must use weak first-person data claims instead. In Chapter 5, I discuss the second horn of the dilemma. I argue that weak first-person data claims (in combination with the scientific data) are insufficient for the inference of the supposed scientific phenomenon of phenomenal consciousness: New scientists must supplement the data with a substantive philosophical thesis, asserting that the sensory qualities that we are acquainted with in normal

waking perception are qualia. I then argue that this turn from science to philosophy is multiply problematic for the new science.

3.1 PRIVATE DATA AND SCIENTIFIC DATA

We have seen that the scientific study of consciousness often faces opposition from those who argue that phenomenal consciousness is not open to scientific explanation. My investigation will focus on a preceding question: How do new scientists infer the supposed scientific phenomenon and is this inference a good one? To answer this question we need some understanding of what scientific phenomena are and how they can be legitimately inferred. This, in turn, pushes us to consider how data are used in scientific investigations and to articulate what those data consist in. In Chapter 1, I noted that the new science of consciousness is thought to be new in part because new scientists claim to have and to make use of so-called data that many have thought to be illegitimate for scientific purposes. The goal of this section is to detail how these first-person data differ from data as they are typically understood in science and to draw out why the supposed use of first-person data has been thought to be illegitimate. To do so I will focus on Jim Bogen and James Woodward's (1988, 1992; Woodward, 1989) articulation of scientific data in drawing the distinction between *data* and *phenomena* in scientific work.

The basic idea behind the distinction is that data are collected over the course of scientific investigations, while phenomena are inferred from that data.[39] For example, Bogen and Woodward note that "data, which play the role of evidence for the existence of phenomena, for

[39] Of course, phenomena are not typically inferred from data alone: Scientific theory often plays a critical role in what is inferred from the data. The role of scientific theory in inferring phenomenal consciousness is discussed in the following section.

the most part can be straightforwardly observed" (1988, 305). In contrast, they explain that "phenomena are detected through the use of data, but in most cases are not observable in any interesting sense of the term" (306). That data are straightforwardly observable reflects that they are collected in scientific investigations. Thus, Bogen and Woodward write that "data are records and reports—accessible to the human perceptual system and available for public inspection" (1992, 593). On this account, data consist in the various records and reports taken during the course of a scientific investigation and can include recordings of instrument readouts, outputs of computer displays, photographs and other imagery, records of subjects' reports (verbal or non-verbal), and so on. According to this conception, data are public.

New scientists do not restrict themselves to the collected data, however—they also claim to make use of first-person data. First-person data are episodes of acquaintance in which the subject comes to know about something by having it directly "presented" to them.[40] By being acquainted with something the subject is thought to have data about it, although not in the sense articulated by Bogen and Woodward: Such episodes of acquaintance are not records or reports, are not collected during the course of a scientific investigation, and are not open to public inspection. Of course, people can make claims about their supposed episodes of acquaintance. And the resulting reports can be collected, analyzed, and publicly inspected. Such reports are first-person reports and they are data on the standard understanding of the term. The point to note, however, is that such first-person reports are not themselves the episodes of acquaintance that they supposedly report on. As such, it is possible for the reports to be inaccurate—the person

[40] What is it to be *acquainted* with something or to be directly *presented* with it? These are surely concepts that could do with some clarification. Unfortunately, new scientists do not clarify and the philosophical discussions are not of much help either. Acquaintance is typically just left as a primitive. As my concern is with the objects of acquaintance, not acquaintance itself, I will follow suit. I suspect, however, that acquaintance is a combination of two phenomena that are topics of current scientific investigation—perception (broadly construed) and awareness. To be acquainted with something is to be aware of it by perceiving it. I will not further articulate or defend this claim here, however.

giving the reports might mischaracterize the episodes of acquaintance that they report on or, worse, they might report on supposed episodes of acquaintance that did not actually occur.[41]

To avoid confusion, I will refer to data in Bogen and Woodward's sense as *scientific data*. I will then use the term "data" broadly to include not only scientific data, but first-person data as well.[42] The key difference between scientific data and first-person data is that while the former are public, the latter are private. Being episodes of acquaintance, each first-person datum is restricted to the person undergoing the episode; thus, I cannot undergo your episodes of acquaintance and you cannot undergo mine. While we can each report on our episodes of acquaintance, and while those reports can be made available to others, the episodes themselves cannot be. Thus, imagine that a new scientist observes me looking at a ripe tomato and hears me state that I see red. The new scientist holds that there are actually two types of data that are important in such an event: There is the report that I give and there is also (most likely) the episode of acquaintance with redness that I am reporting on. The former is a scientific datum, while the latter is a first-person datum.

Both types of data are critical for the new science of consciousness. The reason is that scientific data alone are clearly silent about the supposed scientific phenomenon of phenomenal consciousness, while each first-person datum is restricted to the person undergoing the episode

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[41] For example, many people have claimed to have seen Bigfoot. Such a person might well *insist* that she underwent a perceptual episode in which she was acquainted with Bigfoot. Assuming that Bigfoot does not exist, however, she is mistaken—she was not acquainted with Bigfoot. Perhaps she is delusional and saw nothing at all (reporting on a supposed episode of acquaintance when none occurred); or, perhaps, she saw something, maybe a prankster wearing a costume, but did not see Bigfoot. Thus, we might accept that this person has a first-person datum (she underwent an episode of acquaintance), but deny that her characterization of that datum is accurate. She might use her first-person datum—perhaps concluding that Bigfoot is between seven and eight feet tall—but she would be using it erroneously.

[42] Note that I do not make this distinction to terminologically deny that first-person data can legitimately be used in scientific investigations; rather, I do so to facilitate a discussion of the differences between first-person data and scientific data.

of acquaintance and is therefore silent about other people.[43] As will be detailed at greater length in Section 3.3, the result is that each new scientist must call on her own supposed first-person data if she is to infer that the first-person reports of others are reporting on qualia. Each new scientist must assume that other people are like her, undergoing episodes of acquaintance in a given type of situation that are similar to those she claims to undergo in that type of situation. In other words, the new scientist needs to call on claims about her supposed first-person data (*first-person data claims*). This is only part of the battle, however, as will be drawn out in Section 3.4: To infer that other people have qualia in a given type of situation, the new scientist needs to take herself to be acquainted with *qualia* in that type of situation—not just with *sensory qualities*. This raises two questions that we need to investigate: Are the first-person data claims such that if we accept that they are accurate, the new scientist can infer the scientific phenomenon of phenomenal consciousness from the data without calling on further controversial assumptions? And should we accept the accuracy of such first-person data claims in the first place?

3.1.1 The Publicity Principle

We have seen that the use of private data—but not public data—is controversial in science. The basic idea is that whatever else science might be, it is a fundamentally third-person enterprise with scientific theorizing being constrained by the public data. This general point has been labeled the "publicity principle" and is well expressed by Gualtiero Piccinini (2003, 597-598):

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[43] As David Chalmers puts it (2004, 1111): "The task of a science of consciousness, as I see it, is to systematically integrate two key classes of data into a scientific framework: *third-person data*, or data about behavior and brain processes, and *first-person data*, or data about subjective experience. When a conscious system is observed from the third-person point of view, a range of specific behavioral and neural phenomena present themselves. When a conscious system is observed from the first-person point of view, a range of specific subjective phenomena present themselves."

> Scientific statements must be intersubjectively testable. If evidence for a statement cannot be obtained by different investigators, then neither the evidence nor the statement are scientific. Classical defenses of this principle have been given by Herbert Feigl (1953, 11), Carl Hempel (1952, 22), Immanuel Kant (1965, 645), and Karl Popper (1959, 44).

The use of first-person data claims is controversial because at the end of the day the accuracy of such claims cannot be directly verified by other investigators. Again, each episode of acquaintance is restricted to just one individual—the one undergoing the episode; this means that when a new scientist makes a claim about a (supposed) episode of acquaintance of hers, nobody else can check the claim against the (supposed) episode to verify that it is accurate. Of course, other investigators could be put in the same situation as the new scientist making the first-person data claim—looking at the same ripe tomato, from the same location, and in the same lighting conditions, for example—but their resulting episodes of acquaintance would not be the new scientist's episode: Each individual would still just have their own first-person data (if they have anything at all).

Note that abiding by the publicity principle does not mean that we cannot accept the veracity of some first-person reports, or even that we cannot accept the veracity of some first-person data claims in particular. Rather, the publicity principle simply prevents us from treating our own supposed first-person data as evidence in scientific investigations. In other words, to abide by the publicity principle the veracity of first-person data claims cannot be *assumed*, but must be *established*. Moreover, this veracity must be established on the basis of the publicly available evidence, without calling on further supposed episodes of acquaintance.

New scientists deny that it is incumbent upon them to fully abide by the publicity principle: They hold that the scientific data do not exhaust the data and assert that they have first-person data that can also be legitimately used in scientific investigations, so long as they are

cautious with regard to the first-person data claims that they make. One way to put this is that new scientists deny that fully abiding by the publicity principle is a necessary criterion for being a science. Accepting that new scientists adopt a weakened version of the publicity principle conditioned on a cautious approach to first-person data claims, it is important to consider the problems that can arise when the publicity principle is not followed. Gualtiero Piccinini (2003) has detailed one central danger—to abandon the publicity principle is to risk *epistemic divergence*.[44] Piccinini writes:

> [Epistemic divergence] occurs when different investigators answer the same question in different ways using private methods for collecting evidence. Disagreement leads to controversy, and in scientific controversies, researchers routinely criticize each others' methods….
>
> When methods are private, the parties in the dispute share no means to prove that a method is flawed—they have no common epistemic ground on which to resolve their disagreement. As long as investigators are in epistemic divergence, their controversies can never be settled. (600)

Note that the danger of epistemic divergence does not necessarily support a blanket prohibition on the use of private data in science, however. Rather, Piccinini points out that there is a risk involved in the use of private data. The risk is that if there is disagreement about the claims made about the (supposed) data—perhaps including disputes about whether there are any such data in the first place—we have no reasoned way to resolve the issue.

The risk of epistemic divergence is not necessarily the same for all private data claims, however, but can be expected to vary with how *reasonably* the claims can be disputed. Thus, we might allow investigators to call on such claims when it is not reasonable to dispute them. What "reasonable dispute" about private data claims amounts to is a difficult question. In particular, it

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[44] It is worth noting that while Piccinini's defense of the publicity principle is given in response to Alvin Goldman's (1997) criticism of it, the new science's use of first-person data is also dubious if we instead adopt Goldman's alternative, including the requirement that the method be reliable. The problem is that if we do not accept the first-person data at issue as evidence to begin with, then we have no evidence for the accuracy of the corresponding claims.

seems likely that different people will have different standards about what is reasonable and, moreover, it seems likely that we could imagine disputes that many people would have difficulty classifying as either reasonable or unreasonable by their own standards. What should be fairly clear, however, is that not just any dispute would count as reasonable and that not just any dispute would count as unreasonable. In fact, new scientists are often skeptical both about blanket acceptance of first-person data claims and about blanket denials of first-person data claims. As will be discussed in the following section, new scientists show caution with regard to first-person data claims; at the same time, however, their caution is moderate—they do not think that every first-person data claim can be reasonably disputed. As such, for me to simply assert a blanket prohibition on the use of first-person data claims in science based on the risk of epistemic divergence would be to beg the question against the new science. To avoid this, I will accept that new scientists can legitimately call on first-person data claims in attempting to infer the supposed scientific phenomenon of phenomenal consciousness, *so long as the first-person data claims cannot be reasonably disputed*, and I will adopt what I think is a rather miserly conception of what reasonable dispute amounts to.

3.2 THE CAUTIOUS APPROACH TO FIRST-PERSON DATA

New scientists do not generally take the deliverances of introspection to be infallible.[45] Rather, they hold that in appropriate situations, within reasonable limits, and with sufficient checking

[45] See the papers in Anthony Jack and Andreas Roepstorff's two volume collection, *Trusting the Subject?* (2003, 2004), for discussion. Jack and Roepstorff summarize their view as follows: "Introspective reports serve most directly as evidence about the beliefs that subjects have about their own experience, less directly as evidence concerning the existence of experiential phenomena, and least directly as evidence concerning the operation of

against the first-person reports of others, first-person data claims can be legitimately called on in scientific investigations. What we find is that new scientists readily accept the use of first-person data claims about some central cases, but that they are then increasingly cautious as they move away from that center. This type of cautious approach is perhaps best illustrated by a philosopher. While the caution that Eric Schwitzgebel expresses about first-person data claims is more extreme than that typically found in the new science, it is nonetheless of the same kind.

In a series of articles and a joint volume with Russ Hurlburt (2007), Schwitzgebel has raised significant doubt about the reliability of proclamations (supposedly) deriving from introspection of one's own phenomenally conscious mental states.[46] His concern is not with whether we have such an introspective faculty, or whether we have phenomenally conscious mental states to introspect in the first place, but with how good we are at accurately describing the phenomenally conscious mental states that we are presumed to have. Schwitzgebel's skeptical claim is that we are really not very good at it at all. Nonetheless, he accepts that we are not completely hopeless at it and it is in this regard that his caution is of a kind with that found in the new science.

Schwitzgebel's skepticism is of a familiar sort: it is similar to skepticism with regards to the accuracy of people's reports of their own motives, traits, or skills (see, for example, Nisbett and Wilson (1977); see Hurlburt and Schwitzgebel (2007), box 2.5, for discussion). Here the skepticism is not about the existence of motives, for instance, but about the accuracy of people's reports of their motives. Likewise, Schwitzgebel is not a skeptic about the existence of

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specific cognitive functions." (ix). As such, they take a cautious but ultimately accepting view of first-person data: "We take it to be obvious that introspective evidence, and only introspective evidence, has 'face validity' in the measurement of experience. No doubt introspective reports will sometimes be mistaken, and this may be established by convergent evidence, yet the balancing of equivocal evidence should always be weighted in favour of introspective reports." (xiii).

[46] Schwitzgebel takes introspection to be "a species of attention to conscious experience" (2004, 59).

phenomenal consciousness and he assumes that we at least sometimes have introspective access to phenomenally conscious mental states. In fact, he holds that such a skepticism would be radical indeed:

> People must have at least some inkling of what's going on in their own present and immediately past conscious experience. That inkling is, I think, surprisingly poor and unstable… but it would be a radical skepticism indeed to suppose that we have no clue whatsoever about the ongoing flow of experience. (Hurlburt and Schwitzgebel, 2007, 227)[47]

Schwitzgebel's view is that while we are often wrong in our reports about our phenomenally conscious mental states, phenomenal consciousness nonetheless exists and our introspective faculty is not utterly hopeless.

As such, Schwitzgebel's skepticism is compatible with the new science, even if it might place more severe limits on the use of first-person data claims than new scientists prefer. Thus, he writes that "the study of consciousness demands that we trust introspective reports—at least some of them, sometimes" (Schwitzgebel, 2004, 58) and he does not take issue with new scientists doing so. Importantly, Schwitzgebel is not a skeptic concerning reports about some central cases of acquaintance with sensory qualities through normal waking perception in good conditions. Thus, Schwitzgebel grants that "some aspects of visual experience are so obvious it would be difficult to go wrong about them" (2008, 253) and offers the following example (252): "Suppose I'm looking directly at a nearby, bright red object in good light, and I judge that I'm having the visual phenomenology, the 'inward experience,' of redness." Further, new scientists

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[47] Or, again, in attempting to make sense of a range of statements by Dan Dennett about our authority regarding our own phenomenally conscious mental states, Schwitzgebel writes (2007): "Here's what I'd like to say… about our tendency to err in reporting experience: there are facts about our conscious experience or 'phenomenology.' We can be, and (when prompted to reflect) often are, badly mistaken about those facts…. One can go wrong about one's conscious experience as easily and as fully as one can go wrong about the objects one sees – perhaps even more easily and more fully…. A subject's testimony about her experience, like the testimony of a sincere eyewitness, is a series of factual claims about objects and events that may or may not really exist as described." (108). Schwitzgebel considers his position to be controversial (108), but not because he embraces phenomenal facts, but because of his degree of skepticism about our ability to generally get those facts right.

frequently focus on such episodes of acquaintance with colors as well, taking them to be the least open to doubt. For example, Bernard Baars (2003, 7) asserts that "there is no question that your experience of the focal contents of vision is indeed a genuine subjective experience." What we find is that it is held that *at the very least* first-person data claims about episodes of acquaintance with colors in normal waking visual perception in good conditions are beyond dispute.

While central cases of acquaintance with colors are arguably the least open to doubt, other central cases are also thought to be relatively uncontroversial—such as episodes of acquaintance with sounds through normal waking auditory perception in good conditions, for instance. Further, one can be more or less restrictive about what good conditions amount to (Schwitzgebel being arguably more restrictive, for example, Baars somewhat less restrictive). Expanding liberally on the examples we have seen, I will take acquaintance with sensory qualities in normal waking episodes of perception, generally, to be relatively uncontroversial. Call these episodes of *ordinary perception*. We can then distinguish acquaintance with sensory qualities in ordinary perception from more controversial cases involving what I will call *unordinary perception*: New scientists also hold that we are sometimes acquainted with sensory qualities while suffering from illusions, hallucinations, or dreams, for example.[48]

[48] A few points of clarification are in order. First, these types of cases can occur together: I might perceive the color of the paper that a Müller-Lyer illusion is on, while also perceiving the illusion, for example. As such, episodes of ordinary perception versus unordinary perception should be individuated at the level of the (supposed) sensory qualities at issue. Second, it should be noted that it is unclear that the term "perception" should be applied to some unordinary episodes. It could certainly be argued, for example, that dreams are not perceptual (see Chapter 5). Nonetheless, it is useful to have a label for these cases and "unordinary perception" is an obvious choice. Third, it should also be noted that some philosophers have denied that some types of sensory qualities can be hallucinatory, for example. Thus, a number of philosophers have held that you cannot have a pain hallucination, as this is taken to just be an actual case of pain. I will have more to say about this in Chapter 4; for the time being, I simply want to point out that this is perfectly compatible with the distinction I am drawing: The new scientist holds that you can be acquainted with redness equally when you are actually looking at a ripe tomato as when you are merely hallucinating a ripe tomato, and likewise that you can be acquainted with painfulness whether you have actually stubbed your toe or are merely hallucinating that you have.

More specifically, new scientists hold that we are sometimes acquainted with sensory qualities in episodes of unordinary perception that do not correspond with our perceptual environments and, as such, that cannot even plausibly be located in the world outside the perceiver's skull: They hold that we are sometimes acquainted with sensory qualities that are themselves illusory, or hallucinatory, or the product of the imagination, and so on. Such supposed sensory qualities—like the pinkness that you might take yourself to be acquainted with in having a visual hallucination of a pink elephant, for example—are often said to be *non-veridical* and this is contrasted with sensory qualities like those that we are acquainted with in ordinary perception, which are said to be *veridical*.[49]

The cautious approach to first-person data in the new science can be generously characterized as permitting the use of claims about episodes of acquaintance with veridical sensory qualities, but not claims about supposed episodes of acquaintance with non-veridical sensory qualities. I will refer to the former as *uncontroversial first-person data claims* and the latter as *controversial first-person data claims*. While disallowing the use of controversial first-person data claims is to show some caution with regard to private data, I will argue that this cautious approach is not cautious enough. Specifically, new scientists should not simply be cautious with regard to which supposed episodes of acquaintance they make claims about, but should also be *cautious about how they characterize those episodes*. This is discussed in Section 3.4. Before turning to that discussion, however, it is important to consider the objection that

[49] Note that this terminology is more natural for the new scientist than for the person who holds that the sensory qualities that we are acquainted with in ordinary perception are mind-independent, since on that view those qualities are not really thought to *correspond with* facts about the immediate perceptual environments of perceivers, but to be *part of* those perceptual environments. Nonetheless, they can fairly easily adopt this terminology, simply taking "veridical" to indicate that the sensory qualities at issue can be found in the relevant perceptual environments.

despite what many new scientists say, the supposed scientific phenomenon of phenomenal consciousness can be legitimately inferred without calling on first-person data claims.

3.3 INFERRING THE SCIENTIFIC PHENOMENON

I noted above that scientific phenomena are seldom inferred from just data alone. The reason for this is that scientific research is not typically carried out in isolation from scientific theory and scientific theory generally plays a critical role in inferring scientific phenomena. A well-known example is black holes. Although black holes cannot be directly observed, their existence can be inferred from observations of their surroundings in conjunction with general relativity theory. It is sometimes claimed that as a scientific phenomenon, phenomenal consciousness is inferred in a similar way—it is taken to be a theoretical construct that is comparable to any of a number of commonly accepted entities in modern science that are not straightforwardly observable.[50] Given this, it might be thought that scientific theory could replace first-person data claims for purposes of inferring that the scientific phenomenon of phenomenal consciousness exists.

In fact, Bernard Baars (1997, 2003) seems to assert as much at places, suggesting that the phenomenon can be inferred from just the scientific data in combination with scientific theory. Thus, while he holds that each of us have first-person data that tell us about our own phenomenal consciousness, he states that as a scientific phenomenon it must be inferred from the scientific data. This leads Baars to treat phenomenal consciousness as a theoretical construct (2003, 4):

> Many observers have pointed out that science is obliged to treat consciousness not as an observable datum but as an inferred concept based on public evidence. To

[50] Note that phenomenal consciousness is not thought to be strictly unobservable, but to be unobservable by others: It is thought that you can introspect your qualia, but not my qualia, and vice versa.

> each of us conscious sights and sounds appear as primary events, but as researchers dealing with public evidence, we can confirm only the reports people make about their conscious experience. Scientifically, therefore, consciousness is not something that we know directly; it is a theoretical construct based on shared, public observations.

It is important to note, however, that while Baars restricts the data to people's reports, he assumes that those reports are *about* the people's conscious experiences (about their supposed phenomenally conscious mental states and qualia).

Rather than explicitly call on his own claimed first-person data, however, Baars suggests a different type of support for the assumption that first-person reports are about qualia. Thus, he compares phenomenal consciousness to a number of commonly accepted theoretical constructs that are supported by the success of the scientific theories that they are embedded in. Baars writes (2003, 4):

> All sciences make inferences that go beyond the observations. The atom was highly inferential in its first modern century; so was the gene; so was the vastness of geological time, a necessary assumption for Darwinian evolution; and other scientific constructs too numerous to list.

The implication is that Baars holds that the inference of phenomenal consciousness also goes beyond the observations (the scientific data) and that the acceptance of this construct is justified by the same types of considerations that support our acceptance of atoms and genes.

The problem is that the case of phenomenal consciousness is rather different from the cases of atoms and genes. For one thing, the concept of phenomenal consciousness does not seem to have been *constructed* to fill a particular need in a successful scientific theory. In fact, one of the big worries about the supposed phenomenon is exactly that we do not know what it is for, as was discussed in Chapter 1. Again, this is perhaps best illustrated by considering the debate over the possibility of philosophical zombies. The debate is premised on phenomenal consciousness not playing any known role in the production of our behavior; but, of course, this

debate would be utterly inexplicable if the concept was a theoretical construct designed to fulfill a functional role in a scientific theory of the mind.

In response it might be argued that despite appearances to the contrary, the concept of phenomenal consciousness is a theoretical construct that plays a role in a successful scientific theory. Unfortunately, the only plausible candidate for such a theory is not a scientific theory of the sort that Baars references: It might be argued that folk psychology should be treated as a scientific theory, that it is a successful theory, that it postulates phenomenal consciousness, and that it plays a role in the success of the theory. It is unclear, however, that any of these conjuncts is true. Thus, it is unclear that folk psychology is best thought of as a scientific theory (e.g., Goldman, 1989), it is unclear that folk psychology is successful (e.g., Churchland, 1981), it is unclear that the concept of phenomenal consciousness is part of folk psychology (e.g., Sytsma, 2010), and it is unclear that the concept plays a role in whatever success folk psychology does enjoy (e.g., Knobe and Prinz, 2008).

Although Baars suggests that the justification for the inference of phenomenal consciousness is of the same type as for the inference of theoretical constructs like the atom and the gene, this does not seem to be correct. The assumption that the scientific data is data *about* phenomenal consciousness needs to be justified in another way. In fact, Baars is actually best read as holding that phenomenal consciousness *in others* is a theoretical construct: He infers that *other agents* are phenomenally conscious from their first-person reports *coupled with* his own first-person data claims. Reading Baars in this way, however, it is simply not the case that the inference of phenomenal consciousness is based on *just* the public evidence (in combination with scientific theory); rather, his inference critically relies on his claimed knowledge of his own

phenomenal consciousness. That is, the supposed scientific phenomenon is inferred not just from the scientific data, but from the scientific data in combination with first-person data claims.

The use of first-person data claims in inferring the supposed occurrence of phenomenally conscious mental states in other agents has also been advocated by philosophical proponents of a science of consciousness. For example, John Searle writes (1998, 1936):

> I experience my own conscious states, but I can neither experience nor observe those of another human or animal, nor can they experience or observe mine. But the fact that the consciousness of others is "unobservable" does not by itself prevent us from obtaining a scientific account of consciousness. Electrons, black holes and the "Big Bang" are not observable by anybody, but that does not prevent their scientific investigation.

Certainly, Searle is correct that it is not generally a requirement for being a legitimate scientific phenomenon that it be publicly observable. The key point to recognize, however, is that having *some evidence* is a requirement for legitimately inferring a scientific phenomenon. We have a great deal of evidence for scientific phenomena like electrons and black holes, evidence that reflects both the scientific data and the success of the scientific theories that posit those entities. For phenomenal consciousness, however, there is no theoretical support of this type. To infer the supposed scientific phenomenon of phenomenal consciousness new scientists must instead supplement the scientific data with first-person data claims—as is suggested by Searle's claim that he "experiences his own conscious states."

3.4 TWO TYPES OF FIRST-PERSON DATA

We have just seen that new scientists must call on first-person data claims if they are to infer the supposed scientific phenomenon of phenomenal consciousness. They do not call on just any

first-person data claims, however. In fact, they do not call on just any uncontroversial first-person data claims. Rather, they specifically claim to be *acquainted with qualia* during episodes of ordinary perception, taking their first-person data to be data about their supposed phenomenally conscious mental states.

What do new scientists mean when they claim to be acquainted with qualia in such episodes? It is clear that they take themselves to be acquainted with *something* in each of these episodes and that they take those *somethings* to be qualia. Leaving acquaintance as a primitive, there are two basic ways to interpret the new scientists' first-person data claims. The most straightforward reading is that they take themselves to be acquainted with qualia because they take the episodes of acquaintance on their own to directly establish the existence of the supposed qualia at issue. In other words, on this reading new scientists take themselves to be acquainted with sensory qualities *as being* qualia. Call this the strong interpretation. Alternatively, new scientists might simply take the episodes to directly establish the existence of sensory qualities, and then *interpret* those sensory qualities as being qualia. Call this the weak interpretation.

If the weak interpretation is the best interpretation of new scientists' claims to be acquainted with qualia, then the cautious approach to first-person data would be for them to simply claim to have episodes of acquaintance with sensory qualities. I will refer to such claims as *weak first-person data claims*. New scientists would then need to *argue* that the sensory qualities that they claim to be acquainted with are qualia. Alternatively, if the strong interpretation is the best interpretation of new scientists' claims to be acquainted with qualia, then we can take them to deny that such argumentation is needed—the first-person data claims on their own would be sufficient. I will refer to such claims as *strong first-person data claims*.

Based on what new scientists say, I find the strong interpretation of their first-person data claims to be the most plausible reading: New scientists believe that they are acquainted with sensory qualities *as being* qualia. As my goal will be to argue that new scientists have not established beyond reasonable doubt that they are acquainted with qualia, however, it does not much matter if I am correct in my reading: If they do not actually take themselves to be acquainted with sensory qualities as being qualia, then so much the better—the result would simply be that I would not need to argue against the use of strong first-person data claims and could just focus on weak first-person data claims.

3.5 A DILEMMA FOR THE NEW SCIENCE

The pieces are now in place to pose a dilemma for the new science of consciousness. New scientists need to make a compelling case for the existence of the supposed scientific phenomenon of phenomenal consciousness, minimally establishing that normally functioning adult humans have qualia at least in some central episodes of ordinary perception. To do this they must make use of first-person data claims. This raises a potential problem: Supposed first-person data are private and the use of claims about private data violates the publicity principle, risking epistemic divergence. This pushes new scientists to take a cautious approach to the use of first-person data claims: First-person data claims can be used if they cannot be reasonably disputed. As such, new scientists often focus on claims about episodes of acquaintance with veridical sensory qualities in ordinary perception.

New scientists do not simply claim to be acquainted with sensory qualities in episodes of ordinary perception, however, but specifically claim to be acquainted with qualia. Such first-

person data claims can be understood in one of two ways: It might be that new scientists are best read as making strong first-person data claims or as making weak first-person data claims. If they make strong first-person data claims, then the claim that they are acquainted with qualia straightforwardly follows. If new scientists make weak first-person data claims, however, then a further inference is involved and this inference requires justification. This leads to the dilemma for the new science: I will argue that if new scientists call on strong first-person data claims, then they are showing insufficient caution with regard to private data, which brings the scientific status of the new science into doubt; but, if they instead call on weak first-person data claims, then something more is required to infer the supposed scientific phenomenon of phenomenal consciousness—new scientists must turn from science to philosophy, which brings the scientific status of the new science into doubt.

The first horn of the above dilemma is established in Chapter 4: I argue that strong first-person data claims can be reasonably disputed *even for* those episodes that are thought to be the least open to doubt—episodes of acquaintance with colors through ordinary perception. The second horn of the dilemma is established in Chapter 5: I demonstrate that if new scientists restrict themselves to weak first-person data claims, then they must call on a substantive philosophical thesis to infer the supposed scientific phenomenon of phenomenal consciousness. I do this in two steps, considering uncontroversial weak first-person data claims first (claims to be acquainted with veridical sensory qualities) and then moving to controversial weak first-person data claims (claims to be acquainted with non-veridical sensory qualities). In each case I detail an alternative position that accepts the weak first-person data claims and yet denies that the sensory qualities that new scientists are acquainted with in those types of episodes are qualia. I argue that the result is that new scientists must turn from science to philosophy to infer the

supposed scientific phenomenon of phenomenal consciousness. I then show that this turn is multiply problematic for the new science.

3.6 CONCLUSION

I began this chapter by articulating what is meant by data and phenomena in scientific work. I then noted that the new scientist cannot simply rely on the scientific data to infer the supposed scientific phenomenon of phenomenal consciousness, but must also call on claims about her own claimed first-person data. First-person data are episodes of acquaintance, which means that any such data are private. While the use of private data claims in science is generally controversial, I granted that new scientists can use first-person data claims so long as they do so cautiously. I then distinguished between two types of first-person data claims—strong first-person data claims and weak first-person data claims—and suggested that the use of each type of claim is problematic for the new science.

4.0 PHENOMENAL CONSCIOUSNESS IS NOT OBVIOUS

In the previous chapter, I posed a dilemma for the new science of consciousness: Either new scientists call on strong first-person data claims (which leads to a problem) or they call on weak first-person data claims (which leads to a problem). In this chapter, I establish the first horn of that dilemma. I show that the use of strong first-person data claims is problematic because the accuracy of such claims can be reasonably disputed. As such, for new scientists to use strong first-person data claims is to exhibit insufficient caution with regard to private data, violating even the weakened version of the publicity principle that they adopt. In other words, I argue that *by the new scientists' own light* they cannot both rely on strong first-person data claims and rightly claim to be part of a legitimate science. I conclude that new scientists must instead call on weak first-person data claims. This leads to the second horn of the dilemma, which is discussed in the following chapter.

Here is how I will proceed. In Section 4.1, I show that the case for some strong first-person data claims being able to be used cautiously depends on the general claim that the existence of phenomenal consciousness is phenomenologically obvious. I then challenge the generality of this claim, charging that many (and plausibly most) people do not find the existence of phenomenal consciousness to be phenomenologically obvious even in those episodes of acquaintance that have been thought to be the least open to dispute. I present four types of support for this charge. In Section 4.2, I present anecdotal support related to what has been called

the “naïve view” of perception. In Section 4.3, I present phenomenological support based on philosophical claims about the so-called transparency of experience. In Section 4.4, I present historical support concerning discussions of the common-sense view of perception in Europe during the Early Modern period. Finally, in Section 4.5, I present experimental support from a series of studies on adult Americans.

4.1 DISPUTING STRONG FIRST-PERSON DATA CLAIMS

Why should we accept the accuracy of strong first-person data claims? Specifically, why should we believe that in episodes of ordinary perception new scientists are acquainted with sensory qualities *as being* qualia, rather than simply being acquainted with sensory qualities that they then take to be qualia (if they are acquainted with sensory qualities at all)? Recall that new scientists show some caution with regard to the use of private data, focusing on cases that they think cannot be reasonably disputed, including especially episodes of acquaintance with colors in ordinary visual perception. As such, the question can be reformulated to be even more pointed: Why should we believe that new scientists are acquainted with colors *as being* qualia in ordinary visual perception rather than simply being acquainted with sensory qualities that they then take to be qualia?

If you believe that you have strong first-person data in episodes of ordinary perception, then you might simply accept the new scientists’ strong first-person data claims. But what if you do not believe that you have strong first-person data even in episodes of acquaintance with colors in ordinary perception? Now things get much trickier. You would face epistemic divergence with new scientists. In fact, this is the situation that I find myself in: I do not believe that I have

strong-first person data even in episodes of acquaintance with colors in ordinary perception. Of course, it might be that I am just the exception that proves the rule. If everyone but me believes that they have strong first-person data, then new scientists might well argue that my disagreement does not amount to reasonable doubt.[51] If we assume that my episodes of ordinary visual perception are essentially like those of others, then new scientists might well argue that it is more likely that I am mistaken than that everyone else is mistaken.[52] What if 10% of the population was like me, however? What if it was 25%? Clearly at some point the tables would shift and the burden of establishing reasonable doubt would rest with the new scientists: They would need to show that it was reasonable to doubt other people's denials that they have strong first-person data even in cases of ordinary visual perception.

My aim in this chapter is to shift the tables. I will show that even in those cases that are thought to be the least open to doubt, many (and arguably most) people do not take the sensory qualities that they are acquainted with to be qualia. In contrast, new scientists seem to expect that almost everybody takes themselves to be acquainted with qualia in such cases. Thus, we have

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[51] It might sound strange to talk about everyone having beliefs about whether or not they have strong first-person data. Specifically, "strong first-person data" might well sound like something far too technical for most people to have beliefs about. Actually, the issue is not so technical as the terminology might suggest and the occurrence of strong first-person data are something that we should expect people generally to have beliefs about, at least once the question is raised: After all, the issue is about what is obvious just in undergoing episodes of perception, with the focus being on the ordinary perception of colors.

[52] Perhaps new scientists might instead argue that their episodes of perception must be unlike those of people who claim not to have strong first-person data. Specifically, they might assert that their episodes of perception involve something more; they are not just acquainted with sensory qualities in those episodes, but are also acquainted with the nature of those qualities—their episodes of perception having what we might call a *mental shading*. As such, it would not be a question of one group of people being mistaken; it would simply be that they are different, with members of one group having episodes of perception with mental shading that members of the other group lack. Note that if new scientists did this, however, they would be postulating a further phenomenon distinct from the supposed scientific phenomenon of phenomenal consciousness. They would be postulating *mental shading* and this might float free of qualia: It might be that people who lack episodes of perception with mental shading (people who deny having strong first-person data) nonetheless have qualia, it is just that in being acquainted with those sensory qualities they are not acquainted with them *as being* qualia. New scientists would therefore have to make the case for the supposed phenomenon of mental shading; but, the case for this certainly wouldn't seem to be any stronger than the case for the people who deny that they have strong first-person data simply being mistaken. As such, I will set this possibility aside for the sake of simplicity. Note, however, that the arguments given in this chapter could just as easily be used to raise doubts about mental shading.

seen that, new scientists appear to hold that the existence of phenomenal consciousness is phenomenologically obvious. Understood as a general claim, they assert that it is manifest just in undergoing episodes of ordinary visual perception, for example, that the colors that people are acquainted with are qualia. If this assertion is correct, then new scientists could call on strong first-person data claims while remaining cautious about the use of private data. Against this, in the remainder of this chapter I will present various types of evidence that jointly cast sever doubt on the generality of the claim that the existence of phenomenal consciousness is phenomenologically obvious. Having done so, I conclude that the tables have shifted and that new scientists cannot call on strong first-person data claims while remaining cautious about the use of private data.

4.2 ANECDOTAL SUPPORT

According to the standard understanding in the new science, qualia are sensory qualities that are produced by the brain. As such, it is possible to accept that we are acquainted with sensory qualities in ordinary perception while denying that those qualities are qualia: One can simply deny that they are produced by the brain, instead taking them to be mind-independent qualities of worldly entities. This general type of view is called *naïve realism* and it is central to the position of disjunctivism that will be discussed in the next chapter. For example, M. G. F. Martin articulates disjunctivism in this way (2008, 354):

> Disjunctivism about perceptual appearances, as I conceive of it, is a theory which seeks to preserve a naïve realist conception of veridical perception in the light of the challenge from the argument from hallucination. The naïve realist claims that some sensory experiences are relations to mind-independent objects. That is to say, taking experiences to be episodes or events, the naïve realist supposes that

> some such episodes have as constituents mind-independent objects. In turn, the disjunctivist claims that in a case of veridical perception like this very kind of experience that you now have, the experiential episode you enjoy is of a kind which could not be occurring were you having an hallucination.

The central claim of naïve realism is that in being acquainted with sensory qualities in ordinary perception we stand in a perceptual relation to mind-independent qualities.

It is not perfectly clear what Martin means by "perceptual relation." Nonetheless, this can be reasonably interpreted as simply being a type of acquaintance—standing in a perceptual relation to sensory qualities just means that we are acquainted with them through perception. As noted previously, the concept of acquaintance could do with some elucidation, but I will follow the literature in treating it as a primitive. For our purposes, what is most important, then, is that the naïve realist holds that in an ordinary event like looking at a ripe tomato—a "sensory experience" in Martin's terminology[53]—the redness that I am acquainted with is a mind-independent quality of the tomato; and, if this is correct, then the redness is not a quale.

While naïve realism is clearly a philosophical position, it is intended to capture something important about our naïve understanding of perception: It has been claimed that we all have an implicit *naïve view* of perception that treats the sensory qualities that we are acquainted with in ordinary perception as being mind-independent. This naïve view is thought to be our natural, pretheoretical, or common-sense view of perception, although it is accepted that some of us come to replace this view. Further, that our common-sense view is the naïve view is commonly asserted for colors in particular. For example, Michael Tye writes that "the obvious view of color, at least as far as common sense goes, is that the color we see objects and surfaces to have are observer-independent properties of those objects and surfaces" (2000, 147). Similarly, Barry Maund (2006) expresses the general point in noting an opposed view of colors:

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[53] Note that this is congruent with the neutral sense of "experience" that I discussed in Chapter 2.

> the colors we ordinarily and naturally take objects to possess, are such that physical objects do not actually have them. Oceans and skies are not blue in the way we naïvely think, nor are apples red (nor green). Colors of this kind it is believed have no place in the physical account of the world that has developed from the 16th century to this century.

In line with this passage, it is often held that prior to being introduced to philosophical or scientific debates about colors, most of us simply take colors to be out there in the world.

Again, it is important to note that it could be the case that our naïve view of perception places sensory qualities in the world, even if many people eventually come to adopt a different view. Thus, it is likely that some people arrive at philosophical worries about the nature of colors on their own. For example, some people might come to worry about individual differences with regard to vision, perhaps contemplating cases like colorblindness. This might lead them to hold that perception does not acquaint us with colors just as they are, perhaps pushing these people to adopt a more nuanced version of the naïve view than they started with (see Chapter 5). Some people might go further, perhaps recreating the inverted spectrum thought experiment, for example, and coming to believe that our brains must produce the sensory qualities that we are acquainted with. These people might then reject the naïve view outright. Alternatively, it is clear that some people are taught a view of perception that conflicts with the naïve view over the course of their education and it is likely that at least some of these people come to accept the view that they are taught.

Consistent with the above possibilities, the naïve view is often believed to be our default view; that is, the view that we implicitly hold at least until confronted with an alternative (or a problem that might lead us to one). For example, William Robinson writes (2004, 20):

> But it also seems to me likely that… when people first begin to reflect on the questions we are discussing, they are prone to accept that colors are "on the objects," and that their thinking may involve some confusion. Students often

> express puzzlement and a sense that they need to revise their thinking when they are first exposed to the psychology textbook account of visual perception.[54]

This suggests that prior to being introduced to the view that sensory qualities are produced by minds/brains (the qualia view), Robinson's students tend to hold the naïve view by default. While anecdotes about the reactions of college students are at best weak support for the claim that the naïve view is our default view of perception—being both subjective and unsystematic—such stories are nonetheless suggestive. Further, this claim is supported by other observations. For example, Natika Newton notes that "some people are color-blind; we don't say that objects are red to some people and not to others" (1989, 578). And Paul Skokowski considers the answers that children—those amongst us who are least likely to have been "tainted" by the prevalent theoretical views—give to questions about colors. He asserts (2007, 67): "Ask a child where the yellow is when she looks at a daffodil. She will reply 'on the daffodil.'"[55]

If it is true that the naïve view is our default view of color perception, then it is not plausible that the existence of phenomenal consciousness is phenomenologically obvious in ordinary visual perception. The reason is that the naïve view does not treat the colors we are acquainted with in those cases as being qualia, but takes them to be mind-independent. That these sensory qualities are qualia, however, is supposed to be obvious just in being acquainted with them in ordinary visual perception. If the existence of qualia were really phenomenologically obvious in such cases, then we would expect naïve individuals to take colors to be mind-dependent; certainly, at the very least we would expect them to remain

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[54] Just how quickly students revise their thinking when confronted with the textbook account likely depends on the students. I have found new philosophy students to be somewhat slow to accept that their views on the matter might need revision. Regardless, my experience is in line with Robinson's in that many of my students seem to come to philosophy holding the naïve view. In fact, I have found this to be a serious impediment to explaining the concept of qualia to my undergraduate students.

[55] Accepting that children tend to respond in ways that are consistent with the naïve view, we might expect the same from many adults. As Skokowski goes on to note, "surely there are also many adults who hold identical pre-theoretical, pre-scientific intuitions" (68).

agnostic on the point. As such, the anecdotal evidence supports the charge that the existence of phenomenal consciousness is not phenomenologically obvious even in ordinary visual perception. Although suggestive, we should nonetheless not place too much weight on this: As I noted above, anecdotal evidence is at best rather weak evidence. Although it could be argued that the new scientists' case is not much stronger—their support for the claim that the existence of phenomenal consciousness is phenomenologically obvious hardly amounting to much more than anecdotal evidence—I will instead turn to other support that can be offered for my charge.

4.3 PHENOMENOLOGICAL SUPPORT

Sometimes philosophers go further, not just claiming that the naïve view is widely held or that it is the default view, but suggesting that this is the case *because* sensory qualities like colors *seem to be mind-independent*. In other words, these philosophers claim that far from it being phenomenologically obvious to them that the sensory qualities that they are acquainted with in ordinary visual perception are qualia, insofar as their phenomenology supports either view, it supports the naïve view over the qualia view. For example, Natika Newton writes that "visual sensations do not *feel like* sensations; instead sensations like colour *appear* to the naïve subject to be properties of external objects" (2000, 63, italics added). Similarly, Tim Crane writes that embracing the relational view of ordinary perception is to "preserve one of the central features of perception *as we experience it*—part of the commonsense conception, if you like" (2008, 141, italics added). If these philosophers are correct, then not only is the existence of phenomenal consciousness not phenomenologically obvious in ordinary visual perception, but quite the opposite: If anything, it is the naïve view that is supported by the phenomenology.

Speaking for myself, I too find that my phenomenology does not support the qualia view. When I pay close attention to what I am acquainted with in episodes of ordinary visual perception, for example, attempting to introspect as hard as I can, I simply do not find that the existence of qualia is obvious just in undergoing those episodes. When I look directly at a ripe tomato that is close by in good lighting conditions, the redness that I am acquainted with seems to be part of the tomato (this is often put in terms of the redness seeming to be on or in the tomato). I see the tomato as being red and nothing about the perceptual episode alone suggests to me that the redness is actually produced by my brain. Given this, I personally find it reasonable to doubt that qualia are phenomenologically obvious for new scientists even in cases of ordinary visual perception. Nonetheless, I said that I would be miserly with regard to what constitutes reasonable doubt and I suppose I could be mistaken (perhaps I am delusional or the victim of post-hypnotic suggestion). And, of course, some other philosophers have claimed more or less explicitly to have introspective knowledge of sensory qualities as being qualia (see, for example, Block, 1996; Loar, 1990; Gertler, 2001). As such, I will not base the phenomenological support on my own judgments about what is or is not obvious for me just in undergoing episodes of ordinary visual perception. Rather, I note that I am not alone, as the above quotes illustrate.

In fact, a number of philosophers have suggested that the existence of qualia is not phenomenologically obvious even in ordinary visual perception. This is perhaps most clear in discussions of the so-called “transparency of experience.” When philosophers claim that ordinary visual perception is transparent, for example, they are in part indicating that they do not find that they are acquainted with sensory qualities *as being* qualia in those episodes. In fact, these philosophers often claim quite the opposite, noting that they *seem* to be acquainted with sensory

qualities as qualities of external objects. For example, in his classic statement of the point, Gilbert Harman writes (1990, 39):

> When Eloise sees a tree before her, the colors she experiences are all experienced as features of the tree and its surroundings. None of them are experienced as intrinsic features of her experience. Nor does she experience any features of anything as intrinsic features of her experience. And that is true of you too. There is nothing special about Eloise's visual experience.

If Harman is correct in taking this description to be typical of ordinary visual perception in humans, then those who claim that it is obvious just in undergoing such episodes that the colors that they are acquainted with are qualia are quite unusual in this regard.

Is Harman correct? As a phenomenological point about ordinary visual perception, the philosophical consensus seems to support the claim. Thus, even critics of the arguments typically derived from claims about the transparency of experience sometimes agree with the phenomenological point that I am calling on. To illustrate, consider Amy Kind's endorsement of this point in a recent critique of transparency claims as used by representationalists:

> Even if there are special cases in which perceptual experience is not transparent, it might be that ordinary visual experience (or, more broadly, even ordinary perceptual experience) is transparent. While this point strikes me as right in principle, I doubt it will sound very appealing to proponents of transparency. (2003, 235)

This suggests that I am certainly not alone in finding that it is *not obvious* just in undergoing episodes of ordinary visual perception that the sensory qualities that I am acquainted with are qualia. Accepting that these claims about the phenomenology of ordinary episodes of visual perception are on at least an equal footing with the contrasting claims suggested by new scientists, I conclude that even the supposedly cautious use of strong first-person data claims in the new science can be reasonably disputed.

4.4 HISTORICAL SUPPORT

Recall that in Section 4.2 we saw Barry Maund assert that the naïve view of sensory qualities faced opposition based on the account of the physical world developed from the 16th century to today. This suggests that we should look to the Early Modern period in Europe for evidence that the naïve view was widespread prior to these theoretical developments. Doing so, what we find is that important figures like Galileo, Descartes, and Locke put forward a view of sensory qualities that was in opposition to the naïve view and that in doing so they explicitly took their view to be counterintuitive. Although the opposed view of sensory qualities came to gain scientific/philosophical ascendancy, it did so despite the fact that many philosophers at the time recognized that common sense placed sensory qualities like colors out there in the world. For example, Hume wrote in a letter to Hugh Blair (July 4, 1762; printed in *Mind*, October 1986) that "philosophy scarce ever advances a greater paradox in the eyes of the people, than when it affirms that snow is neither cold nor white: fire neither hot nor red." Or, as Pierre Bayle mockingly wrote of the Cartesian view of colors ([1697] 2000, 78): "Ever since the beginning of the world, all mankind, except perhaps one out of two hundred millions, has firmly believed that bodies are colored, and this is an error."

The view that Bayle mocks holds that the colors that we are acquainted with in ordinary visual perception are in the mind and not out there in the external world. As noted above, such a view was advocated by a number of prominent philosophers of the period. Thus, Galileo wrote ([1623] 1957, 274): "I think that tastes, odors, colors, and so on are no more than mere names so far as the object in which we place them is concerned, and that they reside only in the consciousness. Hence if the living creatures were removed, all these qualities would be wiped away and annihilated." Similarly, Descartes claimed ([1644] 1985, Article 70, 218): "It is clear,

then, that when we say that we perceive colours in objects, this is really just the same as saying that we perceive something in objects whose nature we do not know, but which produces in us a certain very clear and vivid sensation which we call the sensation of colour." Likewise, Locke asserted ([1706] 1964, 73-74): "Take away the sensation of them; let not the eyes see light or colours… and all colours… vanish and cease, and are reduced to their causes, i.e. bulk, figure, and motion of parts."

While the interpretation of each of the philosophers quoted in the previous paragraph is a tricky business, and while it undoubtedly deserves more care than I can give it here, they nonetheless each seem to deny that the colors that we are acquainted with in ordinary visual perception are to be found in external material bodies, holding instead that those bodies merely lead to the production of sensory qualities in us. In the terminology that became standard, sensory qualities such as colors were held to be *secondary qualities*: The colors that we are acquainted with are not qualities of material objects, rather the bodies are colored in a secondary sense, being such as to lead to sensations of color in us.

Historically, the secondary quality view is tightly linked to the claim that our naïve understanding of perception is radically mistaken. As A. D. Smith notes (1990, 232):

> Primary qualities are intrinsic and irreducible features of material objects. A secondary quality is one which is represented by us unreflectively as such a primary, but on reflection or by experiment is seen not to be. That is to say, Locke and his peers thought it worthwhile to have the notion of secondary quality in order to point out a common mistake…. So, for example, color and taste seem to be real, inherent and irreducible features of objects, but, according to the seventeenth century, they are not.

What Smith suggests is that the secondary quality view of colors was explicitly set in opposition to the common assumption that bodies are colored; in essence, the philosophers putting forth this

view recognized that it ran counter to how people thought about colors at the time and were claiming that the common understanding was mistaken.[56]

Insofar as we accept that philosophers during this period were accurately describing the then common-sense view of colors, it appears that most people did not hold that those sensory qualities are mental. But if it is obvious just in being acquainted with colors in ordinary visual perception that they are produced by our minds/brains, then this is rather surprising. Once again, this suggests against the general claim that the existence of phenomenal consciousness is phenomenologically obvious: It appears that prior to the ascendancy of the secondary quality view, most people in Europe took colors to be mind-independent qualities of worldly objects.

4.5 EXPERIMENTAL SUPPORT

How do people without training in philosophy or the brain sciences understand sensory qualities like colors *today*? Although we saw some anecdotal support in Section 4.2 for the answer that they implicitly hold the naïve view (and although we might draw further support for this answer from both the phenomenological considerations discussed in Section 4.3 and the historical episode discussed in Section 4.4), this is rather clearly an empirical question and to give a fully compelling answer to it we need to investigate what might be termed the "folk theory of perception." Of course, in investigating the folk theory we might find that talk of *theories*, plural,

[56] For example, Malebranche writes ([1674] 1980, 55): "we generally attribute our sensations to objects whenever they act on us through the motion of invisible particles. For this reason, it is generally believed that colors, light, odors, tastes, sound, and several other sensations, are in the air or in the external objects causing them, because all these sensations are produced in us through the motion of imperceptible bodies." Similarly, Leibniz notes that "Descartes… rendered a useful service in eradicating the prejudice that makes heat, colors, and other phenomena seem to be things outside us" ([1692] 1969, 390-391). And, of course, many more illustrations could be given—both of the arguments waged against the common-sense view of sensory qualities and the backlash against those arguments by philosophers like Bayle.

would be more accurate: It might be that different groups of people have different implicit theories of perception; further, it might be that many individuals themselves have different views about perception for different sensory modalities. Nonetheless, I will largely ignore such complications: My goal here is not to fully detail the folk theory (or theories) of perception, but to provide evidence that many (arguably most) people today do not find even the prototypical examples of qualia found in the new science literature to be obvious just in being acquainted with the relevant sensory qualities in ordinary episodes of perception.

While relatively little work has been done on the folk understanding of perception, some recent experimental work on the folk psychology of consciousness is relevant to the question we are investigating (see Sytsma, forthcoming, for a review of this literature). Given what we have seen in the previous three sections, it is interesting to note that Joshua Knobe and Jesse Prinz's (2008) pioneering work on the topic *might* be taken to support the claim that the existence of phenomenal consciousness is phenomenologically obvious. They presented empirical evidence that the folk distinguish between mental states in a way that corresponds with the philosophical concept of phenomenal consciousness. Most notably, in their second study Knobe and Prinz asked participants with little to no training in philosophy or psychology to evaluate how natural it is to ascribe a range of mental states to a group agent (Acme Corporation). They found that the folk seem to be unwilling to ascribe those mental states that philosophers take to be phenomenally conscious to the corporation, while being disposed to ascribe other mental states to it, such as beliefs or desires. Knobe and Prinz interpret their results as providing evidence that the folk have the concept of phenomenal consciousness.

If the existence of phenomenal consciousness is phenomenologically obvious is correct, then we would expect the folk to have the concept of phenomenal consciousness. As such,

accepting Knobe and Prinz's interpretation of their results, we might take the results to provide some support for the claim. Nonetheless, as people could acquire the concept of phenomenal consciousness in other ways, that support would still be fairly weak. Regardless, there are good reasons to doubt Knobe and Prinz's interpretation of their results.

In particular, Edouard Machery and I (Sytsma and Machery, 2009) have argued that Knobe and Prinz's studies do not really show that the folk possess the philosophical concept of phenomenal consciousness. We contend that there is a natural alternative to their interpretation of the data, arguing that there is a confound inherent in their approach: Corporations differ in some significant behavioral and functional ways from individuals. A group agent like Acme Corporation is distributed; it does not have an individual body, although it is comprised of such bodies. It is thus difficult to determine whether people focus on the supposed mental nature of pain and purple (and not on the functional and behavioral differences between distributed corporations and humans) when they deny that Acme can feel excruciating pain or vividly imagine a purple square. In particular, for present purposes, it is important to note that corporations do not have perceptual systems. As such, that the folk deny that a corporation is acquainted with sensory qualities is clearly consistent with the hypothesis that they hold the naïve view. The result is that it is at best unclear that Knobe and Prinz's results support the general claim that the existence of phenomenal consciousness is phenomenologically obvious.

In fact, in a subsequent series of studies, Machery and I produced evidence suggesting that the folk do *not* have the philosophical concept of phenomenal consciousness (Sytsma and Machery, forthcoming). We began by noting that "phenomenal consciousness" is a technical phrase in philosophy of mind: Phenomenally conscious mental states are distinguished by their having phenomenal qualities and the standard examples of such qualities include the redness that

I am acquainted with in seeing a ripe tomato and the painfulness that I am acquainted with in stubbing my toe. We then argued that if the folk have this concept of phenomenal consciousness, then they should treat these different types of phenomenally conscious mental states similarly. Specifically, both the folk and philosophers should deny that an entity that lacks phenomenal consciousness can either see red or feel pain.

Our first study tested this hypothesis. The study was conducted online with participants (both non-philosophers *and* philosophers) being given either a description of a simple, non-humanoid robot (Jimmy) or of a normal human (Timmy) performing behaviorally analogous tasks expected to elicit ascriptions of either a perceptual experience or a bodily sensation for the human. In each scenario the agent (robot or human) manipulated a red box. In half of the scenarios, the manipulation was successful and participants were asked whether the agent "saw red"; in the other half, the agent was electrically shocked and participants were asked whether the agent "felt pain."

With respect to the philosophers surveyed, the results of this study were consistent with the hypothesis. Philosophers treated feeling pain and seeing red analogously. They were unwilling to ascribe either the perceptual experience of seeing red or the bodily sensation of feeling pain to the robot. By contrast, philosophers were willing to ascribe both states to a normal human male. Contrary to the hypothesis that the folk classify mental states in the same way that philosophers do, however, the folk treated the perceptual state of seeing red quite differently from the bodily sensation of feeling pain. Non-philosophers were willing to attribute seeing red to the robot, but were not willing to attribute feeling pain to it. Against the prediction derived from the claim that the folk have the concept of phenomenal consciousness, our results show a clear divergence between their answers and those given by philosophers: On average, the folk

(but not philosophers) were willing to ascribe the perceptual state of seeing red to the simple robot Jimmy. We concluded that these results, as well as those from two further studies that I will not discuss here, offered preliminary evidence that by and large the folk do not have the philosophical concept of phenomenal consciousness.

Again, my direct concern in this chapter is not with whether or not the folk have the concept of phenomenal consciousness, but with the general claim that the existence of phenomenal consciousness is phenomenologically obvious. The results discussed above are also relevant to this claim, however. Thus, it is supposed to be obvious just in undergoing ordinary episodes of visual perception that colors are qualia. But, of course, we can assume that more or less all of the participants that Machery and I surveyed have undergone such episodes. If it was obvious to them from those episodes that colors are qualia, then we would expect them to deny that the simple non-humanoid robot described could see red. This is not what they did, however: By and large they said that the robot saw red.[57]

4.5.1 Experiments on the Folk Psychology of Perception

While the study discussed above provides some support for my challenge, the support is not as direct as we might like. One way to test the new scientists' claim more directly would be to simply ask naïve participants if they think that colors are mind-independent qualities of the objects that they see or if they instead think that colors are mental. Another option would be to test the claim somewhat less directly by asking participants a related question, where the answer to that question is a reasonable indicator of their understanding of colors. For example, we might

[57] While the folk denied that the robot felt pain, it appears that for the most part they did so for a reason that does not obviously have to do with phenomenal consciousness—they appear to hold that pain has a negative valence and deny that a simple robot can either like or dislike something (see Sytsma and Machery, forthcoming, Studies 2 and 3).

ask them about the possibility of spectrum inversion.[58] Thus, it is widely (if not quite universally) agreed amongst philosophers that a commitment to the possibility of spectrum inversion is tantamount to a commitment to the existence of color qualia.[59] The idea is that if two people looking at the same object from the same perspective and in the same lighting conditions were acquainted with two colors that are quite different (one being acquainted with a color of the type that you call "red," for example, the other being acquainted with a color of the type that you call "blue"), then both colors could not straightforwardly belong to the object.

One difficulty with this approach is that it is possible to deny that the colors we are acquainted with in ordinary visual perception are qualia, while accepting that in a certain sense different people might be said to be acquainted with different colors in looking at the same object. We saw how this might work in Chapter 2: It is possible to deny that sensory qualities themselves are mind-dependent and yet to accept that they are "mind-dependent" in the sense that we are acquainted with them as *instances of mind-dependent types*. As such, the naïve realist, for example, can accept that different people might be acquainted with different colors in the sense that while they are acquainted with the same sensory quality, they are acquainted with

---

[58] The classic expression of the inverted spectrum hypothesis owes to John Locke ([1706] 1964, 215) and, not surprisingly, relates to the secondary quality view of colors discussed in the previous section. Locke wrote: "Neither would it carry any imputation of *falsehood* to our simple *ideas if*, by the different structure of our organs, it were so ordered that *the same object should produce in several men's minds different* ideas at the same time: e.g. if the *idea* that a *violet* produced in one man's mind by his eyes were the same that a *marigold* produced in another man's, and *vice versa*. For, since this could never be known, because one man's mind could not pass into another man's body to perceive what appearances were produced by those organs, neither the *ideas* hereby, nor the names, would be at all confounded, or any *falsehood* be in either."

[59] For example, Michael Tye (1994, 160) writes: "On this… issue both advocates and opponents of qualia seem agreed: Grant the Inverted Spectrum Hypothesis and perceptual qualia *must* be admitted. I shall argue that this is a mistake. We need not give up the intuition that inverted spectra are possible in order to 'quine' qualia (as Dennett puts it)." Tye's disagreement on this point, however, is specific to "perceptual qualia" and he uses this phrase to indicate a restricted sense of the term "qualia," like those seen from other philosophers in Chapter 2, that is different from the standard understanding in the new science that is at issue in this chapter. His concern is specifically with denying that the acceptance of the possibility of an inverted spectrum commits you to accepting the existence of "perceptual qualia" where this is essentially defined as qualia (on the standard understanding) that are also non-intentional and non-physical. As our concern is with the standard understanding of the term in the new science, however, we can safely bypass objections like Tye's and treat belief in the possibility of an inverted spectrum as a reasonable proxy measure for belief that the colors that we are acquainted with are phenomenal qualities.

it as being an instance of different mind-dependent types. This will be discussed further in Chapter 5. For present purposes, however, the issue need not concern us greatly: The inverted spectrum thought experiment is typically given so as to minimize the difficulty by specifying colors that are quite different and stipulating that the characters exhibit the same ability to discriminate between different colors on behavioral tests.[60] Further, if anything this difficulty would tend to *increase* the likelihood of responses that are in line with the qualia view; the difficulty would tend to work against me and in favor of the new scientists. As such, if we nonetheless find that a large percentage of people deny that spectrum inversion is possible, it should be seen as correspondingly strong evidence against the claim that phenomenal consciousness is phenomenologically obvious at least in cases of ordinary visual perception.

4.5.2 Study 1: Questions about Colors

My first study used both types of question described above. Each participant was given the following probe:

> There is an old puzzle that many people are familiar with: "If a tree falls in the woods and no one is there to hear it, does it make a sound?" Philosophers have posed a similar question about vision: "If there was nobody there to see it, would a ripe tomato still be red?" Some philosophers have argued that tomatoes (and other objects) are not really colored, rather the red is produced in your mind when you look at the otherwise uncolored tomato. Other philosophers have disagreed, arguing that the tomato itself is truly red—that the red that we see is the red of the tomato. We are not interested in which of these positions is "correct" (or even if

[60] For example, John Searle (2004, 85) articulates the thought experiment in this way, writing: "Let us suppose that neither you nor I is color blind. We both make exactly the same color discriminations. If asked to pick out the red pencils from the green pencils, you and I will both pick out the red pencils. When the traffic light changes from red to green, we both go at once. But let us suppose that, in fact, the inner experiences we have are quite different. If I could have the experience you call 'seeing green,' I would call it 'seeing red.' And similarly, if you could have the experience I call 'seeing green,' you would call it 'seeing red.' We have, in short, a red-green inversion. This is totally undetectable by any behavioral tests, because the tests identify powers to make discriminations in the world, and not the power to label inner experiences. The inner experiences might be different, even though the external behavior is exactly the same."

there is a correct answer to these questions). *What we want to know is how you think about colors—we want to know your intuitions about these questions.*

1. Do you think that a ripe tomato would still be red even if there was nobody around to see it?

2. Do you think that the red you see when you look at a ripe tomato is in your mind?

3. Do you think that the red you see when you look at a ripe tomato is in the tomato?

4. Do you think it is possible that somebody else might actually see the color that you call "blue" when they look at an ordinary ripe tomato, despite having normal visual acuity (i.e., without being color-blind)?

Participants answered each question on a 7-point scale anchored at 1 with "clearly no," at 4 with "not sure," and at 7 with "clearly yes." The survey was given to 52 undergraduates at the University of Pittsburgh. One participant was removed because she had taken the survey previously; an additional 11 participants were removed because they had training in philosophy or psychology.[61] The remaining 40 participants were 62.5% female, with an average age of 20.4 years, and ranging in age from 18 to 41 years old.

High answers to questions 1 and 3, and low answers to questions 2 and 4, correspond with the naïve view of colors; the mean responses for these participants follow this pattern (see Figure 4.1). As predicted, the mean responses for the first and third questions were significantly above the neutral point of 4, while the mean responses for the second and fourth questions were significantly below 4.[62]

[61] Participants were counted as having training in philosophy or psychology if they indicated that they had completed some graduate work in philosophy or psychology or if they indicated that they had completed or were completing an undergraduate major in philosophy or psychology.

[62] Question 1: M=6.10, SD=1.172, $t(39)$=11.329, p<0.001 (one-tailed); Question 2: M=3.20, SD=1.951, $t(39)$=-2.594, p=0.007 (one-tailed); Question 3: M=5.05, SD=1.568, $t(39)$=4.235, p<0.001 (one-tailed); Question 4: M=3.33, SD=2.235, $t(39)$=-1.910, p=0.032 (one-tailed).

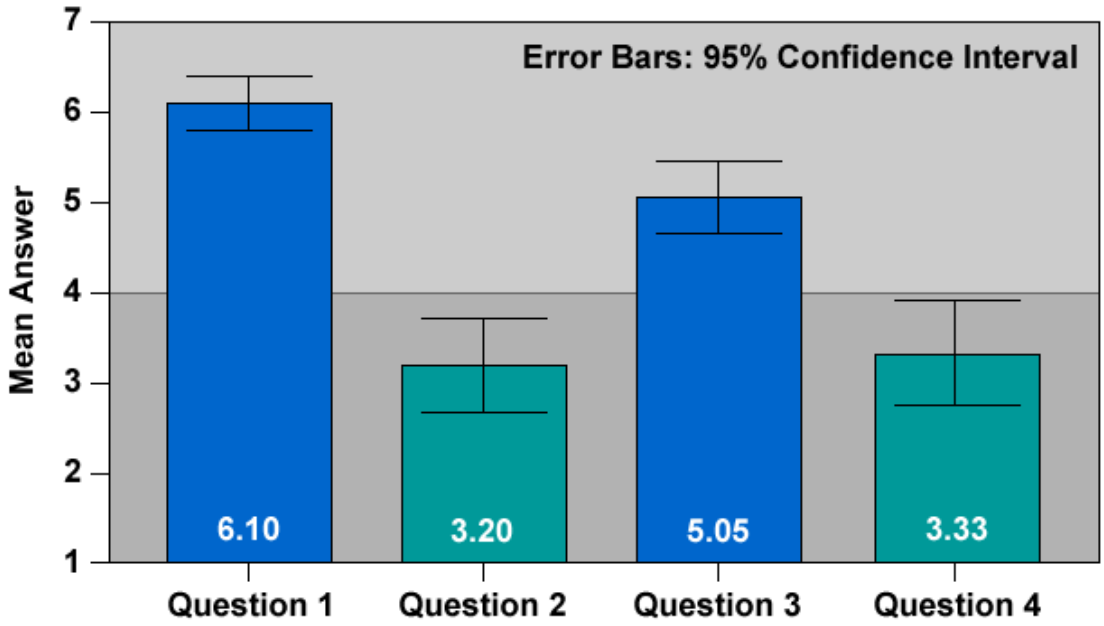

Figure 4.1. Study 1 results.

What we find is that a majority of those tested hold that colors are qualities of objects outside the skull, that a majority deny that colors are mental, and that a majority deny that spectrum inversion is possible. This is strong evidence that a significant percentage of the folk do not hold that colors are qualia. In turn, this is strong evidence against the general claim that the existence of phenomenal consciousness is phenomenologically obvious. And from this it follows that strong first-person data claims can be reasonably disputed.

4.5.3 Study 2: Questions about Colors and Pains

I could easily rest my case at this point: All that I needed to show is that it is possible to reasonably dispute even strong first-person data claims about those cases that are taken to be the least open to dispute—and I take myself to have done this. Nonetheless, it might be argued that colors were not the best test case and that new scientists should focus instead on a different type

of central case. This strikes me as a dubious strategy, however, since colors were chosen exactly because the phenomenology of color vision is supposed to be so clear that claims about what is obvious in ordinary episodes under good conditions could not be reasonably doubted. Thus, while the responses given by the folk for questions about other types of sensory qualities *might* shift closer to the qualia view, this gain would be purchased at the price of it being less clear that their responses reflect what is phenomenologically obvious about those episodes. Despite this, let's continue to be miserly about what constitutes reasonable doubt and investigate another type of sensory qualities.

As we have seen, colors (and specifically redness) are just one of two prototypical examples of supposed qualia found in the literature—the other being pains. The evidence suggests that most people hold a naïve view about colors. Do most of them also hold a naïve view about pains, treating them as mind-independent qualities of some body parts such as a stubbed toe? If they did then this would seem to be rather decisive evidence against the general claim that the existence of phenomenal consciousness is phenomenologically obvious. The reason is that unlike colors, almost nobody in philosophy (or the new science) would have predicted this result. For example, the philosophical consensus concerning pains runs *strongly* counter to the naïve view. In fact, *pains* (not *feelings of* pain) are often treated as paradigmatic examples of *mental states*. Thus, Hillary Putnam writes that "'pain' will henceforth be our stock example of a mind word" ([1968] 2002, 46). He goes on to assert that "one cannot have a severe pain and not know it" and that "one cannot have a 'pain hallucination'" (48). Saul Kripke (1972, 147) writes that it is "self-evidently absurd" that "the very pain I now have could have existed without being a mental state at all." In like fashion, Michael Tye (2000, 35) asserts that "there is a clear range of commonsense facts that any theory of phenomenal consciousness needs to

explain—for example: the fact that I cannot experience your pains, itches, tickles, and so on." David Chalmers (2006, 114) writes:

> Can one conceive of one's ankle being in perfect pain without anyone experiencing the pain? It is not clear that we can. In this respect the phenomenology of pain is quite different from the phenomenology of color, where we have no trouble conceiving of an object being perfectly colored even though no one ever experiences its color.

As M. G. F. Martin (2002, 406) summarizes for the case of itches: "Normally we think of feeling an itch to be a necessary condition of the existence of an itch… and we are also inclined to think that the feeling of an itch is sufficient for the existence of an itch."

Do the folk understand pains in the same way that these philosophers do? Do they conceptualize pains as mental and therefore hold that they cannot exist unfelt and that they cannot be shared with anybody else? To test this, I began by adapting the probe used in Study 1 to the case of pains. For comparison, participants were randomly given either the pain probe or a revised version of the color probe:

> **Color Questions:** There is an old puzzle that many people are familiar with: "If a tree falls in the woods but no one is there to hear it, does it make a sound?" Philosophers have posed a similar question about vision: "If there is a ripe tomato on the table but no one is there to see it, is it still red?" Some philosophers have argued that tomatoes, for example, are not really colored; rather, they hold that the red is produced in your mind and is merely caused by the tomato. Other philosophers have disagreed, arguing that the red is really in the tomato and is simply seen by the mind.
>
> **1.** Which of these two positions do you agree with more?[63]
>
> **2.** Do you think that there is still red in a ripe tomato even when there is no one there to see it?
>
> **3.** Do you think that the red you see when you look at a ripe tomato is in your mind?
>
> **4.** Do you think that the red you see when you look at a ripe tomato is in the tomato?

[63] While questions 2, 3, and 4 were answered on the same scale used in Study 1, question 1 was answered on a 7-point scale anchored at 1 with "the red is produced in your mind and is merely caused by the tomato," at 4 with "not sure," and at 7 with "the red is really in the tomato and is simply seen by the mind."

Pain Questions: There is an old puzzle that many people are familiar with: "If a tree falls in the woods and no one is there to hear it, does it make a sound?" Philosophers have posed a similar question about pain: "If a person has badly injured her leg but isn't paying attention to it, is there still a pain?" Some philosophers have argued that when you stub your toe, for example, the pain is not really located in the injured toe; rather, they hold that the pain is produced in your mind and is merely caused by the injured toe. Other philosophers have disagreed, arguing that the pain is really in the injured toe and is simply felt by the mind.

1. Which of these two positions do you agree with more?[64]

2. Do you think that there is still pain in a badly injured leg even when the person is not aware of it?

3. Do you think that the pain you feel when you forcefully stub your toe is in your mind?

4. Do you think that the pain you feel when you forcefully stub your toe is in the toe?

The survey was completed online by 340 participants.[65] Of these, 42 were removed because they had participated in a previous study or because they were under 18 years of age; an additional 59 participants were removed because they had training in philosophy or psychology. The remaining 239 participants were 70.3% female, with an average age of 35.6 years, and ranging in age from 18 to 83 years old.

Low answers to Question 3 and high answers to the other three questions correspond with the naïve view; the mean responses for the participants for each of the probes followed this pattern (see Figure 4.2). As predicted, the mean responses for the first, second, and fourth questions were significantly above the neutral point of 4, while the mean responses for the third

[64] While questions 2, 3, and 4 were answered on the same scale used in Study 1, question 1 was answered on a 7-point scale anchored at 1 with "the pain is produced in your mind and is merely caused by the injured toe," at 4 with "not sure," and at 7 with "the pain is really in the injured toe and is simply felt by the mind."
[65] The results were collected through the Philosophical Personality website (http://PhilosophicalPersonality.com).

question were significantly below 4.[66] What we find is that a majority of the participants tested deny the qualia view for both colors and pains, holding that these qualities are qualities of objects outside the skull and denying that they are mental. This provides further evidence against the general claim that the existence of phenomenal consciousness is phenomenologically obvious. Again we find that the use of strong first-person data claims in the new science can be reasonably disputed.

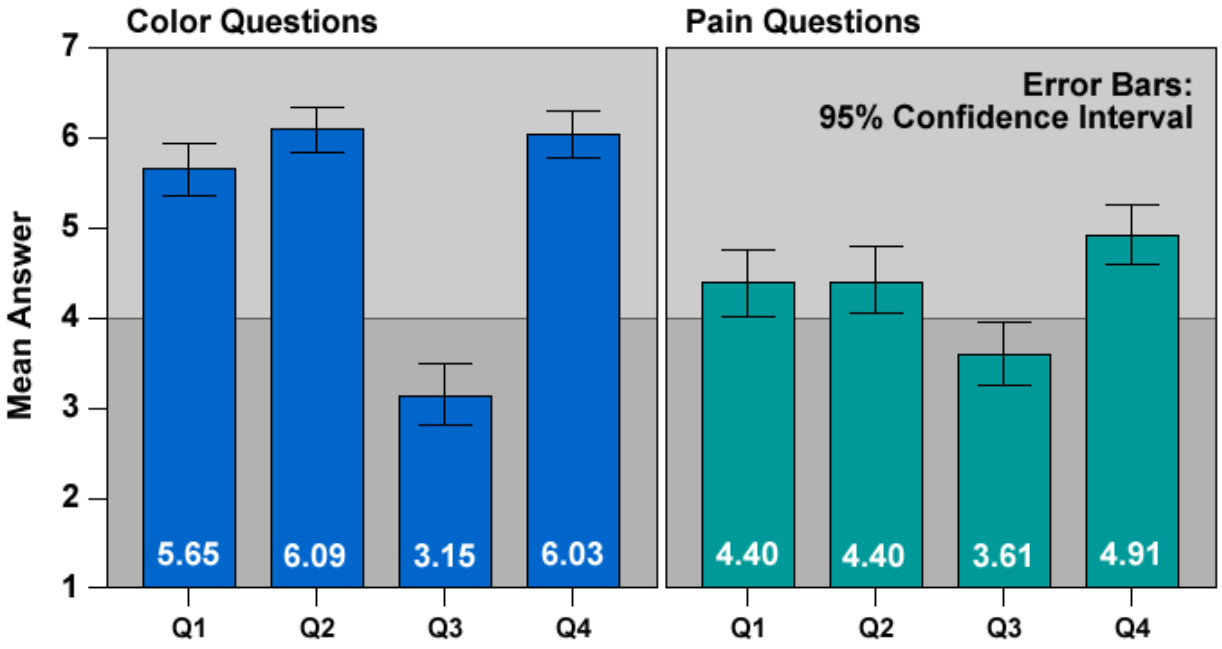

Figure 4.2. Study 2 results.

[66] Color: Question 1: *M*=5.65, *SD*=1.992, *t*(122)=9.190, *p*<0.001 (one-tailed); Question 2: *M*=6.09, *SD*=1.699, *t*(122)=13.642, *p*<0.001 (one-tailed); Question 3: *M*=3.15, *SD*=2.406, *t*(122)=-3.898, *p*<0.001; Question 4: *M*=6.03, *SD*=1.674, *t*(122)=13.466, *p*<0.001 (one-tailed). Pain: Question 1: *M*=4.40, *SD*=2.413, *t*(115)=1.770, *p*=0.040 (one-tailed); Question 2: *M*=4.40, *SD*=2.253, *t*(115)=1.896, *p*=0.031 (one-tailed); Question 3: *M*=3.61, *SD*=2.283, *t*(115)=-1.830, *p*=0.035 (one-tailed); Question 4: *M*=4.91, *SD*=2.092, *t*(115)=4.705, *p*<0.001 (one-tailed).

4.5.4 Studies 3 and 4: Unfelt Pains

Given that the results for the pain probe are not as strong as for the color probe in Study 2, however, it is worth testing the case of pains further.[67] In my third study participants read a description of a situation in which, if one holds that pains are qualities of the afflicted body parts, it would be natural to hold that a pain existed unfelt:

> It is common for people who have been badly injured and are in ongoing pain to report being distracted from the pain by an interesting conversation, an intense movie, or a good book. Afterwards, the person will often reflect that for a period of time they hadn't noticed any pain at all! In such a situation, do you think that the injured person still had the pain and was just not feeling it at the moment? Or, that there was no pain during that period?

Participants answered the question on a 7-point scale anchored at 1 with "clearly in pain, but not feeling it," at 4 with "not sure," and at 7 with "clearly not in pain." The survey was given to 55 undergraduates at the University of Pittsburgh. One participant was removed because she had taken the survey previously; an additional five participants were removed because they had training in philosophy or psychology. The remaining 49 participants were 61.2% female, with an average age of 19.6 years, and ranging in age from 18 to 43 years old.

The average response was significantly below the neutral point of 4, indicating that contrary to the philosophical consensus, the folk surveyed hold that pains can exist unfelt (see Figure 4.3).[68] This finding is predicted by the view that the folk, by and large, hold that pains are qualities of the afflicted body parts: If the pain is taken to be a quality of part of the body, then there is little reason to think that it goes away when it is not being perceived. In other words,

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[67] Note, however, that it was expected that the results would not be as strong for pains as for colors: Not only is the phenomenology of pains arguably not as clear as for colors, but the perception of pains is also linked to valence judgments as discussed in Sytsma and Machery (forthcoming) and noted in the previous sub-section.

[68] M=2.57, SD=1.671, $t(48)$=-5.985, p<0.001 (one-tailed).

unlike Chalmers in the above passage, the folk seem inclined to treat pains similarly to colors in this respect—treating both as being able to exist unperceived.

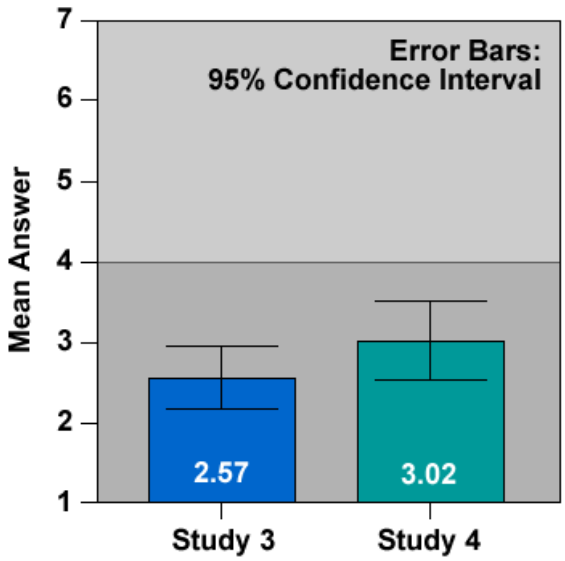

Figure 4.3. Study 3 and 4 results.

It could be argued that the use of the term "distracted" in the probe for Study 3 might have led participants to believe that the pain was ongoing (as you cannot be distracted from something that is not there).[69] My fourth study controlled for this, updating the text of the probe and removing the offending term:

> Doctors have observed that sometimes a patient who has been badly injured will get wrapped up in an interesting conversation, an intense movie, or a good book. Afterwards, the person will often report that during that period of time they hadn't been aware of any pain. In such a situation, do you think that the injured person still had the pain and was just not feeling it during that period? Or, do you think that there was no pain during that period?

[69] Note that the probe used in Study 3 and the pain vignette given in Study 2 differ in their use of the term "distracted": In Study 2 the person is distracted from her *injured leg*, not specifically the *pain*.

Participants answered on the same scale used in Study 3. The survey was given to 50 undergraduates at the University of Pittsburgh. Nine participants were removed because they had training in philosophy or psychology. The remaining 41 participants were 56.1% female, with an average age of 21.9 years, and ranging in age from 18 to 55 years old. The mean response was again significantly below the neutral point of 4 (see Figure 4.3).[70]

4.5.5 Studies 5 and 6: Shared Pains

If people hold that pains can exist unfelt because they think of the pains as residing in the afflicted body part—as the red resides in the tomato—then we would expect them to also hold (*pace* Tye) that pains could be shared… at least in the admittedly atypical case in which a body part is shared. My fifth and sixth studies presented participants with descriptions of two such cases and asked them whether the numerically identical pain was felt by two different people.

In Study 5, I gave participants the following two scenarios in sequence, counterbalanced for order:

> Henry and Johnny are normal undergraduates at a state university. They are distinct people with their own beliefs and desires. One day they were participating in a three-legged race in a park with Henry's right leg tied to Johnny's left leg. While running toward the finish line their "third-leg" forcefully kicked a large rock that, unbeknownst to them, was hidden in the grass. Henry and Johnny both grimaced and shouted out "Ouch!"
>
> Bobby and Robby are conjoined twins that are joined at the torso. While they are distinct people, each with their own beliefs and desires, they share the lower half of their body. One day while running through a park they forcefully kicked a large rock that, unbeknownst to them, was hidden in the grass. Bobby and Robby both grimaced and shouted out "Ouch!"

[70] M=3.02, SD=1.877, $t(40)$=-3.328, p=0.001 (one-tailed).

After each vignette, they were asked whether the runners felt one and the same pain or two different pains. They answered on a 7-point scale anchored at 1 with "clearly same pain," at 4 with "not sure," and at 7 with "clearly different pains." The survey was given to 41 undergraduates at the University of Pittsburgh. Six participants were removed because they had training in philosophy or psychology. The remaining 35 participants were 51.4% female, with an average age of 20.9 years, and ranging in age from 18 to 35 years old.

The mean responses for the two scenarios were significantly different, with the mean for the three-legged race scenario significantly above the neutral response of 4 and the mean for the conjoined twins scenario significantly below 4 (see Figure 4.4).[71] Again, this finding is in keeping with the hypothesis that the folk by and large locate the pains they are acquainted with in the afflicted body parts: In these scenarios, it is the number of afflicted appendages, not the number of perceiving brains, that best corresponds with the number of pains reported.

In Study 6, I found a similar result for a somewhat more fanciful scenario. Participants were given the following vignette:

> As part of an experiment, a mad scientist attached two men who had lost their arms to the same donor hand! To do this, the scientist carefully connected each of the patients' nerve fibers to the new appendage. The two of them now share the one hand. After the operation, the doctor tested their ability to use the new hand. He found that while the two patients have some difficulty picking things up with the shared hand, they show normal pain responses. In particular, when the doctor cut the palm of the shared hand, both patients grimaced and shouted out "Ouch!" Upon questioning, they told the doctor that it had hurt when he cut them.

They where then asked whether the patients felt one and the same pain or two different pains, answering on the same scale used in Study 5. The survey was given to 61 undergraduates at the University of Pittsburgh. Two participants were removed because they were under 18 or had

[71] Comparison: $t(34)=5.703$, $p<0.001$ (two-tailed); Three-legged Race: $M=5.40$, $SD=1.355$, $t(34)=6.114$, $p<0.001$ (one-tailed); Conjoined Twins: $M=3.29$, $SD=2.122$, $t(34)=-1.991$, $p=0.028$ (one-tailed).

taken the survey previously; two additional participants were removed because they had training in philosophy or psychology. The remaining 57 participants were 56.1% female, with an average age of 21.8 years, and ranging in age from 18 to 54 years old.

The mean response was significantly below the neutral point of 4, with the majority of the participants indicating that the two patients felt one and the same pain.[72] Once again, it is the number of afflicted appendages, not the number of perceiving brains, that best corresponds with the number of pains reported. In slogan form, *the folk do not treat the pains as being in the brains*. The results for Studies 5 and 6 are shown in Figure 4.4.

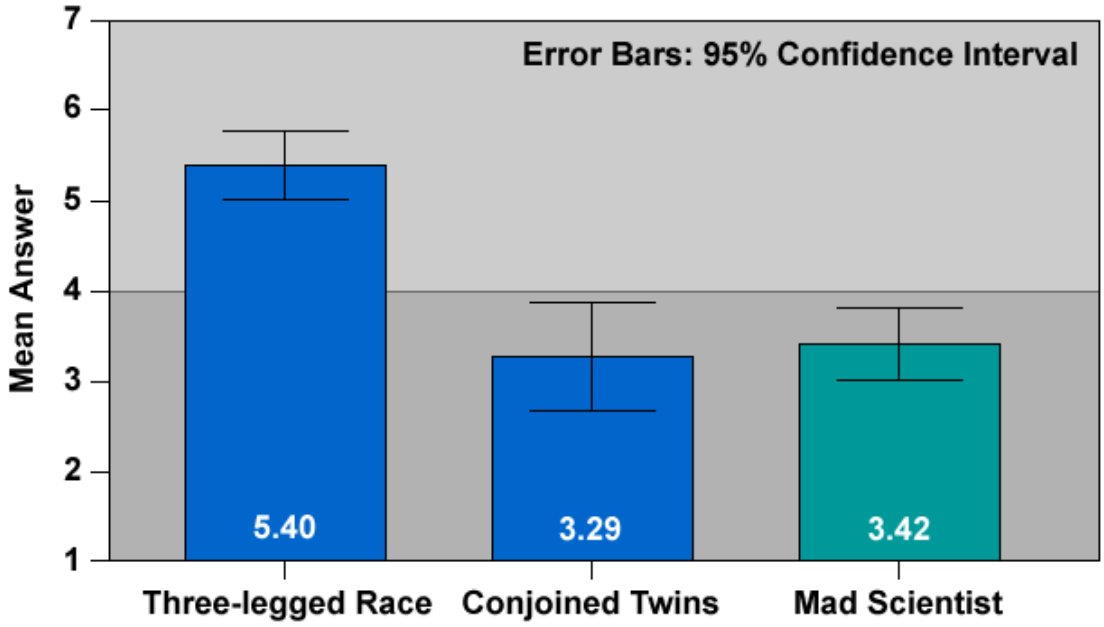

Figure 4.4. Study 5 and 6 results.

The results of these six studies provide evidence that the naïve view is quite prevalent amongst adult Americans today, at least for the two primary examples of qualia in the new

[72] M=3.42, SD=1.861, $t(56)$=-2.349, p=0.011 (one-tailed).

science literature—colors and pains. In fact, the naïve view appears to be the majority view, despite the fact that it is a minority view in philosophy and the brain sciences. That so many people hold the naïve view for colors and pains, even though the vast majority presumably have been acquainted with such sensory qualities in episodes of ordinary perception, is strong evidence against the general claim that the existence of phenomenal consciousness is phenomenologically obvious: Most of the people surveyed did not treat colors and pains as being mental, a fact that is rather difficult to explain on the view that it is obvious just in undergoing ordinary episodes of perception that these sensory qualities are qualia.

Note that my purpose in exploring the folk psychology of perception in this section has *not* been to simply set it against the understanding of perception found in the new science, as if the truth of such matters could be assessed via a popular vote: These studies were not run to test whether or not qualia exist; rather, I have discussed the views of naïve subjects to counter the general claim that the existence of phenomenal consciousness is phenomenologically obvious, thus casting doubt on the use of strong first-person data claims in the new science. If the existence of phenomenal consciousness is in fact phenomenologically obvious, then it should be obvious to ordinary people that prototypical examples of supposed qualia like colors and pains are mental. But by and large it simply is not.

4.6 CONCLUSION

In this chapter I considered the first horn of the dilemma for the new science raised in Chapter 3. I argued that insofar as new scientists use strong first-person data claims (as they seem to do), the accuracy of those claims can be reasonably disputed. I showed this by presenting evidence

against the general claim that the existence of phenomenal consciousness is phenomenologically obvious. I conclude that to use strong first-person data claims is to show insufficient caution with regard to private data. As such, by new scientists' own lights, they must either abandon the claim that the new science of consciousness is a legitimate science or else they must abandon the use of strong first-person data claims, calling on weak first-person data claims instead. This leads to the second horn of the dilemma, which is discussed in the following chapter.

5.0 FROM SCIENCE TO PHILOSOPHY

We have just seen that new scientists cannot call on claims about supposed strong first-person data while maintaining a cautious approach to the use of private data; as such, they must turn to weak first-person data claims—simply claiming to be acquainted with sensory qualities and not necessarily qualia. This brings us to the second horn of the dilemma raised in Chapter 3. In this chapter, I argue that unlike strong first-person data claims, even if weak first-person data claims are accurate they are insufficient for new scientists to infer the supposed scientific phenomenon of phenomenal consciousness without calling on an additional *substantive philosophical thesis*: They must argue that the sensory qualities that we are acquainted with in ordinary perception are qualia. This turn from science to philosophy is problematic for the new science in at least three ways: (1) It is at odds with the new scientists' dismissive attitude toward philosophy and the ability of philosophical arguments to establish substantive claims about the world; (2) having called on philosophical arguments, new scientists are no longer in a position to simply sidestep the philosophical direction of opposition discussed in Chapter 1; (3) the philosophical arguments for the substantive philosophical thesis are contentious and can be resisted.

Here is how I will proceed. In Section 5.1, I consider the use of weak first-person data claims, showing that they must be supplemented with a substantive philosophical thesis if new scientists are to establish that the supposed scientific phenomenon of phenomenal consciousness exists. Having seen that new scientists must turn from science to philosophy, I then argue that

this is problematic. In Section 5.2, I illustrate that new scientists show disdain for philosophical arguments about consciousness, raising concerns about their then relying on philosophy to infer the supposed scientific phenomenon that they target. In Section 5.3, I revisit the philosophical direction of opposition discussed in Chapter 1, arguing that if new scientists turn from science to philosophy, then they must deal with the arguments making up that opposition much more seriously than they do. In Sections 5.4, I charge that even if the turn from science to philosophy was not otherwise problematic, new scientists would still need to actually make a compelling philosophical case for the substantive philosophical thesis noted above. Two primary arguments for this thesis can be drawn from the new science literature. These are discussed in Sections 5.5 and 5.6. I show that neither argument is compelling, indicating how each can be resisted.

5.1 WEAK FIRST-PERSON DATA CLAIMS ARE INSUFFICIENT

Recall that uncontroversial weak first-person data are episodes of acquaintance with veridical sensory qualities, typically in ordinary perception, while controversial weak first-person data (if such there be) are episodes of acquaintance with non-veridical sensory qualities in unordinary perception. Recall as well that new scientists need to infer the scientific phenomenon of phenomenal consciousness, which is held to be a general phenomenon covering a wide range of agents—minimally including normally functioning adult humans—over the course of at least ordinary episodes of perception. In this section, I argue that weak first-person data claims (in combination with the scientific data) are insufficient for new scientists to infer this supposed phenomenon; they must also call on the substantive philosophical thesis that the sensory qualities that we are acquainted with in ordinary perception are qualia. The reason is quite simple: Weak

first-person data claims are claims about episodes of acquaintance with *sensory qualities*, but sensory qualities are not necessarily *qualia*. Something more is needed to show that those supposed sensory qualities are mental. Further, this is the case whether new scientists call on uncontroversial weak first-person data claims or on controversial weak first-person data claims.

5.1.1 Uncontroversial Weak First-Person Data Claims

That uncontroversial weak first-person data claims are insufficient to infer the supposed scientific phenomenon of phenomenal consciousness can be drawn out by considering the contrast between the qualia view advocated by new scientists and the position of naïve realism noted in Chapter 4. We saw that in opposition to the qualia view, the naïve realist holds that veridical sensory qualities are mind-independent qualities of worldly entities. To illustrate further, consider the description given by Sussana Siegel (2005, §2):

> [The naïve realist claims] that some experiences consist in a chunk of the environment—for instance, a lavender bush—being perceptually presented to a subject, so that both the lavender bush and the perceptual relation between it and the subject are constituents of the experience…. According to this view, when you see a lavender bush, some of its properties are presented to you, and your experience consists in your being so related to the bush and those of its properties that are presenting themselves to you.

While the lavender is a sensory quality, the naïve realist takes it to be a quality of the bush, not a quality of the mind or brain. The naïve realist holds that we can be acquainted with such sensory qualities by perceiving them—standing in the perceptual relation of acquaintance to them—and yet holds that the qualities themselves are mind-independent.

What we find is that the naïve realist will generally accept the accuracy of uncontroversial weak first-person data claims, but that she nonetheless denies that the sensory qualities at issue are qualia. As such, the naïve realist demonstrates that uncontroversial weak

first-person data claims are not sufficient for the new scientist to infer the supposed scientific phenomenon of phenomenal consciousness: The accuracy of the claims can be accepted while consistently denying that the sensory qualities at issue are qualia. Of course, new scientists could argue that naïve realism is false, making a case for their opposed qualia view, but doing so would again require that they go beyond the uncontroversial weak first-person data claims. As this is what I wanted to show in this section, I will not defend naïve realism against the objections that new scientists might raise here (although see Sections 5.5 and 5.6). I conclude that the new scientist must go beyond uncontroversial weak first-person data claims to establish the existence of the supposed scientific phenomenon that they seek to explain.

5.1.2 Controversial Weak First-Person Data Claims

One way in which new scientists might attempt to go beyond uncontroversial weak first-person data claims is by turning to controversial weak first-person data claims, asserting that they are acquainted with non-veridical sensory qualities in episodes of unordinary perception. To do so they would need to argue that the *generous* characterization of the cautious approach to private data in the new science that was drawn out in Chapter 3 is actually too cautious. They might assert that the accuracy of at least some controversial weak first-person data claims are beyond reasonable dispute and, thus, that those claims can be legitimately used in the new science. Even if we were to accept this (and I do not think that we should), the weak first-person data claims would still be insufficient to infer the supposed scientific phenomenon of phenomenal consciousness without calling on the substantive philosophical thesis that the sensory qualities that we are acquainted with in episodes of ordinary perception are qualia.

The reason is that while new scientists might plausibly claim, without further argument, that if we are acquainted with *non-veridical* sensory qualities in episodes of *unordinary perception*, then those supposed sensory qualities must be qualia, they would still need to show that the *veridical* sensory qualities that we are acquainted with in *ordinary perception* are qualia. And this is a point that new scientists would clearly need to argue for. Specifically, they would need to argue that a prominent version of naïve realism is false: The disjunctivist holds that while we are acquainted with mind-independent sensory qualities in ordinary perception, unordinary perception works differently.[73] In this, the disjunctivist adopts what A. D. Smith (2002, 43) terms a "divide and conquer strategy" for responding to the argument from illusion: "[The divide and conquer strategy] consists in upholding what I shall call 'Naïve Realism' for veridical perception, but in accounting for illusory perceptions, in the respect in which they are illusory, in terms of the merely intentional, or represented, presence of sensible qualities in consciousness." Although the disjunctivist typically focuses on the related argument from hallucination, rather than the argument from illusion, disjunctivism is readily thought of as adopting the divide and conquer strategy.[74]

It is not perfectly clear how we should understand the "merely intentional, or represented, presence of sensible qualities in consciousness," that Smith notes. In fact, this passage serves to highlight that there are at least two types of position that employ the divide and conquer strategy. Thus, we might read the passage in one of two ways, depending on whether we put the emphasis on "presence" or on "merely": On one reading, the passage asserts that we are acquainted with non-veridical sensory qualities in unordinary perception (we are *presented* with them), but on the

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[73] Disjunctivism was proposed by Hinton (1967, 1973) and developed by Snowdon (1979), McDowell (1982, 1986), Martin (2002, 2004, 2008), and others. Also see the papers collected in Haddock and Macpherson (2008).
[74] The arguments from illusion and hallucination are related to the argument discussed in Section 5.6. See Chapters 1 and 7 of Smith (2002) for a recent articulation of these arguments.

other reading it does not (we are not acquainted with the supposed sensory qualities, rather they are *merely* represented as being present). While Smith is likely best read in the second way, it seems that at least some disjunctivists are best understood as following the first reading. This is illustrated in the next paragraph and for the sake of clarity I will reserve the term "disjunctivism" for this type of position. In the following subsection, I consider the second reading, labeling the resulting position "eliminative disjunctivism."

Mike Martin adopts the divide and conquer strategy while seemingly holding that we are sometimes acquainted with non-veridical sensory qualities in episodes of unordinary perception. For example, in response to Smith he writes that "the disjunctivist is not assimilating the hallucinating subject to the victim of post-hypnotic suggestion" (2008, 375), indicating that the disjunctivist accepts that the hallucinating subject is acquainted with the supposed non-veridical sensory qualities at issue at that time (unlike what might be thought to be the case for the victim of post-hypnotic suggestion). Or again a few pages later (377): "The debate here is not over whether both sides should agree that the subject genuinely has sense experience in the case of causally matching hallucinations in contrast to the case of post-hypnotic suggestion. Both sides should agree with that." The clear suggestion is that Martin holds that the hallucinating subject is acquainted with non-veridical sensory qualities during the hallucination. These passages indicate that at least one prominent disjunctivist (Martin) can be read as accepting that we are sometimes acquainted with non-veridical sensory qualities in unordinary perception and I will take him to be representative of the disjunctivist position in this.

What disjunctivism illustrates is that even if we allowed the use of claims about supposed controversial weak first-person data in science, new scientists would still need to supplement the data with arguments for the substantive philosophical thesis noted above. Weak first-person data

claims—whether uncontroversial, controversial, or both—are insufficient to establish that we are acquainted with qualia in ordinary perception, at least not without some philosophical help. After all, the disjunctivist does not necessarily deny the accuracy of weak first-person data claims of either type, but nonetheless denies that we are acquainted with qualia in ordinary perception. Again we see that new scientists must turn from science to philosophy if they are to infer the supposed scientific phenomenon of phenomenal consciousness.

5.1.3 Eliminative Disjunctivism

I noted above that there is a second way to read Smith's description of the divide and conquer strategy: We might emphasize "merely" and downplay "presence," holding that in episodes of unordinary perception the subject is not truly acquainted with the supposed non-veridical sensory qualities at issue; rather they are *merely* represented as being present, perhaps leading the subject to believe that she is acquainted with those supposed qualities when she is not. The resulting position is *eliminative disjunctivism*. The eliminative disjunctivist grants that we are acquainted with veridical sensory qualities, while denying that we are acquainted with non-veridical sensory qualities. In other words, she holds that the only sensory qualities that exist are veridical sensory qualities and takes these qualities to be mind-independent (thus denying that sensory qualities are ever directly produced the brains of perceivers). As such, the eliminative disjunctivist accepts that uncontroversial weak first-person data claims are often accurate, but denies that controversial weak first-person data claims are ever accurate.

What we find is that in line with Smith's statement of the divide and conquer strategy, the eliminative disjunctivist accounts for illusory perceptions, *in the respect in which they are illusory*, by taking the supposed non-veridical sensory qualities to be merely represented as being

present; likewise for hallucinations, *in the respect in which they are hallucinatory*, and similarly for other episodes of unordinary perception. Thus, unlike Martin's disjunctivist, the eliminative disjunctivist *is* assimilating the victim of unordinary perception to the victim of post-hypnotic suggestion: Just as many deny that the victim of post-hypnotic suggestion is actually acquainted with non-veridical sensory qualities, the eliminative disjunctivist denies that the victims of illusions (hallucinations, dreams, etc.) are actually acquainted with non-veridical sensory qualities. This position places additional pressure on the use of controversial weak first-person data claims to attempt to establish the reality of the supposed scientific phenomenon of phenomenal consciousness.[75]

5.2 BAD FAITH

We have seen that if new scientists are to remain cautious about the use of private data, they must turn from science to philosophy to make a compelling case for the existence of the supposed phenomenon that they seek to explain. In the remainder of this chapter, I argue that this turn is problematic for the new science.

The first problem is that new scientists are dismissive of the ability of philosophical arguments to establish substantive claims about consciousness. This is often expressed by saying that science has a much better track record than philosophy, with the use of scientific methods doing far more to increase our understanding of the world than more distinctively philosophical

[75] In fact, eliminative disjunctivism provides one strategy that can be employed in resisting one of the philosophical arguments that new scientists might call on to infer the supposed scientific phenomenon of phenomenal consciousness, as will be discussed in Section 5.6.

methods.[76] Accepting this claim, not only would it be inconsistent for new scientists to turn from science to philosophy to attempt to establish the substantive claim at issue (that the sensory qualities that we are acquainted with in ordinary perception are qualia), but insofar as the support for it rests on philosophical arguments, we should be skeptical about the truth of this claim.

5.3 OTHER ARGUMENTS

A second problem for new scientists is that given the turn from science to philosophy, the standard response that they give to the philosophical direction of opposition (see Chapter 1) no longer looks even minimally compelling. Recall that the philosophical direction of opposition consists in a variety of arguments that can be construed as accepting that phenomenal consciousness exists and then purporting to show that it cannot be explained scientifically. The standard response in the new science literature corresponds with the point noted in the previous section: New scientists assert that we should put our faith in scientific method over philosophical argument. In other words, new scientists attempt to avoid the philosophical direction of opposition by turning from philosophy to science. If they were to now turn back to philosophy, however, then they would once again come face-to-face with that opposition. What we have seen is that new scientists cannot simply put their faith in scientific method, since the scientific

[76] Although many new scientists are dismissive of the use of philosophical arguments to establish substantive claims about consciousness, few are as blunt in this regard as Francis Crick. To give but one example (1994, 257-258): "The… thing to stress is that the study of consciousness is a scientific problem. Science is not separated from it by some insurmountable barrier. If there is any lesson to be learned from this book it is that we can now see ways of approaching the problem experimentally. There is no justification for the view that only philosophers can deal with it. Philosophers have had such a poor record over the last two thousand years that they would do better to show a certain modesty rather than the lofty superiority that they usually display."

evidence does not establish that there is a problem in the first place; as such, they must deal with the philosophical direction of opposition much more seriously than they normally do.

The result is that new scientists need to respond directly to the arguments making up the philosophical direction of opposition. Unfortunately, it is not clear that they can do so in a sufficiently compellingly fashion. For example, new scientists would need to give a compelling response to Frank Jackson's knowledge argument, but that argument has proven to be remarkably resilient.[77] As we saw in Chapter 2, Jackson's argument is not best understood as showing that qualia exist on the standard understanding (which would help the new science), but instead assumes the existence of such qualia and then aims to establish something about their nature. In fact, one way to put Jackson's conclusion is that these assumed qualia are non-physical and, as such, they cannot be explained neurobiologically. Far from helping the new scientist, this argument casts doubt on the viability of the new science. Furthermore, a similar point could be made about Chalmers's zombie argument discussed briefly in Chapter 1: Like the knowledge argument, for present purposes the zombie argument is best seen not as an argument for the existence of qualia on the standard understanding, but as assuming the existence of such qualia and then concluding that they cannot be explained neurobiologically.[78] And I have not even touched on Colin McGinn's mysterianism, and so on.

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[77] For instance, see Ludlow, Nagasawa, and Stoljar (2004).

[78] Although the most common response to the arguments making up the philosophical direction of opposition is to attempt to avoid them, we also saw another type of response to the zombie argument from Jeffrey Gray (2004, 71) in Chapter 1. The response is essentially that since we are talking about qualia, they must have some causal effect on our behavior. If this is correct, then although the zombie argument might *seem* compelling, it must be false. And the same response could be given to the knowledge argument. Unfortunately, there is an obvious problem with the thumbnail objection to the zombie argument sketched by Gray: Humans talk about all sorts of things that do not seem to have a causal effect on our behavior. For example, I had a conversation the other day about the land of Mordor; despite this, Mordor presumably did not have a causal effect on my behavior. After all, the land of Mordor does not exist. In response, it could be noted that talking about Mordor is not analogous to talking about qualia, since in responding to the zombie argument Gray is assuming that qualia exist, while Mordor does not exist. It is not clear that this point of disanalogy matters, however: If I can talk about something that does not exist without it having a causal effect on my behavior, then it seems plausible that I could also talk about something that does exist

Fortunately, my point does not require that we delve further into the messy details of the philosophical direction of opposition here: The point is simply that there *are* messy details to delve into. As such, if new scientists are to turn from science to philosophy, then they have to be prepared to get their hands dirty. And, even if they do so, it is not obvious from the outset that their mucking about will produce a compelling case for the new science.

5.4 THE ARGUMENTS ARE INCONCLUSIVE

The third problem for the new science is that even if the turn from science to philosophy were not otherwise problematic, new scientists would still need to make a compelling case for the substantive philosophical thesis that the sensory qualities that we are acquainted with in ordinary perception are qualia. This is a problem because, as is typical in philosophy, each of the two basic arguments for the thesis that can be drawn from the new science literature is contentious. While these arguments ultimately deserve much more space than I can give them here, my goal in the next two sections will be to offer some preliminary support for this claim by indicating how the arguments can be resisted.

We have seen that new scientists often just take the supposed existence of qualia in ordinary perception for granted. The result is that they seldom provide clear arguments for the substantive philosophical thesis beyond asserting that the existence of qualia in ordinary perception is phenomenologically obvious. As such, it is refreshing to see Jeffrey Gray

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without it having a causal effect on my behavior. For example, it seems that I could talk about something that I mistakenly think is fictional (like Mordor), but that coincidently turns out to exist and yet is still not causally linked to my behavior. Certainly, at the very least the issue is likely to turn on fine points about how reference works; but, this would push the new scientist to do some serious philosophical work not found in sketchy responses like Gray's.

acknowledge that if his fellow new scientists want their science to be taken seriously, then they should begin by making a compelling case for the supposed scientific phenomenon that they seek to explain. He writes (2004, 7):

> The first difficulty in discussing consciousness is to convince people that there is a real problem at all. There are two lines of enquiry that I shall pursue in the attempt to persuade you of this. The first… turns more upon observation; the second… more upon theory.

Although these two lines of enquiry are not nearly as clear as one might like, I find that they correspond with two distinct arguments for the substantive philosophical thesis at issue—what I will call the *argument from observation* and the *argument from theory*.

Gray's two arguments are representative of what can be extracted from the new science literature more generally and I will discuss each of them in turn. I begin with the argument from theory in Section 5.5, then turn to the argument from observation in Section 5.6. I argue, *pace* Gray, that neither of these arguments should convince you that the supposed scientific phenomenon exists and, thus, that neither should convince you that the new science is directed at a real problem.

5.5 THE ARGUMENT FROM THEORY

Gray's argument from theory is based on the claim that our best current scientific theories of perception do not postulate the sensory qualities that we are acquainted with in ordinary perception. From this it is argued that these qualities must be directly produced by the brain. That the conclusion follows from the base claim is not obvious, however. As such, the argument from theory will need to be reformulated in a more precise fashion.

In practice, when this type of argument is given in the new science literature it begins with the author outlining the standard scientific account for a given type of episode of ordinary perception. The author then notes that something seems to be missing from the account—the colors seen, the sounds heard, the flavors tasted, and so on. She then concludes that those sensory qualities must be directly produced by the brain. Consider the example that Gray gives for audition (2004, 10):

> You are in a concert hall. Someone opens up some pages on the music stand, strikes successive keys on a piano, and you hear a Beethoven sonata: *where is the sonata?* Physically, what is happening is that the keys cause the piano strings to vibrate; this causes vibrations in the air, and these strike your ear-drums, where they are translated into electrical pulses traveling along nerve cells into your brain. Do you directly perceive a piece of music that is *out there* in the vibrations in the piano strings or those in the air? Vibrations are not music. If the Beethoven sonata was played on a gramophone and no-one was there to listen, there would be no music—just vibrations in the air. Music is what you experience in your head, when it is constructed by the brain (in response to the pattern of nerve impulses reaching the brain from the ears).

In this passage Gray tells a bare-bones story about what scientists think occurs during ordinary episodes of audition and he then draws a conclusion from that story. The scientific account is that hearing the sonata involves the production of vibrations, their propagation through the air, and their translation into electrical pulses in neurons. Gray then notes that this account does not mention the sounds that we are acquainted during episodes like this. From this fact he concludes that those sensory qualities must be mental.

As given in the above passage, the argument from theory is far from compelling. The basic problem is that Gray draws a substantive conclusion about the nature of sensory qualities from the claim that those qualities are (supposedly) missing from our current scientific accounts of perception. Taking the (fleshed out) scientific accounts to embody our scientific knowledge in these areas, Gray essentially takes our supposed scientific ignorance about sensory qualities to

show us that those qualities are qualia.[79] The problem is that this conclusion does not follow—at least not without further work.

To conclude that sensory qualities are qualia, the argument from theory has to be given in a stronger form. In fact, the new scientist has to assert that modern science has shown us something positive about sensory qualities: She needs to claim that modern science has shown us that sensory qualities *cannot* be located in the world outside of the brains of perceivers. That is, she cannot simply claim that the sensory qualities that we are acquainted with do not occur under that type of description[80] in our current scientific theories, but has to deny that they can be identified with any of the entities or properties described by those theories or otherwise explained in terms of those entities and properties. Further, the new scientist needs to argue that this is not likely to simply be a shortcoming of our current scientific accounts, but that science has given us positive reason to believe that the sensory qualities that we are acquainted with in ordinary perception cannot be located in the world outside the brains of perceivers. In other words, new scientists like Gray need to claim that modern science shows us that sensory qualities are mind-dependent.

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[79] Something like this basic argument can be seen elsewhere in the new science literature, as well as in the brain sciences more generally. For example, consider a passage from Eric Kandel, James Schwartz, and Thomas Jessell's text, *Essentials of Neural Science and Behavior* (1995, 370): "We receive electromagnetic waves of different frequencies but we perceive color: red, green, orange, blue or yellow. We receive pressure waves but we hear words and music. We come in contact with a myriad of chemical compounds dissolved in air or water but we experience smells and tastes. Colors, sounds, smells and tastes are mental constructions created in the brain by sensory processing. They do not exist, as such, outside the brain." In effect, it is noted that the sensory qualities that we are acquainted with in ordinary perception are not found—under that type of description—in our current scientific theories of perception. What we find instead are descriptions of seemingly different entities and properties, such as electromagnetic waves of different frequencies. Kandel, Schwartz, and Jessell then assert that the sensory qualities that we are acquainted with are directly produced by the brain. But, of course, this conclusion does not follow from the claim that our scientific theories of perception are silent about sensory qualities—at least not without some further premises being called on.

[80] That is, under descriptions primarily based on our acquaintance with sensory qualities or descriptions using terms that refer to mind-dependent sensory quality types.

Even assuming that modern science shows us that sensory qualities are mind-dependent, however, it still does not obviously follow that the sensory qualities that we are acquainted with in ordinary perception are qualia. A further premise is needed to move from the claim that sensory qualities are mind-dependent to the claim that sensory qualities are mental—it needs to be argued that if a sensory quality is mind-dependent, then it is mental. Noting this we are now in a position to reformulate Gray's argument from theory:

> **Premise 1:** Science shows us that the sensory qualities that we are acquainted with in ordinary perception are mind-dependent.
>
> **Premise 2:** If a sensory quality is mind-dependent, then it is mental.
>
> **Conclusion:** The sensory qualities that we are acquainted with in ordinary perception are qualia.

Adopting the standard understanding of the term "qualia" in the new science (i.e., taking qualia to be sensory qualities that are mental), the conclusion follows from the premises. The problem is that each of the premises in the reformulated argument can be disputed.

5.5.1 Disputing Premise 2

While I will focus on disputing the first premise, it is worth briefly noting that the second premise can also be disputed. Thus, while I noted in Chapter 2 that the reverse direction of the conditional in this premise is straightforward (if a sensory quality is mental, then it is mind-dependent), the bi-conditional is not so obvious. The reason is that it seems that we can specify properties that depend on brains and yet are not directly produced by them. For example, at the time of writing this my computer monitor arguably has the property of having a center of mass that is between two and three feet away from the center of mass of my brain. While this property depends on my brain—if my brain did not exist, then my monitor would not have this property—

it is not directly produced by my brain. Of course, the new scientist could respond to this objection; she might argue, for instance, that sensory qualities are intrinsic qualities and thus are not like the property in the counterexample that I offered. This is itself a non-trivial claim, however, and one that must be argued for in turn.

5.5.2 Disputing Premise 1

The first premise of the reformulated version of the argument from theory states that modern science shows us that the sensory qualities that we are acquainted with in ordinary perception are mind-dependent. Focusing on the frequent example of colors, I will argue that it is not clear that science shows us this. To do so I will indicate how colors can be identified with mind-independent properties that are described in our current scientific accounts of visual perception.

To begin, it is worth simply noting that there is much disagreement about the nature of colors. While the contention that the colors that we are acquainted with in ordinary perception are mind-dependent is likely the majority opinion amongst color scientists, it has also been vigorously contested. As Alex Byrne and David Hilbert note (2003, 3):

> [Do] these objects like tomatoes, strawberries, and radishes that appear to have this property really have it? In other words, are objects, like tomatoes, red? Color scientists, philosophers, and other cognitive scientists with opinions on the matter strongly disagree about the answers to these questions.

This suggests that the first premise of the reformulated argument from theory can be reasonably disputed. Nonetheless, reasons have been given for thinking that the colors that we are acquainted with in ordinary perception cannot be cleanly located in the world and to dispute the first premise I must respond to these. Most importantly, there is the phenomenon of metamerism: It happens that there are spectrally different radiations that observers cannot distinguish between

by visually perceiving them. In other words, a given observer will classify these different lights as being the same color.

Based on phenomena like metamerism we might conclude that the colors that we are acquainted with in ordinary perception cannot be located in the world outside of the brain: It seems that we are sometimes acquainted with the same color when presented with different stimuli and despite there being differences in the physical properties that we might seek to identify that color with (i.e., properties of the radiations). Consider how C. L. Hardin articulates the point (1988, 80-81):

> If… we identify colors with *bona fide* physical properties such as spectral reflectance or emitance profiles, we shall indeed have object characteristics that are typically essential ingredients of explanations of why we have the color experiences we do. Distinct reflectance profiles then become distinct colors regardless of whether they are distinguishable by any human observers, and indefinitely many objects will be taken by us to be qualified by the same hue family despite marked dissimilarities in their reflectance profiles. Colors will thus be properties of objects, but red, green, yellow and blue will not. This does not seem to be a satisfactory solution to the problem of the ontological status of colors.

Hardin's point is well taken. And it is tempting to conclude from the apparent fact that colors like red, green, yellow, and blue are not properties of objects that the first premise of the reformulated argument from theory is true, at least for colors. This would be a mistake, however: The fact noted by Hardin does not show that colors are mind-dependent in the sense in which that term is used in the argument from theory.

Recall that I distinguished between two senses of "mind-dependent" in Chapter 2: We are concerned with the claim that sensory qualities themselves are mind-dependent, not with the claim that we are acquainted with sensory qualities as instances of mind-dependent types. Thus, the naïve realist, for example, can hold that the colors that we are acquainted with in ordinary perception are themselves mind-independent, while accepting that they are "mind-dependent" in

the sense that we are acquainted with them as being of a non-natural kind. I claim that what the above passage from Hardin indicates is that we are acquainted with colors as being instances of mind-dependent types, but that it does not show that the colors themselves are mind-dependent. In fact, the passage actually suggests how we can identify colors with mind-independent properties described by our current scientific accounts of visual perception.

In Chapter 2, I illustrated the distinction between sensory qualities being mind-dependent and our being acquainted with sensory qualities as instances of mind-dependent types by calling on the notion of *simple sensory qualities*. I supposed, for the sake of illustration, that we had an objective way of describing sensory qualities like colors that was not based on our own episodes of acquaintance with them. Further, I supposed that these descriptions were more finely grained than the discriminations we can make by relying on episodes of acquaintance alone. I then noted that if we could identify our mind-dependent sensory quality types with sets of such simple sensory qualities, then we could reasonably claim that the sensory qualities that we are acquainted with are mind-independent—and do so despite our being acquainted with those sensory qualities as instances of mind-dependent types.

To indicate how the argument from theory can be resisted, then, what I need to do is to suggest how we might use our current scientific accounts of visual perception to specify the simple sensory qualities for colors. And the above passage from Hardin indicates how this might be done: We can identify simple sensory qualities for colors with spectral reflectance or emitance profiles, for example, or alternatively with the spectral composition of the light reflected or emitted. These are *bona fide* physical properties, as Hardin puts it, and these properties are more finely grained than the colors that we can discriminate between through acquaintance alone. The upshot is that it appears to be a live option for us to identify colors with mind-independent

properties, despite our being acquainted with those colors as instances of mind-dependent types. If this is correct then it is not the case that current science establishes that the sensory qualities that we are acquainted with in ordinary perception are mind-dependent in the way required for the reformulated argument from theory.

5.6 THE ARGUMENT FROM OBSERVATION

The argument from observation centers on the claim that we are sometimes acquainted with non-veridical sensory qualities in episodes of unordinary perception. On the basis of this it is then argued that all sensory qualities are qualia (and, thus, that the sensory qualities that we are acquainted with in ordinary perception are qualia). I responded to the argument from theory by indicating how the sensory qualities we are acquainted with in ordinary perception can be located in the world outside the perceiver's brain. This option is not available for supposed non-veridical sensory qualities, however, as they cannot be located in the world outside the perceiver's brain by definition. As such, another strategy will be needed.

Unfortunately, the steps in the argument from observation are not typically expressed as clearly as one might like and, as such, this argument will also require some reformulation. For example, consider Gray's general statement of the argument for cases of illusion:

> That evidence is contained in a vast array of visual illusions, many so familiar that they long ago entered school classrooms, museums and art galleries. These illusions demonstrate, over and over again, that the world as we see it is made according to rules imposed by the brain. Almost everybody is susceptible to them. But hardly anyone draws the necessary conclusions: that *all* our visual percepts, not just the demonstrably illusory ones, are constructed by the brain, remain inside the brain, and merely seem to form part of—are projected by the brain onto—a three-dimensional world (itself constructed by the brain) out there. I shall

> describe only a handful of these myriad demonstrations of the fallibility of visual perception, choosing them so as to draw out their general implications. (2004, 15)

In effect, Gray claims that we are acquainted with non-veridical sensory qualities in various cases of illusions, and then asserts that it is a necessary conclusion that all sensory qualities are mental. For this conclusion to follow, however, we need to fill in several unstated premises. Further, while Gray talks about many cases of illusion in this passage, since the argument only requires one instance in which the author is acquainted with a non-veridical sensory quality, it is better to focus on specific claims and run a different variation on the argument from observation for each supposed observation. Thus, as I reconstruct it, the argument from theory begins with a supposed controversial weak first-person data claim. The author asserts that she is acquainted with a non-veridical sensory quality during an episode of unordinary perception. It is then argued that being non-veridical, this supposed quality must be mind-dependent and, therefore, that it must be mental. The final step in the argument is to generalize on this point, arguing that all sensory qualities—including those that we are acquainted with in ordinary perception—are mental. The reconstructed argument from observation can be stated as follows:

> **Premise 1:** I am acquainted with a non-veridical sensory quality.
>
> **Premise 2:** If a sensory quality is non-veridical, then it is mind-dependent.
>
> **Premise 3:** If a sensory quality is mind-dependent, then it is mental.
>
> **Premise 4:** If any sensory quality is mental, then they are all mental.
>
> **Conclusion:** The sensory qualities that we are acquainted with in ordinary perception are qualia.

As with the argument from theory, several of the premises in the argument from observation can be disputed. In fact, we have already seen that the third premise can be disputed (it is the same as the second premise in the argument from theory). Below I will show that the first premise (what I

will refer to as the *observation step*) and fourth premise (what I will refer to as the *generalization step*) are also contentious.

5.6.1 Disputing the Observation Step

Each iteration of the argument from observation rests on a supposed controversial weak first-person data claim: In the observation step the person giving the argument claims to be acquainted with a non-veridical sensory quality during an episode of unordinary perception. We saw in Chapter 3, however, that new scientists take a cautious approach to the use of claims about supposed private data—and with good reason. To be incautious about the use of private data claims is to court epistemic divergence. In fact, I spelled out the cautious approach to private data in the new science in terms of it being impermissible to call on controversial first-person data claims. For new scientists to rely on the argument from observation, then, is for them to abandon this cautious approach to private data. This alone is reason to be skeptical about the argument from observation.

Nonetheless, it will be helpful to further illustrate why we should be suspicious of different supposed controversial weak first-person data claims involved in iterations of the argument from observation. Of course, given that the argument could be run using any supposed controversial weak first-person data claim that a new scientist might make, I will not be able to deal with more than a tiny fraction of the iterations that might be run. As such, I will begin by considering the two primary cases of visual illusions discussed by Gray, then consider two other types of unordinary perception more generally (hallucinations and dreams). My goal will be to indicate that we should be suspicious of the supposed controversial first-person data claims made about these cases. I hope that by raising doubts about these claims, I will give you reason to

entertain doubt concerning claims about supposed controversial weak first-person data claims more generally.

Note that I say "supposed" controversial weak first-person data claims for a reason: I do this to express doubt about the characterization of the claims at issue as being *controversial* weak first-person data claims. This is important because it is a controversial weak first-person data claim that is needed for the observation step in an iteration of the argument from observation: The supposed sensory quality that the author claims to be acquainted with must be non-veridical. For example, a weak first-person data claim to the effect that the subject is acquainted with a sensory quality of the red type during a hallucination is a *controversial* weak first-person data claim insofar as that supposed sensory quality is itself hallucinatory. If the author were actually looking at a ripe tomato while undergoing an auditory hallucination, however, then the claim would instead be an *uncontroversial* weak first-person data claim (although the subject might make a controversial weak first-person data claim about what she thinks she heard in undergoing the auditory hallucination). As such, there are two ways that we might go about disputing a supposed controversial weak first-person data claim: It could be argued that it is not actually a controversial weak first-person data claim; alternatively, it could be argued that the claim itself is inaccurate—that the author was not actually acquainted with the (supposed) sensory quality at issue. The former strategy will primarily be employed in discussing cases of illusions, like those that Gray focuses on, while the latter will primarily be employed in discussing cases of hallucinations and dreams.

5.6.1.1 Siegel's Fish Before turning to the illusions that Gray discusses, it is worth illustrating that some supposed controversial weak first-person data claims are arguably better taken to be

first-person data claims about episodes of acquaintance with veridical sensory qualities (if they are taken to be weak first-person data claims at all). For example, consider an illusion described by Susanna Siegel (2005, §2):

> Suppose you see a fish while unwittingly looking in a mirror. It may look as if there is a red fish in front of you, when in fact the red fish you see is behind you and there is no fish at all in front of you. Similarly, in auditory or olfactory hallucinations, one may seem to hear voices when in fact no one is speaking, or to smell an odor when in fact nothing is emitting that smell…. These are cases of being misled by one's senses, and it is natural to say that in these cases things are not as they appear to be.

In associating this illusion with cases of hallucinations, it seems that Siegel intends to be making a controversial weak first-person data claim. (Although this example is likely hypothetical, it certainly could occur and for the sake of illustration I will assume that Siegel was misled by a fish in a mirror in the way described.) And it is reasonable to say, as Siegel suggests, that in this case she was being misled by her senses: In other words, she made an erroneous judgment (judging that there was a fish in front of her) based on what she saw. This is not enough for this episode to serve as the observation step in an iteration of the argument from observation, however. What is needed is specifically an episode of acquaintance with a non-veridical sensory quality, not simply a case in which someone is misled by their senses.

Nonetheless, it might be argued that in the episode that Siegel describes, she was acquainted with the non-veridical sensory quality of a fish being in front of her. This type of quality is somewhat different from the sensory qualities discussed in Chapter 2, however, and it is not clear that it should really be taken to be a sensory quality at all. One issue is that it is unclear whether relative locations are best thought of as being sensory qualities.[81] More

[81] Note, that being in front of Siegel would seem to be a quality of the same sort as my computer monitor being in front of my brain. The upshot is that if the former is a sensory quality, then the response I suggested the new scientist might give to the objection I raised against the second premise of the argument from theory—which is

importantly, it is not clear that this is a good description of what Siegel was acquainted with in the first place. To draw this out, suppose that she did not look in the mirror unwittingly, but had placed it there so that she could see what was behind her. It seems plausible that in this case Siegel would be acquainted with the same sensory qualities that she was in the original situation and, yet, that she would not judge that a fish was in front of her (she would not be misled by her senses). This suggests that in the original situation Siegel was not actually acquainted with a non-veridical sensory quality, but that she is instead describing what she was acquainted with in a way that reflects the erroneous judgment that she made about it.

In response it might be argued that while Siegel would not judge that a fish was in front of her if she knew that she was looking at a mirror, a fish would still *appear* to be in front of her; the only difference would be that in the updated scenario she would know better than to trust the appearances. In this case, however, it seems at best misleading to say that a *fish* appeared to be in front of her: It seems that Siegel should instead say that a *reflection* of a fish appeared to be in front of her.[82] And, note, that this "appearance" is at the very least not obviously non-veridical: It is natural to say that Siegel accurately sees the reflection as being in front of her—or, if we accept that relative locations are sensory qualities, that she is acquainted with the veridical sensory quality of a reflection being in front of her. If this is correct, however, then in the original case of Siegel being misled by her senses it seems that we should say the same thing. We should say that she accurately saw a reflection as being in front of her or that she was acquainted with the veridical sensory quality of the reflection being in front of her. The illusion

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identical to the third premise in the argument from observation—would not apply. As such, the new scientist would need to support the claim that "if a sensory quality is mind-dependent, then it is mental" in another way.

[82] Note that "appear" is being used to signal that we are concerned with the phenomenology—that is, that what we want is a description of just what Siegel was acquainted with. But, of course, the term is often used in other ways and we might say that it appeared like there was a fish in front of her in the unproblematic sense that if she didn't know better she would be likely to judge that there was a fish in front of her.

would then just consist in the fact that Siegel mistook the reflection for the object reflected; as such, it would not involve her being acquainted with a non-veridical sensory quality of a fish being in front of her. It seems that what was taken to be a controversial weak first-person data claim is better characterized as an uncontroversial weak first-person data claim (if it is a weak first-person data claim at all).

5.6.1.1 Tichener's Circles A similar point can be made for the illusions discussed by Gray. Note that Gray focuses on illusions in large part because he takes the accuracy of supposed controversial weak first-person data claims about such cases to be less open to doubt than claims about hallucinations or dreams, for example. Thus, he notes that different people can look at the same illusory figure and most will express similar judgments about it (2004, 18). For other types of unordinary perception, however, even this level of intersubjectivity is lacking and it is rather clear how skepticism about the accuracy of controversial weak first-person data claims about such episodes could get a grip, as we will see below. Nonetheless, while the accuracy of weak first-person data claims about illusions is not as open to doubt as is the accuracy of claims about hallucinations or dreams, there is a trade-off for purposes of using them to run the argument from observation: In line with the illustration above, I find that the less open to doubt a weak first-person data claim is, the less clear it is that the claim is best characterized as a controversial weak first-person data claim. In fact, for the illusions that Gray discusses, it can be reasonably disputed that the weak first-person data claims he makes are suitable for use in the argument from observation. This is the case for both the traditional illusions that he considers, as well as phenomena like colorblindness that are less commonly thought of as involving illusions.

The traditional illusion that Gray focuses on is the Tichener circles illusion[83], shown in Figure 5.1. He states that in looking at the figure "a circle appears larger when it is surrounded by a ring of smaller circles than when surrounded by a ring of larger circles" (2004, 19). The description suggests the controversial weak first-person data claim that he was acquainted with the non-veridical sensory quality of one circle being larger than the other.

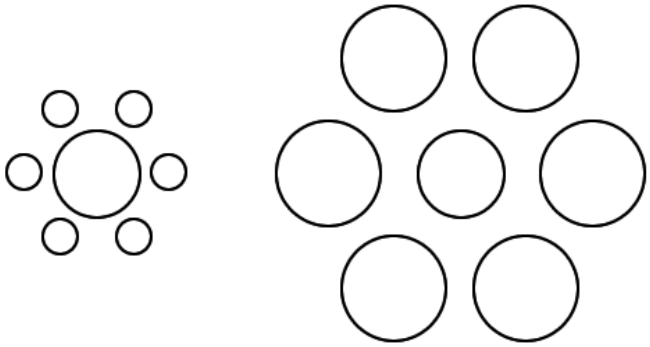

Figure 5.1. Tichener circles illusion.

An initial problem with the above claim is that the supposed sensory quality at issue is a comparative quality and, thus, not obviously a sensory quality.[84] Further, it is not obvious that one object being larger than another should be taken to be a sensory quality that Gray is acquainted with, as opposed to his being acquainted with other sensory qualities (such as the colors, shapes, or sizes of the two circles) and then comparing them (perhaps subconsciously) in the process of arriving at the judgment that one circle appears to be larger than the other. This is a problem, in part, because new scientists would seem to be committed to our being acquainted with at least some of the other supposed sensory qualities noted in looking at the figure and

[83] The reason that Gray gives for focusing on this illusion is that it is "a simple example" (2004, 19); the suggestion would seem to be that its simplicity makes it correspondingly difficult to dispute the accuracy of weak first-person data claims made about it.

[84] As with Siegel's claim of being acquainted with a supposed sensory quality of a fish being in front of her, this would raise difficulties for the new scientist with regard to supporting the second premise of the argument from observation.

detecting such features would seem to be integral to our seeing the circles and, thus, integral to one circle appearing to be larger than the other. As such, an account of what combinations of sensory qualities are themselves sensory qualities is needed, but I do not know of any such account of complex sensory qualities being given. Further, there are obvious difficulties for giving such an account: In particular, one would need to avoid making every erroneous judgment that we might make on the basis of what we see a case of acquaintance with a non-veridical sensory quality. For example, suppose that I see a car of the same make, model, year, and color as my own parked in front of my house and erroneously judge that it is my car. Surely we would not want to account for my erroneous judgment by saying that I made an accurate judgment about a non-veridical sensory quality of being my car. And while this example is somewhat extreme, many more could be given.

Even if a compelling account of complex sensory qualities could be given, however, remember that the observation step is just the first step in the argument from observation: The observation must also be generalized upon (among other things) and if the supposed sensory quality in the observation step is significantly more complex than the sensory qualities we have been concerned with up to this point, it would pose a problem for arriving at the conclusion that those simpler sensory qualities are qualia. This suggests a general point, which was also indicated by the discussion of the illusion given by Siegel. If an iteration of the argument from observation is to be compelling, the supposed non-veridical sensory quality at issue in the observation step cannot be such that the naïve realist cannot explain it away as simply being akin to an erroneous judgment based on acquaintance with veridical sensory qualities. I say "akin," here, to allow room for what we might call "judgment-like processes" that are largely outside of our conscious control. I have in mind especially cases like those that are sometimes described in

terms of perceiving something "as being" this or that. For example, when I look at my mother I cannot help but see her *as being* my mother, even though it is no doubt a possibility that in any given instance I could be looking at her doppelganger. And while the suggestion that this is the case might lead me to temper my conscious judgment that the person I am looking at is my mother (however minimally), it would have little effect on my seeing her *as being* my mother.

My response to the illusion discussed by Siegel can be described in these terms as well: A reflection of a fish can look similar enough to an actual fish that even though the sensory qualities that Siegel is acquainted with in looking at it are veridical, she is likely to see it *as being* an actual fish. And a similar response can be given with regard to the Tichener circles illusion. Thus, I find that even when I know better, I (almost) cannot help but see certain line drawings *as being* objects arranged in three dimensions. Considering the Tichener circles illusion in particular, I find that I almost cannot help but see the center circle on the left *as being* closer to me than the center circle on the right. Having known that I was looking at a line drawing in looking at the Tichener circles illusion, however, I was once apt to misdescribe the result of this judgment-like process in terms of the center circle on the left appearing larger than the other.

The likely response would be for Gray to deny that in looking at the Tichener circles illusion he simply sees one of the circles *as being* larger than the other (or *as being* closer than the other), claiming that one circle actually appears larger than the other (in the sense of "appears" noted in Footnote 82). It could then be argued that although this involves a comparison, such a comparison indicates that he is acquainted with a non-comparative non-veridical sensory quality: For one circle to appear larger than the other, at least one of the two circles must appear either larger or smaller than it actually is. While this seems preferable to treating comparative sizes as sensory qualities, it leaves the supposed non-veridical sensory

quality underspecified: It is not clear whether Gray should say that the center circle on the left appears larger than it really is, or that the center circle on the right appears smaller than it really is, or both. Regardless, I find that none of these claims are accurate description of what I am acquainted with in looking at the figure; and, thus, insofar as Gray is correct in treating the illusion as practically intersubjective, I charge that this illusion does not provide a compelling basis for the argument from observation.

To begin, consider whether you find that the center circles in either half of the Tichener circles illusion appear larger/smaller than they really are. Starting with the left side, look at the sequence depicted in Figure 5.2. There is no reason to think that the center circle on its own (the circle in frame a) appears larger than it really is; but, for me at least, it does not appear to change sizes as the surrounding circles are added. And a similar point holds for the claim that the center circle on the right appears smaller than it really is when surrounded by larger circles.

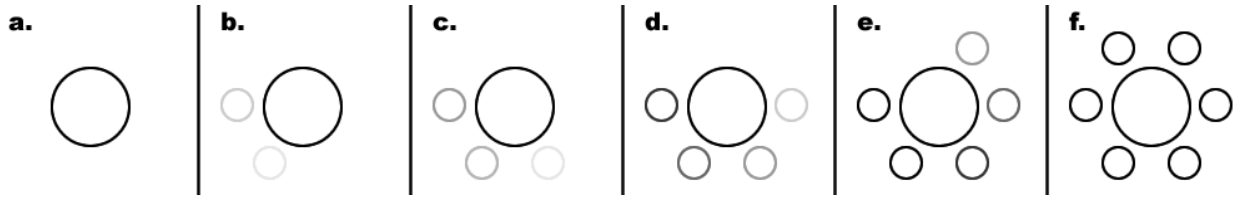

Figure 5.2. Adding surrounding circles to the left center circle of the Tichener circles illusion.
Animated version available at: http://www.jsytsma.com/figures/d52.asp

Gray might respond that at least one of the circles nonetheless looks larger/smaller than it really is when it is in the context of the whole Tichener circles illusion. If this is the case, however, then at least one of the circles should look larger/smaller in the context of the illusion than it looks on its own. But, again, I do not find that this is the case. Thus, consider the sequence depicted in Figure 5.3. For me, neither center circle seems to change size as the

surrounding circles are removed or added. Further, I find that neither of the center circles on their own—as shown in frame d—appear to be larger/smaller than they really are, nor do the two of them appear to be different sizes. This suggests to me that I am not acquainted with a non-veridical sensory quality in looking at the Tichener circles illusion, even though I "cannot stop [myself] seeing them as being of different sizes" (Gray, 2004, 19)—or, more aptly, even though I (almost) cannot stop myself from seeing the center circle on the left as being closer to me than the center circle on the right. I find that while this simple example was supposed to provide an observation step for the argument from observation that is largely beyond dispute, it does not live up to that billing.

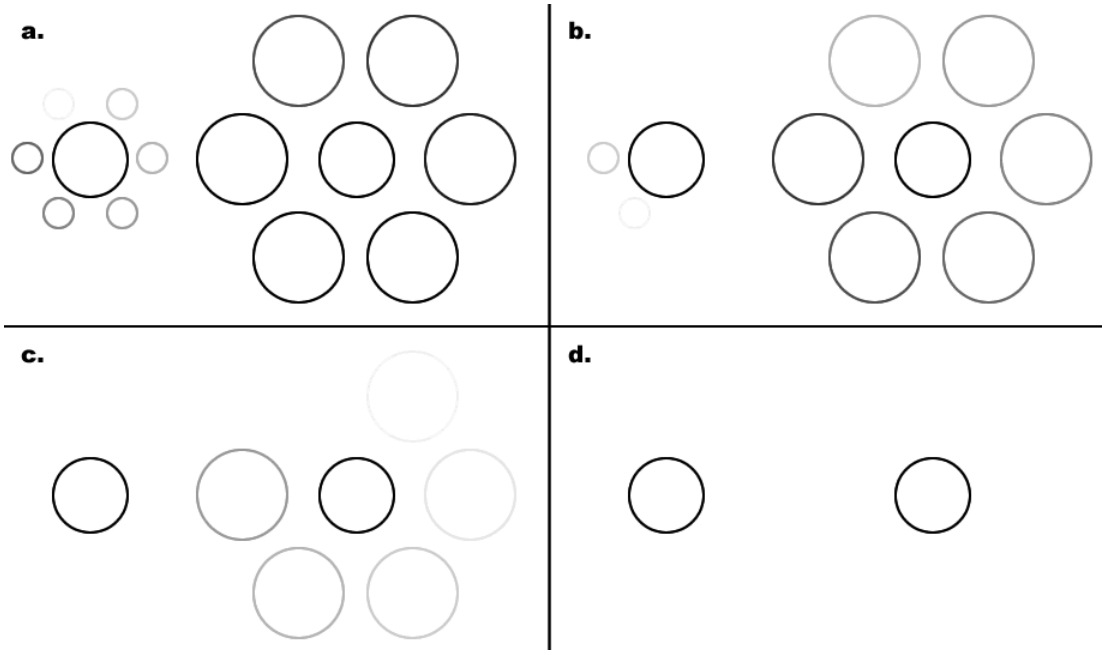

Figure 5.3. Removing surrounding circles from the Tichener circles illusion.
Animated version available at: http://www.jsytsma.com/figures/d53.asp

5.6.1.3 The Deuteranopic's Apple Although Gray's primary example is the Tichener circles illusion, he also considers a rather different type of case that is sometimes put under the header of illusions—various phenomena of colorblindness.[85] Gray writes (2004, 12):

> Usually, there are three [separate pigments in different cells of the retina], with closely similar properties in all human beings—so most people respond to differently coloured materials in much the same way. However, some individuals have pigments with slightly different properties; and some lack one or even two pigments entirely. Individuals like these experience colours in radically different ways from the norm—giving rise to the well-known phenomena of colour blindness. So, the colours one sees are clearly *not* inherent in the objects whose surfaces one sees as coloured: they are made by the brain.

As given, the conclusion that colors are qualia does not obviously follow. Nonetheless, this example can be fit to the argument from observation to derive the conclusion. Thus, we might imagine a new scientist with deuteranopia making the weak first-person data claim that in looking at a Braeburn apple he is acquainted with the same color that he is acquainted with in looking at a Granny Smith apple. Given that most people can readily distinguish the color of a Braeburn (predominantly colors of the red type under standard illuminations) from the color of a Granny Smith (predominantly colors of the green type under standard illuminations), we might conclude that the weak first-person data claim is a controversial weak first-person data claim—the person is acquainted with a non-veridical sensory quality.

It is not clear, however, that the sensory quality that the colorblind person is acquainted with is non-veridical. In fact, we have already seen how this claim can be disputed: In the previous section I indicated how we might identify simple sensory qualities for colors with mind-independent properties and noted that the mind-dependent sensory quality types that people are

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[85] For example, A. D. Smith writes: "the term 'illusion' is to be understood as ranging much more widely than its common use would allow. For example, the world appears differently to those who are colour-blind and to those who are not. This involves an illusion, in the possibly unnatural sense here employed. For if I, being colour-blind, cannot tell red and green things apart, but you can, at least one of these colours must look different to the two of us. So, for at least one of us, that colour cannot look the way it really is." (2002, 23).

acquainted with colors as instances of could then be articulated in terms of sets of those simple sensory qualities. Of course, given that these types are mind-dependent, it is not surprising that they would turn out to be somewhat different for different people, with our individual sensory quality types reflecting the peculiarities of our own perceptual systems. What we find is that people typically do differ somewhat in terms of which simple sensory qualities they can distinguish between and that some of us differ from others still more radically. People who have deuteranopia, for example, cannot make *many* of the color discriminations that people with "normal" color vision can. Further, we can explain their relative perceptual deficits in this area neurobiologically, as is indicated in the above passage from Gray.[86]

If this account is correct, then the weak first-person data claim at issue for this iteration of the argument from observation is not best characterized as a controversial weak first-person data claim: The colorblind person is not acquainted with a non-veridical sensory quality, despite the fact that he cannot distinguish between the color of a Braeburn apple and a Granny Smith apple. As such, the colorblind person's claim is not suitable for use in the observation step in the argument from observation. In fact, I find that the conclusion that should be drawn from phenomena like colorblindness is not that colors are mind-dependent, but that we are acquainted with colors as instances of mind-dependent types. We have already seen, however, that this conclusion does not establish the substantive philosophical thesis at issue: One can accept that

[86] In fact, people with colorblindness often describe their vision in terms of having difficulty (or being unable to) distinguish between some of the colors that other people can. Some examples can be found in the "conversations on colorblindness" collected by Marty Modell and available at http://www.martymodell.com/colorblindness/. For instance, Marty writes about himself: "I am shade blind (I have difficulty distinguishing between colors of the same intensity, especially 'washed out' colors). Things like weather maps, in fact maps of all kinds, are difficult to read because the colors blend together. I can see intense, pure colors, but have trouble with mixed colors (purple, maroon, etc.). Red on black is almost invisible to me, I cannot distinguish between navy blue and black, or dark brown or dark red and black. Not enough color for me to detect."

we are acquainted with sensory qualities as instances of mind-dependent types while denying that those qualities are qualia.

Of course, that the primary iterations of the argument from observation discussed by Gray can be reasonably disputed does not show that all possible iterations of the argument can be similarly disputed. Not only could the new scientist make supposed controversial weak first-person data claims about other types of illusions[87], but she could make claims about other types of episodes altogether. For example, she might claim to be acquainted with a non-veridical sensory quality of the red type in dreaming that she is looking at a ripe tomato or in having a visual hallucination as of a ripe tomato. And as it is not plausible that such controversial weak first-person data claims are really misdescribed uncontroversial weak first-person data claims (or not weak first-person data claims at all), they are not susceptible to the strategy illustrated above. As such, it is important to briefly note how claims like these might nonetheless be disputed.

5.6.2 Hallucinations

It is fairly common for authors to move from claims about specific illusions to more general claims about hallucinations, as seen in the passage from Siegel discussed above. Claims about hallucinations more often concern the supposed possibility of a given type of hallucination than controversial weak first-person data claims about actual hallucinations that the author has

[87] For example, one might well argue that color illusions such as those developed by the Purves Lab—http://www.purveslab.net/seeforyourself—are more compelling than illusions like the Tichener circles. Although I will not attempt to explain away the supposed controversial weak first-person data claims that might be made about such (rather stunning) illusions, here, I find that they are susceptible to the same strategy seen above: The amazing thing that color illusions like the "brightness contrast with color: cube" illusion show is just how adaptive our visual system is, not that the brain, quite mysteriously, directly produces colors. Although I cannot defend it here, the basic story to be told about this illusion is that our mind-dependent sensory quality types for colors are not static, but change with context, reflecting that our visual systems have been shaped by natural selection not so much to identify colors as to use colors to identify objects in natural settings where illumination varies.

underwent, however. The reason for this seems to be rather clear: Most people do not suffer from hallucinations on a regular basis nor can they easily induce them on command. As such, the possibility of acquaintance with non-veridical sensory qualities during hallucinations is typically just asserted, although sometimes the assertion is supported by claims about what it is like to be mentally ill or high on hallucinogenic drugs, for example. The problem is that it seems rather clear that insofar as these claims are taken to be controversial weak first-person data claims, their accuracy can be reasonably disputed: The people giving the first-person reports in such cases are generally not in a position to reliably assess what their perception is like; after all, they are on mind-altering drugs or in the grip of mental illness, for example.[88] If the case for the existence of the supposed scientific phenomenon of phenomenal consciousness ultimately rests on claims that people are sometimes acquainted with non-veridical sensory qualities during hallucinations, then it strikes me that this is close to having no case at all. After all, a similar case could be made for all sorts of supposed phenomena that scientists at least should be quite skeptical about—from the existence of angels and demons to alien abductions and sophisticated multinational conspiracies.

5.6.3 Dreams

It might be argued, however, that we actually undergo events that are like hallucinations on a regular basis: Many nights we go to sleep and seem to enter a fantasy world that might be compared to an elaborate hallucination. (For example, Owen Flanagan (2000, 8) claims that "dreams share many features with psychoses.") Perhaps claims about dreaming will make a more compelling basis for the argument from observation than claims about hallucinations.

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[88] Subsequent reports about hallucinations are still more open to doubt: Not only was the person giving the report not in a position to reliably assess what her perception was like, but now the reports are potentially tainted by memory.

Again, the question we need to ask is whether we are acquainted with *non-veridical* sensory qualities while dreaming. Plausibly we sometimes perceive bits of what is going on in the world around us, even when we are asleep. For example, you have likely had the experience of being woken up by the phone ringing and had the impression that the first few rings had been incorporated into your dream. But what about those elements in your dreams that do not plausibly involve veridical sensory qualities? When you dream that the phone is ringing, even though your actual phone is silent, are you nonetheless acquainted with the supposed sound? Is dreaming that you see a ripe tomato in front of you phenomenologically like actually seeing a ripe tomato? Are you acquainted with redness in both cases?

It is commonly held that people are sometimes acquainted with non-veridical sensory qualities while dreaming. For example, consider Dan Dennett's characterization of the received view (1976, 151):

> The "received view" of dreams is that they are *experiences that occur during sleep*, experiences which we can often recall upon waking. Enlarged, the received view is that dreams consist of sensations, thoughts, impressions, and so forth, usually composed into coherent narratives or adventures, occurring somehow in awareness or consciousness, though in some other sense or way the dreamer is *un*conscious during the episode.[89]

Dennett goes on to defend a rather radical skepticism about dreaming, suggesting that dreams are nothing more than stories made up while you are unconsciousness and loaded into memory such that upon waking it seems to you as if you had underwent the events of those stories. He calls this the "cassettes theory" and notes that "on this view, the process of presentation has vanished" (1976, 160). One need not go so far as this, however, to deny that we are acquainted with non-veridical sensory qualities during dreams. Thus, we can accept that dreaming is a type of

[89] Dennett quotes Hilary Putnam (1962, 224) defining dreams as "a series of impression (visual, etc.) occurring during sleep; usually appearing to the subject to be of people, objects, etc." As the impressions are thought to *appear* to the subject, they are presumably taken to involve acquaintance with non-veridical sensory qualities.

experience (on the neutral understanding of the term discussed in Chapter 2) while denying that it is like ordinary perceptual experience with respect to acquaintance with sensory qualities. In essence, we can allow that the dreamer is in some sense aware of the story as it is being spun, while denying that this story is presented to her in a perceptual fashion.

5.6.3.1 Confabulation Note that there is rather ample room for skepticism concerning the accuracy of controversial weak first-person data claims made about dreams. After all, the dreamer is *asleep* and any controversial weak first-person data claims come *after* the dreamer has woken up.[90] Controversial weak first-person data claims about dreams inevitably rely on memory and I contend that it is difficult to deny that such memories could be mistaken. Positively, I charge that claims of being acquainted with non-veridical sensory qualities during dreams are confabulations. Unlike Dennett, the confabulation I call on is rather minimal and restricted to memories about (supposedly) being acquainted with sensory qualities during dreams. And I think that this moderate charge is rather plausible. After all, doesn't it at least seem possible that when you remember yourself having been acquainted with redness during a dream about a ripe tomato, for example, that you are remembering an instance of thinking that you were seeing a ripe tomato without actually doing so? Might not your dreaming be more like pretending or acting (including that your dream-self embraces the pretence)? If so, the dream need not have involved any actual redness; that it seems as if you were acquainted with non-

[90] Thus, while Flanagan purports to give first-person reports of his dreams, for example, he also admits that he is really just reporting what he takes himself to remember (2000, 11, italics added): "In telling you how the dreams seemed, I have provided you with the phenomenology. Phenomenology, literally 'the study of appearances,' is the philosopher's useful jargon for the study of how things seem from the subject's point of view. I have said what the dreams were about and what events and emotions I *remember* experiencing."

veridical sensory qualities might, so far as you know, simply reflect your memory playing tricks on you.

And, of course, it is well known that memory often plays tricks on us. In fact, it is well known that it can lead us to swear that we saw things that we did not see. This is common in clinical instances of confabulation, but also in non-pathological episodes as well. For example, William Hirstein opens his volume on the phenomenon of confabulation with a description of a conversation with a man suffering from Korsakoff's syndrome (2005, 1):

> The neurologist greets him, examines his chart, and after a brief chat in which the man reports feeling fine, asks him what he did over the weekend. The man offers in response a long, coherent description of his going to a professional conference in New York City and planning a project with a large research team, all of which the doctor writes down. The only problem with this narration is that the man has been in the hospital the entire weekend, in fact for the past three months. What is curious is that the man is of sound mind, yet genuinely believes what he is saying.

The man sincerely believes he had done the things described, which presumably would have involved acquaintance with a wide variety of sensory qualities; but he did not. As Hirstein notes, "what is most troubling about witnessing such confabulations is the rock-jawed certainty with which they are offered up" (20). Or consider the case of denial of paralysis, a type of anosognosia; about such patients, Hirstein writes (11): "When asked whether she reached successfully, the patient who tried to reach will often say that she did, and a large percentage of these patients will claim that they saw their hands touch the doctor's nose." Of course, the patients' hands did not touch the doctor's nose (the hands, along with the arms they are attached to, being paralyzed) and, as such, the patients did not *see* their hands touch the doctor's nose.

Similar confabulations are given by patients suffering from Anton's syndrome (denial of blindness). When such patients are asked to describe what they see, they will "typically produce a description that is logical or plausible, but false" (Hirstein, 2005, 12). Or consider the dialogue

reported from DeLuca (2001, 121) of a conversation with a patient suffering from an anterior communicating artery aneurysm:

> Doctor: You indicated last night you were working on a number of projects at home…. What would you say if I told you you were actually here in the hospital last night?
>
> Patient: I'd be surprised, because my experience, what I learn from my eyes and ears tells me differently…. I'd want some evidence. I'd want some indication that you knew about my private world before I gave any cognizance.

While it is perhaps tempting to write-off such cases as unordinary, noting that each involves a rather rare physiological disorder, it should be recalled that our concern in this section is also with relatively unordinary cases—with cases of unordinary perception such as dreams. Regardless, what these clinical instances show is that confabulation about episodes of perception certainly can occur: It is commonly accepted that people can sincerely come to believe that they underwent episodes of perception that they did not actually undergo.

Furthermore, one finds instances of such confabulation in normal, healthy individuals as well. Jennifer Ackil and Maria Zaragoza (1998) found that through suggestion first-graders could be led to form false recollections of what they had seen in a movie. Similarly, Stephen Ceci and colleagues (1994) showed that preschool children can readily come to remember described events as actually having occurred to them (typically embellishing the event in the process). Jane Dywan (1995, 1998) has shown similar confabulation in the recollection of subjects under hypnosis. In a classic study, James Deese (1959) elicited false memories about episodes of perception in normal adults by presenting a sequence of words related to, but excluding, "sleep"; despite the word being excluded, many subjects later claimed to have seen it.

Perhaps most famously, in a series of experiments Elizabeth Loftus and colleagues showed how a third-party can instill false memories in eye witnesses (see Loftus, 1996). In one

study (Loftus and Palmer, 1974), participants were shown images of an automobile at an intersection with either a stop sign or a yield sign; subsequent questioning mentioning the other type of sign resulted in many subjects falsely remembering seeing that type of sign in the original image. In another study (Loftus, Miller, and Burns, 1978), participants were shown an image of an automobile accident; upon later questioning, the term used to describe the collision ("hit" versus "smashed") correlated with whether or not the subject remembered having seen broken glass in looking at the image. Examples like this have led Loftus and Katherine Ketcham (1991) to question the common and fiercely held belief that our memories are preserved intact and are essentially inviolable. They write:

> Truth and reality, when seen through the filter of our memories, are not objective facts but subjective, interpretive realities. We interpret the past, correcting ourselves, adding bits and pieces, deleting uncomplimentary or disturbing recollections, sweeping, dusting, tidying things up. Thus our representation of the past takes on a living, shifting reality; it is not fixed and immutable, not a place way back there that is preserved in stone, but a living thing that changes shape, expands, shrinks, and expands again, an amoeba-like creature with powers to make us laugh, and cry, and clench our fists. Enormous powers—powers even to make us believe in something that never happened. (20)

In contrast to Loftus and Ketcham's view, the claim I am defending is quite moderate: Again, isn't it possible that when you think you remember being acquainted with redness during a dream, for example, that you are mistaken? Isn't it possible that you merely dreamed about seeing something red and that what you are now remembering are details that are involved in actually seeing a ripe tomato, but that you were not acquainted with during the dream?

5.6.3.1 Dreaming in Black and White Alternatively, consider Eric Schwitzgebel's work on changing reports about whether most people dream in color (as opposed to black and white) over the course of the 20th century. In a number of articles and the first chapter of his upcoming book,

Schwitzgebel has explored these changes in beliefs about dreaming both historically and empirically (2002, 2003, forthcoming; Schwitzgebel, Huang, and Yifeng, 2006). He notes that in a study from 1942, Warren Middleton found that only 29% of Americans surveyed reported dreaming in color (either occasionally, frequently, or very frequently) and that some subsequent studies put the number even lower. What one finds is that during the 1950s, it was widely held that dreams were predominantly in black and white, but with an occasional splash of color. This changed dramatically in the 1960s, with a 1962 study by Edwin Kahn finding that 83% of people reported dreaming in color. Further, when Schwitzgebel replicated Middleton's study in 2003, he found that 81% of respondents today reported dreaming in color at least occasionally.

What accounts for this change in beliefs about what dreams are like? Two possibilities present themselves: It might be that the dreams themselves changed, leading to different reports, or else that the dreams remained the same while people's reports changed. Schwitzgebel considers both possibilities, concluding that we simply do not know the answer. This includes not knowing whether it is accurate to talk about being acquainted with colors in dreams (where this includes achromatic colors). Thus, Schwitzgebel suggests that it might be that dreams are more like novels, where some colors might be specified but are not actually present (2009, 17):

> Although the view that our dreams have color may seem more plausible than the view that they're black and white, we should also consider the possibility that they're neither colored *nor* black and white, that applying either of these categories is misleading. Consider, as an analogy, a novel. While novels are surely not in black and white (though the words on the printed page may be), it also seems a little strange to say that they're in color.

Schwitzgebel rightly takes it to be a live possibility that we are simply not acquainted with colors (chromatic or achromatic) while dreaming.

Accepting Schwitzgebel's rather reasonable conclusion, iterations of the argument from observation based on controversial weak first-person data claims about dreams are hardly

compelling. In fact, things are somewhat worse for the argument that this suggests, as other premises can also be reasonably disputed, including the generalization step as I discuss below.

5.6.4 Resisting the Generalization Step

Even if we grant the first three premises in the reconstructed argument from observation, including various versions of the observation step, this is still not enough on its own to establish the substantive philosophical thesis at issue: While we could conclude that some qualia exist, we could not conclude that the sensory qualities that we are acquainted with in ordinary perception are qualia. The generalization step is needed for that; and, like the observation step, this premise can be resisted.

Although Gray asserts that it is a necessary conclusion from the observational step that the sensory qualities that we are acquainted with in ordinary perception are qualia; and although there does seem to be some intuition that if some sensory qualities (say some colors) are qualia, then they must all be qualia, this is nonetheless something that must be argued for. While Gray does not do this, the intuition behind the generalization step can be supported in at least a couple of different ways. First, one could raise doubts about what would justify treating subjectively indiscernible sensory qualities differently; second, one could appeal to the simplicity of offering a unified account of sensory qualities.

The first strategy is given a relatively clear statement by A. D. Smith (2002) in articulating the related arguments from illusion and hallucination. While Smith's conclusion concerns sense-data rather than qualia, the argument he gives for the generalization step can be readily applied to the argument from observation. For example, he writes (2002, 26):

> The usual reason given for taking [the generalization step] is the subjective indiscernibility of veridical and possible illusory situations. To put it crudely, being aware of a sense-datum is *exactly like* perceiving a normal object. But a sense-datum, whatever it may turn out precisely to be, is clearly a radically different type of thing from a normal physical object—at least as the latter are usually (that is, realistically) conceived. So how could awareness of two such radically different types of object be experientially identical? How could we *mistake* one for the other?

Focusing on the supposed non-veridical sensory qualities at issue, rather than their supposed objects[91], we can note two potential problems with this argument: First, it assumes that for whatever supposed sensory quality is at issue in the observation step, the author can be acquainted with a sensory quality in ordinary perception that is "subjectively indiscernible" from it (or that is "exactly like" it, or that is "experientially identical" to it). But this subjective indiscernibility claim is not established by the observation step in the argument from observation alone. In fact, it is not clear how this could be established through observation, since even granting—for the sake of argument—that we are sometimes acquainted with non-veridical sensory qualities in unordinary perception, it is doubtful that they are like paint chips that can be compared side-by-side to see if they are subjectively indiscernible. If subjective indiscernibility is not established through observation, however, then it is not clear that it can be established; after all, the subjective indiscernibility claim would seem to be a claim about people's perceptual capacities (i.e., that they cannot distinguish between two sensory qualities through acquaintance).

Leaving the issue of establishing that the supposed non-veridical sensory quality in the observation step of some iteration of the argument from observation is subjectively indiscernible from some veridical sensory quality, there is a second problem: Human perceptual capacities are

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[91] Sense-data are the supposed objects of at least non-veridical sensory qualities (if such there be), but new scientists do not necessarily hold that qualia are qualities of such objects. In fact, insofar as they say anything about this, they tend to say that qualia are qualities of mental states. While it could be argued that holding that qualia exist ultimately commits new scientists to the view that sense-data exist, I will not worry about the point; for my purposes, we can assume that it is possible to be a qualia theorist without being a sense-data theorist.

not perfect and we are often unable to distinguish between different sorts of things just by perceiving them. It happens that sometimes different sorts of things look the same, for example: The cubic zirconium looks like the diamond, the wax apple like the real thing, the movie set like an actual New York apartment, and so on. At a given time and from a given perspective, these pairs might all be said to be "subjectively indiscernible" by a given person. The point is that subjective indiscernibility does not seem to imply indiscernibility and, thus, it is not clear that even if a supposed non-veridical sensory quality is subjectively indiscernible from a veridical sensory quality that this implies that if the former is mental then the latter must be mental.

While new scientists like Gray are not clear on exactly why they think that we should generalize from (supposed) demonstrations that we are sometimes acquainted with non-veridical sensory qualities that are qualia to the claim that the veridical sensory qualities that we are acquainted with in ordinary perception are qualia, I suspect that their reason is somewhat different from the argument given by Smith: They hope to give a unified scientific account of sensory qualities, treating simplicity and elegance as virtues for scientific explanations. Such a *hope* is admirable and other things being equal the scientist should aim to give the simplest account possible. But this hope rests on the assumption that sensory qualities are fundamentally alike, whether they are veridical or non-veridical (if such there be). If it turns out that the (supposed) subjective indiscernibility of the redness that we are acquainted with in seeing a ripe tomato and the redness that we are (supposedly) acquainted with in hallucinating a ripe tomato, for example, is like the subjective indiscernibility of the diamond and the cubic zirconium, then attempting to give a unified account of these supposed qualities would be misguided.

Nonetheless, the new scientist might argue that when possible we should assume a simpler ontology over a more complex one and that it is simpler if there is only one type of

sensory qualities (mental sensory qualities) rather than two (mental sensory qualities and mind-independent sensory qualities). Insofar as we are ignorant about the nature of sensory qualities, this might well be a useful rule of thumb (although a useful rule of thumb would hardly seem to make an especially compelling case for the generalization step). But insofar as I am correct that the sensory qualities that we are acquainted with in ordinary perception can be identified with mind-independent properties, this rule of thumb would actually cut the other way: While it is simpler if there are only mental sensory qualities, it is simpler still if there are only mind-independent sensory qualities (these being less mysterious than qualia), and yet simpler if there are no sensory qualities at all.[92] It seems that insofar as this rule of thumb supports the generalization step of the argument from observation, it should decrease the bar on what constitutes reasonable doubt with regard to the observation step.

5.7 CONCLUSION

In this chapter I have investigated the second horn of the dilemma raised for the new science in Chapter 3. I showed that new scientists must turn from science to philosophy, calling on a substantive philosophical thesis: They must argue that the sensory qualities that we are acquainted with in ordinary perception are qualia. I then showed that this is problematic for the new science. I conclude that new scientists have not made a compelling case for the existence of the supposed scientific phenomenon that they seek to explain.

[92] For example, given that there are both horses and horns in the world, it is simpler to think that any supposed unicorns are horses-with-horns-attached-to-their-heads (and simpler still to deny both, even if this is implausible with regard to horses-with-horns-attached-to-their-heads).

6.0 NEURAL CORRELATES OF CONSCIOUSNESS

Let me briefly summarize where we have been. I began in the introduction by noting that phenomenal consciousness is thought to pose a great mystery. And yet, despite nearly a quarter of a century of work aiming to explain it in the new science of consciousness, we remain scientifically ignorant about this supposed phenomenon. I took this to motivate a reconsideration of the reality of the phenomenon, proposing a critical investigation of the new science and the reasons that new scientists offer for believing that phenomenal consciousness exists.

In the first two chapters, I considered the aims and outlook of the new science (Chapter 1) and articulated how new scientists understand the phenomenon (Chapter 2). I showed that phenomenal consciousness is understood in terms of agents having mental states with distinctive qualia at least in ordinary episodes of perception. The standard understanding of "qualia" in the new science is that they are sensory qualities—such as redness or painfulness—that are mental (in the sense of being directly produced by brains). As such, if a sensory quality is mind-independent, then it is not a quale (even though we might be acquainted with that sensory quality as an instance of a mind-dependent type). Over the course of these chapters, we also saw reason to deepen our suspicion concerning the reality of this supposed scientific phenomenon: New scientists claim that phenomenal consciousness cannot be studied without calling on private data and formidable arguments have been given that assume that qualia exist, then conclude that they cannot be explained scientifically.

I then turned to an investigation of the reasons offered for believing that phenomenal consciousness exists. In Chapter 3, I showed that new scientists must call on claimed private data if they are to infer the supposed scientific phenomenon, raising the danger of epistemic divergence and leading them to adopt a cautious approach to the use of private data claims: At least some claims about episodes of acquaintance with veridical sensory qualities are acceptable (uncontroversial first-person data claims), but not claims about supposed episodes of acquaintance with non-veridical sensory qualities in unordinary perception (controversial first-person data claims). Drawing a further distinction between claims to be specifically acquainted with sensory qualities *as being* qualia (strong first-person data claims) and claims to be acquainted with sensory qualities more generally (weak first-person data claims), I posed a dilemma for the new science: They must call on either strong first-person data claims or weak first-person data claims—and each option leads to a problem.

The first horn of the dilemma was established in Chapter 4. I showed that new scientists cannot call on strong first-person data claims while remaining cautious about the use of private data. As such, they must call on weak first-person data claims. This leads to the second horn of the dilemma, which was established in Chapter 5. I showed that unlike strong first-person data claims, weak first-person data claims are insufficient for purposes of inferring the supposed scientific phenomenon of phenomenal consciousness; the result is that new scientists must turn from science to philosophy, supplementing weak first-person data claims with a substantive philosophical thesis (that the sensory qualities that we are acquainted with in ordinary perception are qualia). This turn further deepens the suspicion about the reality of phenomenal consciousness raised in the introduction, showing that the new scientists' case rests on a philosophical thesis, not scientific evidence. I then demonstrated that the arguments for the

substantive philosophical thesis at issue that can be extracted from the new science literature are contentious and indicated how these arguments can be resisted. The result is that new scientists have not made a compelling case for the existence of the supposed scientific phenomenon that they seek to explain. Absent that, however, and given the suspicion motivating my investigation in the first place, I tentatively conclude that it does not exist.

The goal of this final chapter is to bolster my tentative conclusion by considering the scientific evidence involved in one of the most prominent experimental projects in the new science—the search for neural correlates of consciousness (NCC). I will argue that this project neither produces nor utilizes evidence about phenomenal consciousness. Not surprisingly, many of the same considerations that we have seen in the preceding chapters come up in looking at the new science understanding of NCC research, although the argument will unfold in a slightly different way. As such, this chapter is not only intended to provide a critique of the relevance of NCC research to the new science, but to serve as an extended conclusion to this document.

6.1 SEARCHING FOR EVIDENCE OF QUALIA

The search for neural correlates of consciousness (NCC) is at the forefront of current scientific interest in consciousness: It is frequently asserted that the NCC project is the starting point for the new science of consciousness. Thus, many prominent new scientists hold that the first step in explaining the supposed scientific phenomenon of phenomenal consciousness is to find neural activity that specifically correlates with the contents of a subject's phenomenal consciousness.[93]

[93] This is not the only goal that one can have in conducting research under the "NCC" label. Nonetheless, the search for neural correlates of the content of phenomenal consciousness is arguably the most common project amongst NCC

If these researchers are correct in their assessment of the importance of the NCC project, then the new science will rise or fall with the search for neural correlates of the contents of phenomenal consciousness. In this chapter I assess the empirical prospects of this research project. I claim that its prospects are dim, arguing that there is no scientific evidence for the claims about phenomenal consciousness that one finds in discussions of NCC research in the new science.

To see this we need to begin with a clear understanding of the supposed phenomena that new scientists conducting NCC research are interested in (the "contents of phenomenal consciousness" or "qualia" in the terminology that I have been using) and the data that are collected during NCC experiments (records of the behavioral reports of subjects and measures of their neural activity). I argue that the data that are collected in these experiments are insufficient evidence to establish the desired correlations between qualia and neural activity. This is shown by considering two alternative interpretations of a prototypical NCC experiment. I begin by considering an eliminativist interpretation, which takes the behavioral reports to reflect the perceptual discriminations made by the subject but denies that they indicate the occurrence of qualia. As such, on this interpretation, the NCC experiments tell us nothing whatsoever about the supposed scientific phenomenon of phenomenal consciousness.

As the eliminativist interpretation is compatible with the data collected in NCC experiments, further support is needed if we are to favor the new science interpretation. This might come from theoretical considerations or from another source of data. I examine each possibility in turn, showing that the new science interpretation rests on the beliefs of the researchers that in situations like those used in NCC experiments, they are visually acquainted

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researchers and has often been considered the standard NCC project. For example, Jakob Hohwy writes (2007, 465): "The standard NCC approach is primarily interested in the neural substrate for having one rather another *content* represented in consciousness (e.g. a percept of a face rather than of a house)." See Chalmers (1998, 2000), Hohwy (2007), and Rees (2007) for discussions of NCC research; see also the articles collected in Metzinger (2000).

with various sensory qualities and that such acquaintance is reflected in their behaviors (each researcher making this judgment about his or her own case). The new scientists' claimed episodes of acquaintance are considered to be a source of data, but not in the typical sense of the term. One's supposed episodes of visual acquaintance with sensory qualities are not themselves publicly observable and, as such, are not included in the scientific data collected in an NCC experiment; assuming that they exist at all, these episodes are first-person data and new scientists call on their characterizations of them to infer that their subjects are phenomenally conscious.

There are two main problems with this inference. To begin with, the use of first-person data claims in a scientific investigation is questionable. Worse still, it is far from clear that the claimed first-person data provides evidence about qualia. This is because the eliminativist can respond that the "first-person data" are nothing more than the perceptual discriminations that the researchers have made, noting that the eliminativist account accepts that people's behaviors reflect their perceptual discriminations. If this is correct, then the use of first-person data claims does not support the new science interpretation over the eliminativist interpretation.

Even granting that acquaintance with sensory qualities involves something more than mere perceptual discriminations, however, it is still not clear that such episodes of acquaintance support the new science interpretation. The reason is that, even if we accept that the subjects in NCC experiments are each acquainted with sensory qualities and that these episodes of acquaintance are reflected in their behavioral reports, this does not necessarily mean that the reports express people's acquaintance with the supposed content of their phenomenal consciousness. For that we also need evidence that the sensory qualities that the subjects are acquainted with are qualia. To make this point clear, I consider a second alternative interpretation of NCC research—one based on a naïve realist account of ordinary perception.

This interpretation accepts that the subject in an NCC experiment is acquainted with sensory qualities and yet denies that those sensory qualities are part of the content of that subject's supposed phenomenally conscious mental states. The naïve realist interpretation holds that what the subject is acquainted with are mind-independent sensory qualities of the experimental stimuli, not qualia.

Once again, further support is needed for the new science interpretation. And, again, such support might come from theoretical considerations or from another source of data. While philosophical arguments can be given against the naïve realist account of the relevant qualities, the issue is far from settled and it would be rather premature for a science of consciousness to dismiss the naïve realist interpretation based on these arguments. The new science interpretation might instead be supported by calling on another source of data: The new scientist could make stronger claims about her supposed first-person data, not simply claiming to be acquainted with sensory qualities, but with those sensory qualities as being qualia. In other words, the new scientist might claim to have strong first-person data, not just weak first-person data. The use of strong first-person data claims leads to a serious problem, however: Claims of introspective knowledge cannot be directly verified and the closest that you can come to testing them is to put yourself into the same situation; but, when I do so, the sensory qualities that (I think) I am acquainted with do not specifically seem to be qualia. And I am not alone in this.

In the remainder of this chapter, I will spell out this line of argument in greater detail. In Section 6.2, I briefly summarize what we have learned about the new science of consciousness and the supposed scientific phenomenon that the new scientists hope to explain, showing how this relates to the NCC project. In Section 6.3, I look at a prototypical NCC experiment, noting the data that are collected during such an experiment and distinguishing them from the supposed

phenomena at issue. In Section 6.4, I offer the first of two alternative interpretations of NCC research—the eliminativist interpretation. In Section 6.5, I consider what further support the new scientists could offer to favor their interpretation over the eliminativist interpretation. I argue that this support rests on an acceptance of scientifically questionable first-person data claims. In Section 6.6, I show that we can nonetheless accept the accuracy of these first-person data claims while denying the new science interpretation; I do this by offering a second alternative interpretation of NCC research—the naïve realist interpretation. In Section 6.7, I consider what further, further support could be offered to selectively favor the new science interpretation over the naïve realist interpretation and find the support wanting. I conclude that there is no scientific evidence for the claims about phenomenal consciousness coming out of NCC research.

6.2 THE NEW SCIENCE AND NCC RESEARCH

As discussed in Chapters 1 and 2, the goal of the new science of consciousness is to give a naturalistic, indeed biological, account of phenomenal consciousness and qualia. The predominant understanding of phenomenal consciousness in the new science literature is a familiar one: It is thought that each one of us has mental states that are phenomenally conscious in virtue of having distinctive qualia that we are at least sometimes acquainted with. Qualia, which together make up what is sometimes called the "content of phenomenal consciousness" in the NCC literature, are sensory qualities that are mental.[94] These supposed qualities are thought

[94] Typically this phrase is shortened to "content of consciousness" in discussions of NCC research (see Chalmers, 2000, for example). I will use the longer phrase, however, to keep clear that it is phenomenal consciousness—not access consciousness (Block, 1995), for example—that is at issue for new scientists.

to be produced by the brain and the primary aim of new science researchers is to explain how this feat is accomplished.

Giving a convincing biological account of the supposed scientific phenomenon of phenomenal consciousness is widely recognized to be a rather difficult task—to put it mildly. As such, the standard strategy in the new science is to tackle the problem indirectly, starting with the search for *correlations* between a subject's neural activity and some qualia.[95] As Francis Crick and Christof Koch express the strategy (2003, 119):

> The most difficult aspect of consciousness is the so-called "hard problem" of qualia—the redness of red, the painfulness of pain, and so on. No one has produced any plausible explanation as to how the experience of the redness of red could arise from the actions of the brain. It appears fruitless to approach this problem head-on. Instead, we are attempting to find the neural correlate(s) of consciousness (NCC), in the hope that when we can explain the NCC in causal terms, this will make the problem of qualia clearer. In round terms, the NCC is the minimal set of neuronal events that gives rise to a specific aspect of a conscious percept.

New scientists like Crick and Koch aim to correlate neural activity with qualia and the hope is that such correlations will cast light on the supposed mystery of phenomenal consciousness. This means that it is essential to the goal of new scientists that the correlations drawn from NCC research involve phenomenal consciousness. As Thomas Metzinger puts it in introducing his edited volume on the topic, "generally speaking, the epistemic goal—what we really want to

[95] The "neural" side of the NCC correlations is typically understood in terms of neural representations; but, as there is much disagreement about how the brain represents the world, it is not too surprising that we find that different researchers have different expectations concerning the neural correlates (with some focusing on areas of the brain, others more specifically on types of neurons, or patterns of neural activity, or neural mechanisms). Nonetheless, the general approach is largely the same: The goal is to isolate some facet of the living brain (through the typical neuroscientific methods such as single-cell recordings or fMRI), showing it to be closely tied to the subjects' behavioral reports (which are then taken to be reports on the contents of their phenomenal consciousness). Although there are many issues to be explored with regard to the "neural" side of the correlations, I intend to sweep them under the rug. My focus in this chapter is on the difficulties that arise on the other side of the correlations. As such, I will speak neutrally of "neural activity," meaning this to pick out whatever it is about the brain that a given researcher thinks best correlates with the behavioral reports.

know—in the type of correlation studies relevant to consciousness research consists in isolating the *minimally sufficient neural correlate* for specific kinds of phenomenal content" (2000, 4).[96]

6.3 THE SCIENTIFIC DATA

The question I am interested in is whether the data collected in NCC experiments enables the researchers to establish neural correlates of the supposed contents of phenomenal consciousness. To answer this question we need to begin by considering what the data in these experiments are. I will follow the discussion in Chapter 3, adopting the understanding of "scientific data" articulated there. Recall that scientific data are collected during experiments and often include records of instrument readouts, computer displays or photographs, and reports of subjects' behaviors. My goal in this section is to make clear what the scientific data collected in some prototypical NCC experiments are.

The most important work on neural correlates of consciousness has involved the use of binocular rivalry.[97] In fact, work on binocular rivalry has sponsored widespread optimism

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[96] This passage suggests that the goal of NCC research is to match the *specific contents* of neural representations with the *specific contents* of consciousness. This "matching-content doctrine" is the target of one of the most prominent critiques of NCC research in the philosophical literature (the other owing to Ned Block and discussed briefly in Footnote 100). Alva Noë and Evan Thompson (2004) argue that on this understanding of NCC research, there is good reason to doubt that neural correlates can be found. Their objection centers on what would be needed to show a *systematic match* between the contents of a neural representation and the contents of consciousness. As such, Noë and Thompson's critique is rather different from the one presented here.

[97] Interest in the phenomenon of binocular rivalry itself has a long history, with Nicholas Wade (1998) locating the first clear description of it in Porta (1593). See Blake (2001) for an accessible overview of current controversies concerning binocular rivalry; see also the articles collected in Alais and Blake (2005). In particular, it is worth noting that the phenomenon itself is not well understood and that this raises questions about its use as a *tool* in NCC research. Although the use of binocular rivalry "is widely thought to provide one of the most important experimental paradigms for determining the neural states whose contents match the contents of visual consciousness" (Noë and Thompson, 2004, 7), not all NCC experiments employ this paradigm. Other paradigms include the use of stimuli near the threshold for discrimination (Grill-Spector et al., 2000; Kjaer et al., 2001; Moutoussis and Zeki, 2002; Ress and Heeger, 2003; Pins and ffytche, 2003; Ojanen, Revonsuo, and Sams, 2003), other forms of bi-stable perception

concerning the NCC project and the new science. I take this work to be the classic example of NCC research and will use it as the central example throughout this chapter. Most famously, Nikos Logothetis and colleagues have used binocular rivalry to look for the NCC of visual consciousness in alert macaque monkeys using single-cell recordings (Leopold and Logothetis, 1996, 1999; Logothetis and Schall, 1989, 1990; Sheinberg and Logothetis, 1997). Binocular rivalry experiments have also been conducted on human subjects, typically using fMRI or EEG/MEG recording techniques (Tong et al., 1998; Polonsky et al., 2000; Tong and Engel, 2001; Lee and Blake, 2002; Lee, Blake, and Heeger, 2005; Haynes, Deichmann, and Rees, 2005; Wunderlich, Schneider, and Kastner, 2005). While I could explore any of these studies for purposes of this discussion, for the sake of simplicity—and following the philosophical discussions (e.g., Noë and Thompson, 2004)—I will focus on the earlier experiments on monkeys. (Note that in doing so I will *not* be raising concerns about animal minds or otherwise raise skeptical issues specific to the reports of non-human animals.)

In the prototypical NCC experiment using binocular rivalry, a monkey is first trained to pull different levers when shown different types of images. I will focus on horizontal and vertical gratings for purposes of discussion; in this case, the monkey is trained to pull one lever when a horizontal grating is presented to her and another lever when a vertical grating is presented to her. The monkey then has a horizontal and a vertical grating presented simultaneously, one to each eye (see Figure 6.1).[98]

(Kleinshchidt et al., 1998; Sterzer et al., 2002; Sterzer, Haynes, and Rees, 2003; Eriksson et al., 2004), and alterations of atentional signals or stimulus context (Rees, Frith and Lavie, 1997; Rees et al., 1999; Sakai et al., 1995; Ehrsson, Spence and Passignham, 2004). See Rees and Frith (2007) for discussion.

[98] The training procedure is actually somewhat more complicated than described here, although this should suffice for our purposes; see Logothetis (1998, 1808) for a summary.

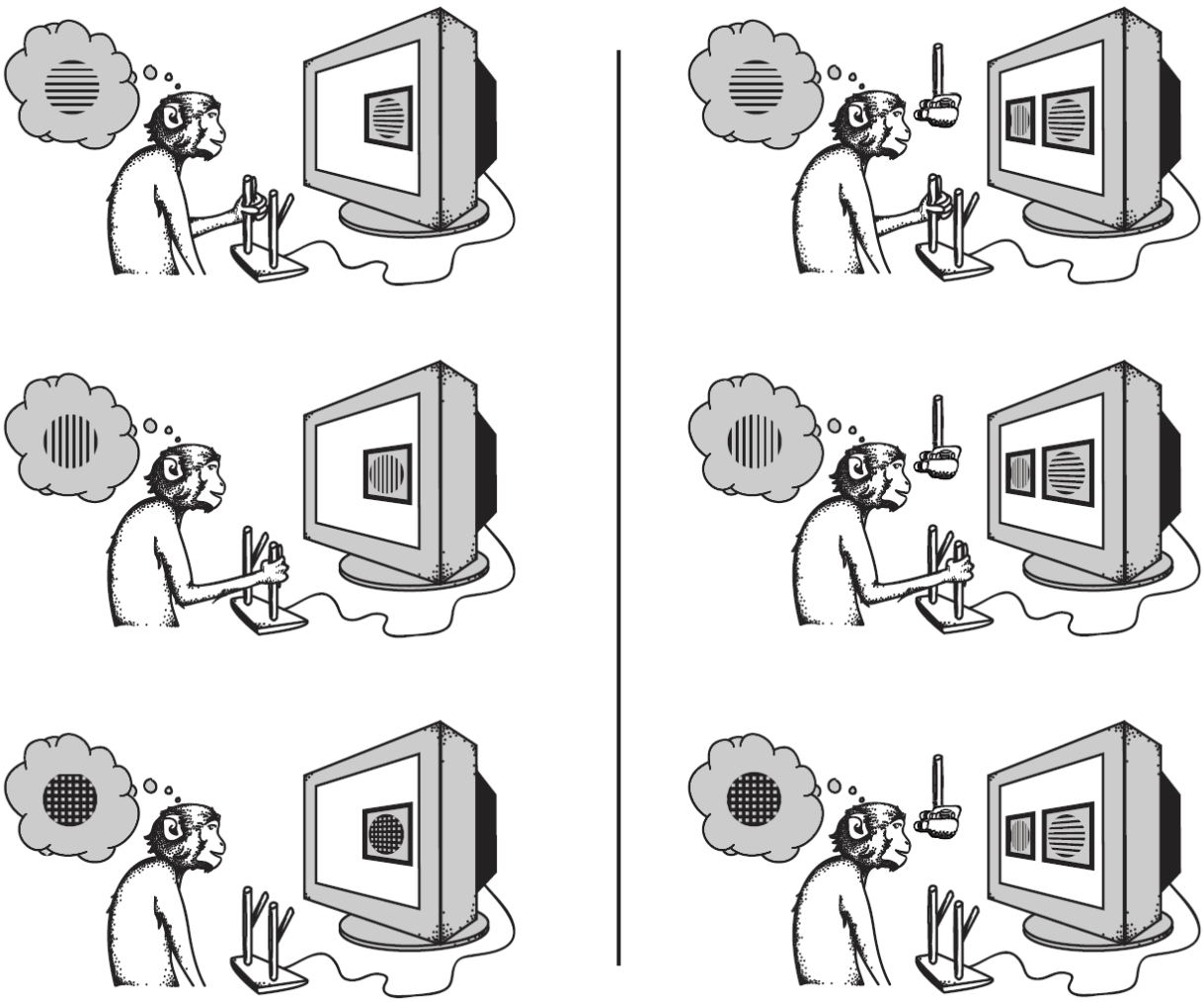

Figure 6.1. Training session on left; testing session on right.
Adapted from Logothetis (1998, Figure 4).

Human subjects typically report binocular rivalry in this situation: They report seeing alternatively either single definite image or a partial overlap of the two. The trained monkeys respond similarly to humans in this experimental set-up, alternatively pulling either the horizontal grating lever or the vertical grating lever (Logothetis, 1998, 1808). The scientific data collected on the "consciousness" side of the correlations consist in the timed sequences of lever pulls made by the monkeys. As the monkeys were trained to pull the horizontal grating lever when presented with a horizontal grating and the vertical grating lever when presented with a

vertical grating, it is reasonable to interpret the lever pulls during binocular rivalry as indicating the monkey's identification of one of the two types of stimuli (and I will not challenge this interpretation). I will express this by simply saying that the lever pulls indicate which of the two stimuli the monkey *sees* at that time, where this is meant to be neutral on the question of what more (if anything) is involved in these episodes of visual perception (such as acquaintance with sensory qualities or specifically with qualia, for example).

During the experiment, cells that selectively respond to either horizontal or vertical gratings are monitored and their firing rates recorded. This is the scientific data collected on the neural side of the correlation. The responses of the cells are then correlated with the behavioral responses of the monkey. The goal is to locate cells that show higher activity *specifically* when the monkey pulls the lever for the corresponding grating and not otherwise (even though the other stimulus is still being presented to one of the monkey's eyes). It turns out that the strength of the correlation depends importantly on the area of the cortex being monitored: Cells in the primary visual cortex do not correlate well (Leopold and Logothetis, 1996), while cells in the inferior temporal cortex correlate strongly (Sheinberg and Logothetis, 1997).[99] That is, the firing of "vertical grating cells" in the inferior temporal cortex correlates strongly with the monkey pulling the vertical grating lever, while the firing of "horizontal grating cells" in the inferior temporal cortex correlates strongly with the monkey pulling the horizontal grating lever.

Again, the scientific data collected in this experiment consists in records of cell firing rates and the levers that the trained monkey pulled. The cell firing rates are used as a measure of

[99] The studies on the primary visual cortex and the inferior temporal cortex were conducted separately using different monkeys, although the training procedures remained the same. The types of stimuli used in the studies differed, with Sheinberg and Logothetis using a sunburst-like image for one stimulus and a variety of images for the other (including images of humans, monkeys, butterflies, etc.). For the sake of simplicity, however, I will continue to treat these experiments jointly, using the stimuli from Leopold and Logothetis (1996) for both studies.

neural activity and the lever pulls are reasonably taken to indicate which of the two stimuli the monkey sees. As noted above, however, the supposed phenomena of interest to new scientists in NCC experiments are the contents of phenomenal consciousness. The question we must ask, then, is whether the behavioral data collected are data about qualia. I argue that new scientists have not made a compelling case for the claim that they are.

6.4 THE ELIMINATIVIST TAKE ON NCC EXPERIMENTS

New scientists hold that the behaviors recorded in NCC experiments like the one described in the previous section reliably indicate something about the supposed content of the subject's phenomenal consciousness; for example, the monkey pulling the horizontal grating lever is taken to indicate that at that time she was acquainted with qualia related to a horizontal grating (and not a vertical grating). The new scientist claims to infer the existence of qualia from the scientific data, taking the behavioral reports to be reporting the occurrence of qualia. I argue that this is a bad inference. I begin in this section by showing that the scientific data does not establish the existence of qualia. This can be seen by considering an alternative interpretation of NCC experiments—the eliminativist interpretation. While the eliminativist accepts the scientific data, she denies that phenomenal consciousness and qualia exist (and, thus, denies that the behavioral data are data about qualia).[100]

[100] Inspiration for the eliminativist interpretation of NCC research can be found in the work of Dan Dennett, including his discussions of his heterophenomenological method (1991, 2003, 2007). The eliminativist interpretation also can be taken to be related to an objection to NCC research raised by Ned Block (2001). The objection is that NCC research gets at *access consciousness* and not *phenomenal consciousness* (Block, 1995). (Roughly, "access consciousness" refers to information that is available for behavioral report and, as such, the eliminativist interpretation can be seen as a way of drawing out the failure of NCC research to get at phenomenal consciousness

The new scientist takes the scientific data in an NCC experiment to enable us to reliably discriminate between competing claims about the supposed content of the monkey's phenomenal consciousness at a given time; but, whether or not the monkey's behavior is a reliable indicator of qualia in the first place is a legitimate question and one that the scientific data collected in the NCC experiment does not answer. This is clear once we recognize that the relevant data just consist in records of the monkey's behaviors, while correlating the behaviors with the supposed content of her phenomenal consciousness would require another source of evidence: We would need independent data about the monkey's supposed qualia. As no such data are collected in the NCC experiment, the scientific data on their own do not justify the correlation claims at issue. In other words, the behavioral data are perfectly compatible with an eliminativist denial of the existence of phenomenal consciousness.

Nonetheless, the eliminativist need not take the behavioral data to be useless; she can allow that they can be used to infer something about the monkey (whether the monkey saw the horizontal or the vertical grating at a given time), even though she holds that they tell us nothing about the monkey's supposed qualia. The crucial point to note is that the new scientist agrees with the eliminativist that *the behavioral reports indicate what the monkey sees*. Both accept that the monkey's behaviors—her lever pulls—indicate her detection of the type of stimulus that she

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as opposed to access consciousness.) For example, Jakob Hohwy (2007, 464) reads Block in this way: "Block argues that much of the current NCC work prioritizes access over phenomenality. The risk is that the neural substrate of access consciousness is irrelevant for the neural substrate of phenomenality." Unlike Block, however, I do not think that phenomenal consciousness exists such that an appropriate NCC experiment could produce neural correlations with it; as such, I offer the eliminativist interpretation as part of an objection that is ultimately rather different from Block's. Thus, while Block criticizes those NCC researchers who seem to target access consciousness, I argue that they have actually gotten things right. Of course, Block is correct that sometimes NCC researchers will discuss consciousness in ways that suggest that they are interested in something other than phenomenal consciousness. For example, Geraint Rees (2007, 877) writes: "Consciousness and awareness of a stimulus are used interchangeably in this review to indicate the ability of an observer to report either the presence of that stimulus or its identity." Insofar as this description is accurate, Rees's interpretation coincides with the eliminativist interpretation and diverges from the new science interpretation. Researchers holding such a view of NCC experiments are not the target of the present critique.

was trained on for that lever and that she has distinguished it from the other type of stimulus she was trained on. This inference is not controversial and is supported by considering the monkey's behavior during the training sessions. The new scientist goes further than the eliminativist, however, in not just taking the behavioral reports to be reliable indicators of what the monkey sees, but *also* of the supposed content of the monkey's phenomenal consciousness. The question is what supports this *further* inference? It cannot be the behavioral data on their own, as those data do not decide between the new scientist's interpretation and the simpler eliminativist interpretation. The new scientist therefore needs another source of evidence if the monkey's behavioral reports are to be reasonably interpreted as data about phenomenal consciousness.

6.5 FURTHER SUPPORT

In general, the additional evidence required by the new science could come from one of two sources: The new science interpretation might be supported by theoretical considerations or it might gain credence from another source of data beyond the scientific data discussed in Section 6.3. Both strategies are found in the literature and I will consider each in turn.

We have just seen that the scientific data collected in a typical NCC experiment on their own do not allow the new scientist to infer anything about the monkey's supposed qualia; it might be, however, that the data support such inferences when taken in conjunction with a well-supported scientific theory that posits phenomenal consciousness.[101] As noted in Chapter 3, scientific research is seldom, if ever, carried out in isolation from existing scientific theory and

[101] Alternatively, the data might be considered in conjunction with philosophical arguments for the existence of phenomenal consciousness; I postpone a discussion of this possibility until Section 6.7, focusing here on the support that can be drawn from scientific theory.

theory very often plays an important role in inferring the existence of a phenomenon. Not surprisingly a few researchers have attempted to support the inference of the supposed scientific phenomenon of phenomenal consciousness in a similar way, treating it as a theoretical construct. This was illustrated through a discussion of Bernard Baars, who likened phenomenal consciousness to the atom and the gene, arguing that "scientifically… consciousness is not something that we know directly; it is a theoretical construct based on shared, public observations" (2003, 4). In investigating this example further, however, what we found is that new scientists are right to claim that the supposed scientific phenomenon cannot be studied by relying on the scientific data alone: Phenomenal consciousness is not posited by a successful scientific theory.

Despite what the quoted passage suggests, Baars is actually best read as claiming that for scientific purposes phenomenal consciousness *in others* is a theoretical construct. He holds that we can each legitimately infer that other people are phenomenally conscious from their behaviors when taken in conjunction with our supposed knowledge of our own phenomenally conscious mental states. The point to be noted, however, is that this inference does not rely on just the shared public observations. Rather, the new scientist takes herself to have first-person data about her own supposed qualia in a given situation and claims to use those data to infer that other beings have similar qualia in that type of situation. As such, the supposed evidence for the occurrence of qualia actually involves another source of data beyond the scientific data: New scientists claim to have first-person data—to have episodes of acquaintance with sensory qualities in situations like that found in our example NCC experiment.

Does the inclusion of such first-person data claims—the researcher's claims about her own supposed episodes of visual acquaintance in binocular rivalry situations—support the new

science interpretation over the eliminativist interpretation? If so, should we place evidential weight on those first-person data claims? The eliminativist can offer reasons for answering each of these questions in the negative. First, recall that the eliminativist accepts that the behavioral data are a reliable indicator of *something* about the subject, taking them to correspond with what the subject *sees* (in the neutral sense given in Section 6.3); it might then be argued that the new scientist's supposed episodes of visual acquaintance are really nothing more than her episodes of seeing. If this deflationary account of acquaintance is correct, then the supposed first-person data that the new scientist claims to call on are actually just further instances of the type of phenomenon that the eliminativist infers from the scientific data. The new scientist therefore needs to resist this deflationary account of visual acquaintance, holding that visual acquaintance involves *something more* than seeing.

Note, however, that if the new scientist claims that when she undergoes episodes of visual acquaintance she finds that they involve something more than her seeing, then we have no way to test the reliability of her judgments that this is the case. We can, of course, test her ability to make visual discriminations—testing her ability to identify different visual stimuli and their features in a controlled setting, for example; but, insofar as the new scientist claims that her episodes of acquaintance in such cases involve something more than making these visual discriminations, her ability to make such judgments is not tested in testing her ability to see. Thus, if the new scientist responds in this way, she buys the applicability of the supposed first-person data at the cost of casting doubt on their evidential value: She construes her first-person data such that they favor the new science interpretation over the eliminativist interpretation, but in doing so the accuracy of her first-person data claims can no longer be checked by other researchers.

And we have seen that the use of private data claims in science is controversial, violating what is often held to be a fundamental principle of scientific methodology—the publicity principle. In Chapter 3, for the sake of argument I accepted with the new scientist that *some* private data claims can legitimately be used in science; nonetheless, the eliminativist could well stick to their guns and reject any weakening of the publicity principle—and they would be in some good company in doing so. Of course, the response the new scientist is likely to give is to charge the eliminativist with adopting a radical and unreasonable form of skepticism. Further, the new scientist might urge the eliminativist to consider her own episodes of perception and to consider whether a deflationary account of acquaintance really fits with her judgments about those episodes. That is, the new scientist might urge the eliminativist to check the first-person data claims by proxy.

As episodes of perception are restricted to the person who undergoes them, I can only proxy-check first-person data claims about the experimental set-up described earlier for myself. When I put myself in a situation of binocular rivalry between a horizontal and a vertical grating, what I find is that after a period of adjustment I see either a horizontal or a vertical grating in alternating fashion (occasionally interspersed with a partial overlap of the two). And when I reflect on seeing the horizontal grating, for example, I do take myself to be acquainted with bars of color running horizontally and likewise for the vertical grating. Further, I take myself to be acquainted with them in a way that involves something more than is found in the eliminativist's deflationary account and when I reflect on my reports about what I saw, I take myself to have been reporting on my (full-fledged) visual acquaintance with sensory qualities. Assuming that I am typical, I might then use my (claimed) first-person data to infer that the behavioral data collected in our example NCC experiment likewise correspond with what the subject was

visually acquainted with at the time. Thus, insofar as I trust my judgments about my (supposed) episodes of acquaintance and take them to be typical of the judgments other people would make in similar circumstances, I am inclined to give *some* leeway with regard to the *cautious* use of private data claims. Nonetheless, I am not so confident in my judgments that I cannot see the eliminativist's point.

Even if we reject the eliministivist's deflationary account of acquaintance, and grant the cautious use of first-person data claims in science, a problem remains: The data still does not specifically support the new science interpretation of NCC experiments. This is because the other alternative noted above—the naïve realist position—also interprets the behavioral data in terms of visual acquaintance and yet denies that the sensory qualities that the subject is acquainted with are qualia.

6.6 THE NAÏVE REALIST TAKE

Note that the supposed phenomena at issue for the new science interpretation of NCC research are not episodes of acquaintance with sensory qualities, but specifically the contents of phenomenal consciousness (qualia). Thus, even if we grant that the eliminativist interpretation discussed in the previous two sections fails to do justice to our episodes of acquaintance with sensory qualities in binocular rivalry situations, the data still does not uniquely support the new science interpretation. This is clearly seen if we change to an alternative interpretation of NCC research, replacing the eliminativist interpretation with a naïve realist interpretation.

As discussed in Chapter 5, the naïve realist takes ordinary episodes of perception to involve standing in a relation of acquaintance to mind-independent sensory qualities. Thus, she

holds that when the perceiver is acquainted with a sensory quality of the red type in looking at a ripe tomato in normal waking visual perception, for example, the quality is actually a quality of the tomato and is not produced by her brain. Accepting that the subjects in our example binocular rivalry experiment undergo ordinary episodes of perception, the naïve realist interpretation takes the behavioral data to indicate what the subject was acquainted with at a given time, but holds that the objects of acquaintance in each case are qualities of one or the other of the two stimuli used.[102] This contrasts with the new science interpretation of the NCC experiment, which takes the behavioral data to specifically indicate the subject's visual acquaintance with qualia.[103] The important point is that both interpretations agree that the behavioral reports are reasonably interpreted in terms of the subject's visual acquaintance with sensory qualities, but they diverge with regard to their views on what the nature of those qualities is (i.e., whether they are qualia or not). What we find is that the data—even when the scientific data are supplemented with first-person data claims about acquaintance with sensory qualities—do not adjudicate on the nature of the qualities at issue. Again, the new scientist requires further support for her interpretation.[104]

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[102] One might question whether situations of binocular rivalry are really instances of ordinary perception, and certainly in one sense they are not (as they involve rivalry). Nonetheless, the naïve realist typically distinguishes ordinary perception from cases that could fuel the argument from hallucination and binocular rivalry is not such a case; at least, no more so than alternating between closing one eye and the other.

[103] It might be that the new scientist takes the behavioral reports to also indicate the subject's visual acquaintance with the content of his phenomenal consciousness in addition to the subject's acquaintance with one of the stimuli. This would raise further difficulties concerning how one could distinguish between these two types of acquaintance; but, regardless, the arguments that follow are applicable to either version of the new science interpretation.

[104] Using the terminology introduced in Chapter 3, weak first-person data claims are insufficient for the inference that the subject in our example NCC experiment has qualia.

6.7 FURTHER, FURTHER SUPPORT

Once again, the new scientist might call on theoretical considerations or on another source of data to support her interpretation over the alternative (this time the naïve realist interpretation). As noted in Section 6.5, however, phenomenal consciousness is not posited by a successful scientific theory and thus the existence of this supposed scientific phenomenon is not supported by theoretical considerations of that sort. Alternatively, the new scientist might call on philosophical arguments like those discussed in the previous chapter; in particular, she might support her interpretation indirectly by arguing that no relevant form of naïve realism is a viable position. What we saw, however, is that those arguments are not decisive and their conclusions can be resisted. I will not rehash the details here, but suffice it to say that naïve realism (in one form or another) currently seems to be a live option. If, on top of the difficulties discussed in Section 6.5, the new science interpretation of NCC experiments *also* critically involves the assumption that such contentious philosophical arguments are correct, then the claim that the new science is a scientific discipline is brought into serious doubt. In fact, although the literature is not clear on the point, I do not think that most new scientists would be happy to have their interpretation of NCC experiments rest on contentious philosophical arguments.

Alternatively, the new scientist might claim to have another source of data that directly supports her interpretation: The new scientist might claim that when she puts herself into a situation like that used in our example NCC experiment, she is not only visually acquainted with sensory qualities, but that she is acquainted with those qualities *as being* qualia. That is, the new scientist might claim to have introspective knowledge that she is acquainted with the supposed content of her phenomenal consciousness in such situations. In other words, the new scientist might claim to have strong first-person data rather than just weak first-person data.

If the new scientist claims that she has strong first-person data and assumes that she is typical in this regard, then the inference from the behavioral data in an NCC experiment to the supposed content of the subject's phenomenal consciousness is straightforward. Is this inference a good one? No. The reason is that the current evidence suggests that the new scientist is *not* typical in this regard, as we saw in Chapter 4. In fact, what we found is that there is reason to believe that the new scientist is quite atypical in the introspective judgments that she makes about her episodes of ordinary perception.

6.8 CONCLUSION

New scientists aim to give a neurobiological explanation of the supposed scientific phenomenon of phenomenal consciousness and the NCC project is widely considered to be the first step in doing so. The hope is that finding neural correlates of the contents of phenomenal consciousness will cast light on how neural activity creates qualia. In this chapter I have questioned whether NCC research is able to produce evidence for such neural correlates, challenging the claim that NCC experiments involve data about supposed qualia. This challenge centered around offering two alternative interpretations of NCC experiments that accept the scientific data while denying the reality of the phenomena in question. The result is that new scientists must claim to have first-person data. Specifically, insofar as they hold that they have scientific evidence for their interpretation, rather than merely resting the case on contentious philosophical arguments, new scientists must claim to be acquainted with sensory qualities *as being* qualia in the situations involved in NCC experiments. Such strong first-person data claims might then be used in conjunction with the scientific data to infer the phenomena. This inference

should not be accepted, however, as the accuracy of strong first-person data claims is highly suspect. I conclude that there is no scientific evidence for the claims about qualia that one finds in discussions of NCC research in the new science. As such, if NCC research is truly the first step in explaining the supposed scientific phenomenon of phenomenal consciousness, then the new science is blocked at the starting gates.

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