

## 1

## Important preliminaries

This chapter engages in some initial—but important—ground clearing and foundation building. It starts by drawing a number of distinctions, more precisely delineating our target, and setting the terms for the debates that follow. It explains some of the different things that people mean by “consciousness”, in particular, as well as some of the claims that have been made about the nature of first-person—or “phenomenal”—consciousness. The chapter also argues in support of a pair of substantive theses on the topic that will be relied upon later. Specifically, it argues that phenomenal consciousness is exclusively nonconceptual in nature, and that it doesn’t admit of degrees: it is either categorically present or categorically absent. Finally, the chapter situates the topic of animal consciousness in relation to the traditional problem of other minds.

### 1. Kinds of consciousness

Consciousness research is bedeviled by terminological confusion. In fact, there are a number of different things that people mean by the word “conscious”. Failure to distinguish them can lead to important errors, as well as to failure to see what are genuine possibilities.

The kind of consciousness that forms our topic is so-called *phenomenal* consciousness. This is the sort of consciousness that is said to be *like something* to undergo, or that has a distinctive subjective *feel*. Phenomenal consciousness is a species of mental-state consciousness. It is mental states (seeing a sunset, hearing a dog bark, smelling cinnamon) that can be phenomenally conscious. *People* are phenomenally conscious derivatively, by virtue of undergoing phenomenally-conscious states. In asking whether animals, too, have phenomenally-conscious mental states we are asking whether their experiences are *like something* also.

It is phenomenal consciousness that is thought to give rise to the “hard problem” of consciousness (Chalmers 1996). For it seems one can conceive of a zombie—a creature that is like oneself in all physical, functional, and representational respects except that it lacks *this* feeling (the distinctive feeling of the smell of cinnamon). Likewise, there seems to be an unbridgeable explanatory gap between all physical, functional, and representational facts and one’s current conscious experience. No matter how much one knows about the former, it seems one can always think, “But why should all *that* feel like *this*?” Hence many have been tempted to conclude that phenomenal consciousness involves properties (often called “qualia”) that cannot be reduced to any combination of physical, functional, or representational ones. This is qualia realism, to discussion of which we return in Section 2.

It should be emphasized that the concept of phenomenal consciousness is a first-person one. The various locutions employed (“like something to undergo”, “subjective feel”, “qualitative character”, and so on) are all intended just to draw one’s attention to one’s own conscious experiences. Acquaintance

with the latter (in some or other sense of that philosophically-loaded term) is a necessary condition for grasping the concept, and no definition or third-person explanation could confer understanding of the concept. Indeed, as Block (1995) remarks, adapting a comment about jazz often attributed to Louis Armstrong, “If you gotta ask what it is, you ain’t never gonna know.” Hence philosophical zombies don’t just lack phenomenal consciousness itself; they must also lack the first-person *concept* of phenomenal consciousness (Chalmers 2006). For by hypothesis, there is nothing for them to be first-person acquainted *with*.

I should also emphasize here that although I am, of course, forced to write about phenomenal consciousness and phenomenally-conscious properties from an external (third-person and public) perspective, it is really the first-person concept and first-person ways of thinking about one’s own experience that are primary. Hence there need be no commitment, in the third-person locutions that I employ, to the real existence of any distinctive set of properties that get picked out when we introspect our own experiences and think things like, “How could any brain state give rise to *this?*”. Indeed, what such first-person thoughts really succeed in picking out is a major component of our present inquiry. I will argue in the end that what gets referred to in such thoughts are just the same perceptual contents that can be adequately described and attributed in the third person also. But that is something that needs to be argued for, not assumed.

Phenomenal consciousness is at least conceptually distinct from *access* consciousness (Block 1995, 2007). Both are forms of mental-state consciousness: it is mental states that are thought to have phenomenal properties, and that can be accessible to enter into decision making, reasoning, and verbal report. As has been stressed, however, *phenomenal* consciousness is a first-person notion. One can only understand what that concept is intended to pick out by directing one’s attention to some of one’s own phenomenally-conscious states. *Access* consciousness, in contrast, is functionally defined, and the concept could be fully understood by a zombie. A mental state is said to be access conscious if it is accessible to a wide range of other systems for further processing, specifically those involved in decision making, in reasoning, in issuing verbal reports, and in the formation of long-term memories.

It is controversial whether or not there is any real distinction between access consciousness and phenomenal consciousness. Put differently: although the *concepts* are certainly distinct, it is disputed whether the two concepts pick out distinct properties or converge on the same property. There are three separable strands in this debate.

The first is about so-called “cognitive phenomenology” (Bayne & Montague 2011). On the assumption that thoughts and concepts, as well as nonconceptual perceptual contents, can be access conscious, it is debated whether they make irreducible (as opposed to merely causal) contributions to people’s phenomenally-conscious experiences. Some have argued that they do (Strawson 1994, 2011; Siewert 1998, 2011; Pitt 2004), pointing out, for example, that there seems to be a phenomenal difference between hearing one-and-the-same sentence with and without understanding. Others have argued that concepts make a merely *causal* (rather than a constitutive) difference to the phenomenal properties of the access-conscious states in which they occur—for instance, by directing attention, or by chunking

together components of the sound stream (Jackendoff 1987, 2012; Tye 2000; Tye & Wright 2011; Carruthers & Veillet 2011, 2017). Although it is somewhat peripheral to our main topic, I will return to this issue in Section 5.

A second strand in debates about the reality of the access / phenomenal distinction is *directly* relevant to our topic. This concerns the alleged richness of phenomenally-conscious experience, as opposed to the relative paucity of content that can be made accessible at any one time for reasoning and reporting. Block (1995, 2007, 2011a), in particular, argues that the contents of phenomenal consciousness are richer than the contents of access consciousness. The main evidence provided, is that people claim to see more details in a briefly presented stimulus than they can thereafter report; however, they *can* report any given subset of those details when cued to do so after stimulus offset (Sperling 1960; Landman et al. 2003; Sligte et al. 2008). This suggests that a representation of the full stimulus is present in consciousness while only being available for reporting piecemeal when targeted by attention. As a result, Block thinks that phenomenal consciousness should be identified with the contents of a form of fragile short-term memory that is distinct from both stimulus-bound iconic memory, on the one hand, and working memory, on the other. Access consciousness, in contrast, comprises the contents of working memory. Block's views will be considered in some detail in Chapter 4.

There is yet a third strand in the debate over the reality of the distinction between access consciousness and phenomenal consciousness, however. For even if one thinks that the two concepts are coextensive in normal humans (as does Chalmers 1997), one can claim that there are a special set of properties that are picked out first-personally (so-called "qualia") that aren't reducible to others, and that aren't explicable in third-person terms. These are the properties that a zombie would lack, despite sharing the same access-conscious states as a normal person. This strand of debate will be addressed in Sections 2, 3, and 4. There I will discuss the contrast between qualia realism and qualia irrealism, and will go on to provide a preliminary sketch of how the global-workspace theory that I will be defending in Chapters 5 and 6 can offer a fully reductive account of phenomenal consciousness. Before we embark on that discussion, however, there is one other pair of distinctions that needs to be explained.

Mental-state consciousness (whether access or phenomenal) should be distinguished from *creature* consciousness, which can be either *transitive* or *intransitive* (Rosenthal 2005). Whenever a creature (whether human or animal) is aware of some object or event in its environment or body, it can be said to be (transitively) conscious of that object or event. Put differently, a creature is transitively conscious of an object or event when it *perceives* that object or event. It is debatable whether or not transitive creature consciousness requires mental-state consciousness. For it is debatable whether the perceptual states that enable a creature to be aware of its environment must be conscious ones. At any rate, it is worth noting that there are many kinds of case where one would pre-theoretically ascribe creature consciousness to an agent—since the agent is displaying flexible perceptual sensitivity to the environment—where the states in virtue of which it acts as it does are *not* conscious ones. This point will be discussed in some detail in Chapter 3.

*Intransitive* creature consciousness, on the other hand, is a matter of being awake rather than

asleep, or conscious as opposed to comatose. When the creature in question is a human person, then intransitive creature consciousness would normally implicate some or other form of mental-state consciousness. Whenever one is awake one is normally undergoing some conscious mental state or other. But the reverse need not be true. It seems that dreams are conscious mental states, even though the dreaming subject is asleep, and hence creature *unconscious*.

Note that both forms of creature consciousness admit of degrees. One can be more or less aware of the properties of a stimulus, and one can be more or less awake. Likewise, the concept of access consciousness allows for degrees. A mental state could be available to more, or to fewer, of the systems for reasoning, reporting, remembering, and so on. Phenomenal consciousness, in contrast, is all-or-nothing. It is hard even to conceive of a case of a mental state that is partly *like something* to undergo, partly not. (Remember, one needs to conduct this imagining in the first person, not the third.) Indeed, even if one is only partly awake, some of the states one is in are definitely phenomenally conscious—it is *like something* to be barely awake. And even though one’s awareness of an object can be more or less detailed, or more or less rich and vivid, even the most impoverished experience is definitely *like something*. Contrast looking at something in sunlight versus looking at it by starlight when one can barely make it out: nevertheless, it is fully—unequivocally—*like something* to be looking at a dimly lit object, even if one is aware of many fewer properties of it. This point will be developed in more detail in Section 6. It is an important premise for some of the arguments of this book.

Our question about nonhuman animals, then, isn’t whether animals can be awake, half-awake, or asleep. (Of course they can.) Nor is it about whether animals can be perceptually sensitive to the properties of their environments. (The obvious answer is that they often are.) Our question is whether the *mental states* of animals are ever conscious; specifically, whether they are ever *phenomenally* conscious. And if they are, which ones, in which species of creature? And how would we know?

It is important to keep these different notions of consciousness distinct. Failure to do so can lead to confusion and error. For instance, it might lead one to move from the obviously-true claim that a dog is conscious of its owner entering the home (that is: it perceives—or is creature-conscious of—the owner doing so, responding with manifest joy at her arrival) to the conclusion that the dog’s perceptual state is itself a conscious one. It *may* be that this inference is warranted. That depends on the outcome of our present inquiry in this book. But it certainly isn’t warranted merely because the term “conscious” crops up in both premise and conclusion. For those two uses of the term are conceptually quite different, as we have seen.

Asking whether the mental states of animals are phenomenally conscious presupposes that animals have mental states at all, of course. Although this is increasingly widely accepted, it will be worth spending some time defending it, as I do in Chapter 2. For the commonalities and differences between human and animal minds will loom large in the discussion that follows. Moreover, it may be the growing acceptance of animal mentality that has increasingly led people to attribute consciousness to animals. For the distinction between conscious and unconscious mental states is largely invisible from the perspective of common-sense psychology, as are some of the distinctions drawn in the present section. But in fact, as

we will see shortly, it is possible to deny phenomenal consciousness to animals altogether while allowing that they have mental lives that are otherwise much like our own. Indeed, no matter how well warranted the latter claim turns out to be, it can't by itself determine an answer to the question of *phenomenal* consciousness in animals.

## 2. Qualia realism

There seems to be an explanatory gap between all physical, functional, and representational facts, on the one hand, and our first-person awareness of our own phenomenally-conscious mental states, on the other. There are a number of ways of demonstrating this point. One is simply to reflect that, no matter how much one might know about the brain, the functional organization of the mind, and the contents represented by one's mental states, it would still not explain why one's experience of a red tomato should feel like *this*. Another is to notice that one can conceive of the possibility of a zombie—a being who is like oneself in all physical, functional, and representational respects but who lacks *this* feeling (the feeling of what it is like to be seeing a red tomato). In addition, one can consider color-deprived Mary (Jackson 1982, 1986), who has lived all her life in a black-and-white room but who comes to know everything there is to know about the physiology and functional organization of the visual system, as well as the contents represented via the operations of that system. Still, it seems, Mary would learn something *new* when she leaves her black-and-white room and experiences red for the first time.

Given the existence of the explanatory gap, one can be tempted to conclude that phenomenal consciousness involves properties (qualia) that don't reduce to any combination of physical, functional, or representational ones (Chalmers 1996). These properties are thought to be intrinsic to the states to which they attach, private to the person who has them, directly knowable through introspection, and ineffable (indescribable). In addition to the physical properties that make up the world, then, one might think one is also required to recognize the existence of these *sui generis* properties of conscious mental states. This is qualia realism. But qualia realism comes in two basic varieties: epiphenomenalism, on the one hand, and various forms of Russellian monism, on the other.

First, epiphenomenalism: on this view, as the name suggests, qualia are causally epiphenomenal (Jackson 1982). They supervene on the physical world without having any causal impact on that world. Indeed, most people now assume that the physical world is *causally closed*. That is to say, every event that happens in the physical world—whether it be the movement of the tides, the growth of a tree, or a person uttering a sentence—has a sufficient physical cause. This has been the guiding assumption of scientific inquiry for centuries, and seems amply confirmed by the success of the resulting scientific theories.

If qualia are non-physical properties of our mental states, however, then it follows from the causal closure of the physical world that qualia cannot cause any events in that world. So it isn't strictly the qualia themselves that cause one to believe in the explanatory gap (if one assumes, as most now do, that beliefs are physical properties of one's brain). Nor can it be qualia themselves that cause one to utter the words, "Mary would learn something new when she sees red for the first time." At best, those properties will be

*correlated* with what causes one's belief, or one's utterance, perhaps in a fundamentally law-like way. Indeed, if qualia aren't physical properties, but reliably co-occur with certain physical properties, then the laws determining that co-occurrence might be among the basic laws of nature (Chalmers 1996).

Russellian monism, in contrast, tries to avoid making qualia epiphenomenal by placing them at the heart of the physical world itself (Russell 1927; Strawson 2006; Alter & Nagasawa 2012). On this sort of view, either qualia, on the one hand, or proto-qualia-like properties that compose qualia, on the other, provide the categorical grounding for the relational, structural, and dispositional truths of fundamental physics. What makes Russellian monism a form of qualia realism (and not a version of reductive physicalism about qualia) is that fundamental physics tells us about the relational, structural, and dispositional properties of fundamental matter, while being silent about the categorical grounding of those relations and dispositions (here said to be qualia). Reductive physicalism, in contrast, ultimately grounds qualia in the properties physics tells us about.

If it is qualia themselves that provide the categorical basis for fundamental physics, then qualia are ubiquitous in the physical world, and a sort of panpsychism results. For at the center of every subatomic property and process will be a little bit of conscious mentality. On the other hand, qualia might be thought to be composed, somehow, out of intrinsic qualia-like properties that ground all physical processes, but these qualia-like properties aren't themselves mental, and aren't phenomenally conscious. Either way, however, it would seem that Russellian monism faces its own version of the explanatory gap (Carruthers & Schechter 2006; Goff 2009; Coleman 2012). For how does one get from the fundamental-particle qualia or proto-qualia to Mary's red qualia? And it seems one could know everything about those fundamental properties and still be puzzled as to why one's red experiences should feel like *this*. Moreover, one can likewise conceive of zombies who have all the same low-level qualia as us, but where those properties fail to "combine" in the right way to get them the person-level qualia we experience.

There is not the slightest empirical reason to believe that either of these forms of Russellian monism is true, of course, beyond the a priori arguments advanced by philosophers. Somewhat as first-cause arguments for the existence of God are designed to satisfy the intuition that every event must have a cause (without really doing so), so Russellian monism is intended to satisfy the intuition that dispositional and relational properties should be grounded in categorical ones. But the hypothesis that qualia or qualia-like intrinsic properties underlie the structural and dispositional facts of basic physics doesn't do any real explanatory work. It doesn't add anything to the physics we already have—no new predictions or empirical results are forthcoming. And it can't explain the dispositional properties in question either, such as whether a given elementary particle is spin-up or spin-down. Nor can it even explain the difference between the circumstances in which a physical disposition becomes actualized and those in which it doesn't. This is in marked contrast with cases where categorical properties actually succeed in explaining something (at least in outline)—such as explaining the brittleness of a glass (its disposition to break when struck with a certain force), or explaining why the glass did actually break, in terms of its molecular structure.

What implications would qualia realism have for the distribution of phenomenal consciousness

across the animal kingdom, however? The answer depends on the kind of qualia realism in question. For those who are epiphenomenalists, the answer will depend on the exact nature of the laws correlating qualia with physical properties. Since we can only seek evidence of these in ourselves, and since the evidence that we can gather in the first person only concerns qualia we are aware of having, not any that we might be *unaware* of, the question becomes intractable. Even if one thinks, for example, that qualia co-occur with access-conscious nonconceptual contents in ourselves, there is no way to discover which of the many physical and functional properties involved should actually figure in the laws of correlation. Perhaps, for example, qualia only get attached to access-conscious events in minds that are capable of verbally reporting them. How could we get evidence either for or against this hypothesis? Moreover, there is no way to rule out the hypothesis that qualia attach to many other events that *aren't* access conscious, that subjects themselves aren't aware of and cannot report.

For qualia realists who are Russellian monists, in contrast, everything will depend on whether qualia are at the heart of every single physical process (in which case panpsychism is true), or whether they are somehow composed out of qualia-like but non-mental intrinsic properties that ground all physical processes. The former view at least provides a determinate answer to the question of which things are phenomenally conscious. The answer is: everything. If qualia are composed of non-qualia properties, in contrast, then the question is likely unanswerable. For no one has the slightest idea how the compositional process is supposed to work, nor how this could be discovered empirically.

In consequence, qualia realism leaves the distribution of phenomenal consciousness entirely open. It might be that only adult human beings are phenomenally conscious.<sup>1</sup> Or it might be that every living creature has phenomenally-conscious states, including bacteria. Indeed, it is even left open that every single physical particle in the universe might come with qualia-properties attached, which is what panpsychists maintain (e.g. Strawson 2006). Nevertheless, since qualia are real, there is a real fact of the matter. It is just that such facts are likely unknowable by us, except on quite tenuous grounds.

That qualia realism makes it hard to know which creatures are phenomenally conscious and which aren't isn't itself a reason for rejecting it. For similar difficulties are likely to arise whatever one's view of the nature of consciousness. This is because the concept of phenomenal consciousness is a first-person one, as we noted at the outset, grounded in one's acquaintance with one's own experiential states. Since one's induction-base is so small (essentially, just oneself and other humans who can describe their experiences to us), it becomes quite difficult to know how far phenomenal consciousness projects beyond that narrow base. But qualia realism has this problem, and then some. Since qualia realism places phenomenal consciousness outside the causal order of the world (if epiphenomenalism is true), or embedded within that causal order in a way that makes no causal difference (if Russellian monism is), it becomes especially hard to know what sorts of evidence might constrain one's hypotheses about its

---

<sup>1</sup> Notice that we would then be claiming that although dogs, for example, are aware of the world around them—they are transitively creature conscious—they lack phenomenally-conscious mental states. This is one way in which creature consciousness and phenomenal consciousness might come apart.

distribution.

### 3. Tacit dualism

Many of us recognize the real existence of properties above the level of basic physics, of course. One can believe in the reality of properties such as photosynthesis and neurotransmitter uptake without thinking that such properties can be reduced, type-for-type, to properties recognized by physics. And one can likewise think that such higher-level properties play a causal and explanatory role in the natural world. Properties picked out by the special sciences are real, and such sciences cannot be replaced by the science of physics. Nevertheless, anyone who is a physicalist needs to accept that events involving such properties must admit, in principle, of reductive explanation in physical terms, at least on a token-by-token basis. Put differently, once all the facts expressed in the language of physics are fixed, then so too are the facts described by the special sciences. Qualia realists, in contrast, think that all physical facts can be fixed, and yet facts about qualia can vary or be absent altogether. Indeed, this is implicit in the very idea of a zombie.

The consequences of qualia realism should be hard for scientifically-minded people to accept. For in addition to the laws, generalizations, properties, and physical mechanisms discovered and discoverable by science, one would be postulating an additional set of laws and/or non-physical properties, supported only by a combination of ordinary introspective awareness together with philosophical argument. These additional properties would do no additional scientific work, and they aren't needed to explain any facts or events in the world. Indeed, they don't even explain the tempting thought experiments that have led philosophers to believe in them. This is because it isn't qualia that cause philosophers to have those thoughts and beliefs, and to say the things that they do, but rather the physical correlates of qualia or the physical processes grounded in qualia. In consequence, the burden of proof required for one to accept qualia realism should be quite high.

Why, then, do so many scientists seem to take qualia realism seriously? The answer probably derives, in part, from an intuitive, unreflective, Cartesian dualism about the mind in general. This leads people to have at least a tacit expectation that minds are separate from brains, while interacting causally with them. This sort of ontological dualism is arguably an innately channeled feature of our common-sense psychology, continuing to operate tacitly even when explicitly rejected (Bloom 2004). Certainly it has been a central aspect of intuitive folk belief across all pre-scientific cultures and historical eras (Boyer 2001; Cohen et al. 2011; Roazzi et al. 2013). Moreover, we know that intuitive beliefs in general can continue to exist alongside scientific ones, rather than being replaced by the latter, and while continuing to exert their influence on people's thoughts and behavior (Shtulman & Valcarcel 2012); and the same is also true of mind-body dualism (Forstmann & Burgmer 2015). I submit that in the absence of intuitive dualism, scientists would pay just as little attention to philosophers' views on this topic as they do to other sorts of metaphysical claim made on the basis of purely philosophical argument, such as Wittgenstein's (1922) thesis that the world is composed of simple, changeless, necessarily-existing objects.

I should emphasize that it is people's intuitive dualism about the mind that makes qualia realism seem more plausible than it is, rather than the other way around. It surely isn't the case that people the



world over have felt the force of the “explanatory gap” between physical facts and phenomenal consciousness, and for that reason have embraced an ontological dualism of mind versus body. Rather, what seems to be the case is that dualist beliefs are innate or innately channeled aspects of folk psychology, thereby making people more receptive of qualia realism than they otherwise would be. There are a number of reasons for thinking this. One is the sheer implausibility of claiming that hunter-gatherers, subsistence farmers, and young children across cultures should have been influenced by consideration of an explanatory gap. Another is that even seven-month-old infants seem to think that minded agents aren’t subject to ordinary physical laws (Kuhlemeier et al. 2004).

Moreover, the explicit dualistic beliefs of children in Western cultures get *less* strong with age (Bering 2006). This suggests that dualism is the default setting of the folk-psychological system, which gets weakened by cultural input in scientific cultures—at least at the level of explicit verbal expression—rather than depending on such input (Rikki et al. 2013; Willard & Norenzayan 2013; Forstmann & Burgmer 2015). Indeed, dualist intuitions are prevalent in both children and adults, even in cultures whose norms discourage overt attention to mental states, albeit becoming weaker as a function of exposure to Western education (Chudek et al. 2018).

In addition, both children and adults are more ready to think that non-sensory mental states like beliefs might survive the death of a biological agent than they are to think that phenomenal experiences could continue (Bering & Bjorklund 2004). And the same thing is found in medieval Christian theology, where the afterlife prior to the resurrection of the body is thought to consist in continuation of the individual’s beliefs and values, rather than in sensory experience (Geach 1957). Since beliefs are by no means paradigmatic phenomenally-conscious states, this suggests that it is intuitive dualism about the mental as such that is more basic, perhaps produced by the deep disconnect between an innately-channeled “core knowledge” of folk-physics and the core assumptions of our early-emerging theory of mind (Bloom 2004). Indeed, since the evolutionary and developmental foundations of our folk psychology are third-personal rather than first-personal (Carruthers 2011a), we can conclude that folk dualism, too, is basically third-personal. So it is dualism that operates in the background, providing tacit support for qualia realism, rather than the other way round.

#### **4. Qualia irrealism**

Contrasting with qualia realism is qualia *irrealism*. The latter comes in a number of different forms, some of which will be explored in due course. But all seek to *identify* phenomenal consciousness with some natural (physical or physically-realized) property. On the view I will ultimately defend, phenomenal consciousness is said to be nothing other than access-conscious nonconceptual content. In addition, the view will come paired with an account of how the explanatory gap arises, consistent with phenomenal consciousness actually being, itself, a representational-cum-functional property. This will be explained in terms of a special class of acquaintance-based indexical concepts that we can token in the presence of such properties, where the concepts themselves have no descriptive content, nor any conceptual connections with physical, functional, or representational concepts. All this will happen in Chapters 4

through 6. We will then explore the consequences of such a view for the question of consciousness in nonhuman animals (as well as human infants and dementia patients) in Chapters 7 and 8.

It is worth noting that qualia irrealism is a close relative of what Frankish (2016) calls “illusionism” about consciousness. Both are defined by their outright rejection of qualia-properties. I prefer the term “qualia irrealism”, however, because illusions generally arise spontaneously, and don’t depend on reflective forms of thinking or reasoning. For instance, perceptual illusions are mostly universal among humans, and occur whenever the stimuli are correctly constructed and presented to people. Likewise, cognitive illusions of the sort investigated by Tversky & Kahneman (1983), Stanovich (2009), and others occur as soon as the question is asked: one has a strong (but incorrect) intuition as to the correct answer. The temptation to believe in qualia, however, is quite different. It depends on distinctive forms of reflective thinking, and on carefully constructed philosophical examples. Indeed, one generally has to do quite a bit of *work* to get people to see the problem of consciousness (even given the head-start provided by most people’s tacit Cartesian dualism). Belief in qualia doesn’t result from an illusion, but from philosophical argument.

It might be claimed, nevertheless, that the role of the arguments in question is just to bring out the presuppositions implicit in our concept of phenomenal consciousness. Perhaps what the “hard”-problem thought-experiments show is that we naively take our conscious experiences to possess non-physical qualia properties. Hence the illusion might be thought to be embedded in the way ordinary people *conceptualize* their conscious experiences. As we will see in Chapter 6, however, this claim is false. Phenomenal concepts of the sort that give rise to “hard”-problem thought experiments are just acquaintance-based indexicals referring to one’s current access-conscious perceptual or perception-like states, and make no commitments regarding the nature of the referred-to states. For it is one thing to say that those concepts *lack* conceptual connections with physical or functional concepts (as we will see), and it is quite another thing to say that they *imply the absence* of such connections, and so commit their users to the non-physical nature of their instances.

In denying illusionism, however, am I committed to thinking that phenomenal consciousness is in some way *real*? And what could that reality consist in if not the existence of qualia or qualia-like properties? For isn’t our concept of phenomenal consciousness that of a state that has qualitative, intrinsic, directly-known attributes? It may well be that many people (mostly philosophers) sometimes think of phenomenal consciousness this way. But to reiterate what was said in Section 1: phenomenal consciousness is *basically* a first-person notion. Indeed, Balog (2009) draws a useful distinction between *basic* and *non-basic* phenomenal concepts to mark just this contrast.

Public talk of “subjective feels” and “what it is like” are just invitations to pay attention to and think about the mental states we are aware of in ourselves, in fact. So the best interpretation I can give of the question, “Do you think phenomenal consciousness is real?” is to transpose it into the question: “When Mary leaves her black-and-white room, sees a ripe tomato for the first time, and thinks, ‘So *this* is what it is like to see red’, does she think something *true*?” I take it to be obvious that she does. In that case, since some phenomenal thoughts are true, what those thoughts are about must be real. It is another

question, however, *what* those thoughts are about (whether they are about intrinsic and/or non-physical properties, and so forth). That is where the philosophical debates should begin.

Before concluding this section, it is worth stressing again the extraordinary *hubris* that it takes to believe in non-physical qualia on the basis of philosophical argument. Relying just on ordinary introspection combined with a few thought experiments (that one can conceive of zombies and so forth) one claims to know something about the fundamental structure of reality: namely, that it contains nonphysical properties that are either linked by some set of causal laws to physical properties, or that somehow provide the intrinsic grounding for physical laws. Any scientist should ask: why should I believe that the structure of my thoughts and concepts enables me to discover, on their own, aspects of the basic ontology of the universe? How could the human mind itself have acquired such miraculous powers?

In what follows, then, I shall be assuming that qualia irrealism should be the default view. But that doesn't absolve us, of course, from providing good explanations of the contrast between conscious and unconscious states, while also explaining why people should be tempted to believe in qualia when they reflect on the matter. These are tasks to be taken up in Chapters 4 through 6.

## 5. Phenomenal consciousness is nonconceptual

It is common for philosophers to draw a distinction between conceptual and nonconceptual content, or conceptual and nonconceptual forms of mental representation. The present section will argue that phenomenal consciousness is exclusively nonconceptual in nature. Not a lot will turn on this point for our purposes, however. The discussion is included here to explain why I shall be framing theories of consciousness in nonconceptual terms throughout, as well as to outline the framework I shall be using to talk about the contents of access-conscious states.

I take the basic contrast in question to be between representations that involve categorical boundaries of some sort (that are “chunked”), and those that are fine-grained and continuous (or “analog”) in nature. This way of drawing the distinction between conceptual and nonconceptual content is pretty standard in the philosophical literature (Tye 2000; Bermúdez 2015; Beck forthcoming), and has been familiar since at least Peacocke (1992). Thus thinking that ripe tomatoes are red is a purely conceptual judgment, composed of the concepts *RIPE*, *TOMATO*, and *RED*.<sup>2</sup> In contrast, perceiving a roundish-shaped object whose surface is covered with some specific range of shades of red (but without conceptualizing the object *as* a red tomato) is a purely nonconceptual state.<sup>3</sup>

Typically, perceptual and imagistic states contain both conceptual and nonconceptual content. While initial processing of a stimulus is nonconceptual, the emerging structures rapidly begin to interact with stored knowledge and concepts. By the time the resulting content is made access conscious, it will

---

<sup>2</sup> I adopt the standard practice of using small capitals to designate concepts or mental representations, reserving italic for the *contents* of those representations (as well as using italic, as I have just done, for emphasis).

<sup>3</sup> Those who deny the existence of nonconceptual content, like McDowell (1994), could recast everything I say in terms of coarse-grained versus fine-grained indexical judgments.

generally comprise an object-file or event-file into which both conceptual and nonconceptual representations have been bound. A perception of a ripe tomato on the kitchen surface will represent both the fine-grained shape, texture, and shade of color of the tomato, as well as embedding the concepts RED and TOMATO, such that one sees it *as* a red tomato.

Something similar happens in connection with speech. When someone says something in a language one understands, the impact of the sound-stream on one's ear-drums will initially be processed for low-level auditory features, but will soon begin to interact with linguistic knowledge. By the time the utterance becomes access conscious, the result is an event-file containing details of pitch, timbre, and accent, but also with word-boundaries, syntactic structure, and meaning imposed on it. Indeed, mental-state information, too, can be bound into the auditory stream, so that one hears the person *as* speaking ironically, for example—that is, as intending to communicate the opposite of what is literally said.

There is much more that could be said on this topic, of course. (Those interested might like to look at Carruthers 2015a, 2015b, 2018a.) But this will do for our purposes here. Given that an access-conscious state such as hearing someone say, “You are welcome in my home”, is comprised of both low-level nonconceptual representations of sound as well as high-level conceptual and semantic information, and given that the state is phenomenally conscious (as it plainly is), we can ask whether both the nonconceptual and the conceptual components make constitutive contributions to the mental state's phenomenal properties.<sup>4</sup>

Everyone in this debate allows that the meaning component makes at least a *causal* difference to the phenomenology of the event. For instance, a non-English-speaker hearing that sentence won't parse the sound stream into distinct words in the way that an English-speaker will, thereby causing a difference in the nonconceptual content of the resulting state (and hence making a difference to what it is like to be in that state). The real question is whether the conceptual contents of the state contribute phenomenal properties in their own right.

In work done with Bénédicte Veillet (Carruthers & Veillet 2011, 2017) I have argued that the way to make progress on this issue is to consider whether the two sorts of components each give rise to “hard”-problem-type thought experiments (zombies, partial zombies, and the rest). For what would be the point of describing something as *phenomenally* conscious (as opposed to just access conscious) if those thought experiments couldn't gain any purchase? Now, it is obvious that nonconceptual content gives rise to those problems. When experiencing the shade of red of the tomato, for example, one can think that there could be a creature exactly like oneself in all respects except that its percept of the tomato isn't *like that*. But we suggest that conceptual content doesn't allow for such thoughts. When looking at a duck in the park, for example, and seeing it *as* a duck (deploying in one's experience the concept DUCK), one cannot

---

<sup>4</sup> Remember, there need to be no commitment here to the real and separate existence of such properties. A theory-neutral way to frame the question is to say that it is about whether both sorts of components (conceptual and nonconceptual) can be picked out by the distinctive first-person concepts that are employed in “hard”-problem thought experiments. See the discussion that follows.

coherently think, “*This* experience [the seeing-as-a-duck one] might not have represented duckhood, and could have been reliably caused by some other property instead.”

Others have accepted that phenomenally-conscious states can be characterized as those that give rise to zombie-type thought experiments, but have used this to draw the opposite conclusion (Horgan 2011; McClelland 2016). However, they misapply the method, we claim. Horgan (2011), for example, constructs a partial-zombie scenario to argue that the meaning-component of speech perception is phenomenally conscious. He asks one to imagine someone who is a complete functional duplicate of oneself, who is physically, functionally, and representationally identical, and who also shares the same nonconceptual phenomenal experiences. But this person is meaning-blind. Although he talks as normal, and responds to other people’s utterances as normal, he experiences speech and writing (both his own and other people’s) *as meaningless*. We are invited to conclude that what is missing from his life is *what-it-is-like to comprehend meaning*.

Horgan’s (2011) mistake, in our view, is that he fails to appreciate the relevance to his thought experiment of the distinction between access consciousness and phenomenal consciousness. That there is at least a conceptual distinction between the two isn’t in dispute, as we noted above. To say that a mental state is access conscious is to say that it is available to a wide range of cognitive systems—for forming memories, for reporting in speech, for action-planning, for use in executive decision making, and to systems that create full-blown emotional responses, among others. Phenomenal consciousness, in contrast, can be operationalized in terms of its aptness to give rise to “hard”-problem thought experiments (or so we suggest). Now notice that access consciousness is implicit in the very idea of a zombie: a zombie is supposed to be a creature that is physically and functionally indistinguishable from a normal person. That means that it, too, must have content-bearing states that are available to inform just the same range of functions and cognitive processes as a normal person.

Horgan, however, doesn’t seem to recognize that the partial zombie’s state of understanding—the state of grasping the meaning of a sentence—would have to be access conscious in order for him to qualify as a partial *zombie*. After all, the meaning of the sentence is access conscious for a regular ordinary hearer. So the meaning of the heard sentence would have to be available to the partial-zombie’s systems for memory, for planning, for verbal report, and so on, thereby having a direct impact on those systems of just the sort that happens in a normal person. So the partial-zombie will immediately know what has just been said to him, and can immediately formulate a reply, recognizing it *as* a reply when hearing himself speak. In consequence, the partial-zombie would be *aware* of the meaning in a purely functional, access-conscious, sense of “aware”. Given the identity in sensory experience between the partial zombie and his normal counterpart, and given that both are immediately aware (in the access-conscious sense) of the same meaning, what else could the partial zombie possibly lack?

Of course, there is more that could be said here, and other examples could be considered (Carruthers & Veillet 2017). But on these sorts of grounds we think it is reasonable to claim that the conceptual content of perceptual and imagistic states *doesn’t* make a constitutive contribution to the phenomenal properties of those states, but at most a causal one. Indeed, Carruthers & Veillet (2017) go

on to suggest that *all and only* access-conscious nonconceptual content is intrinsically phenomenally conscious, including not just nonconceptual sensory content, but also the valence component of affective states like pain and the time-representing components of sequential experiences and episodic memories.

Notice that this conclusion implies that there is a real (and not just a conceptual) distinction between access consciousness and phenomenal consciousness, at least when applied to the component contents of mental states, as opposed to those states considered as wholes. Since the conceptual components of normal sensory experience are access conscious without being intrinsically phenomenally conscious, it follows that there are some properties of our mental states (namely, their conceptual contents) that are often access conscious without being phenomenally conscious. Consistent with this one can claim, of course, that all and only access-conscious *states* are phenomenally conscious. One could also claim that all and only access-conscious nonconceptual contents are phenomenally conscious. Just such a view will be defended in due course.

In what follows, therefore, I shall be assuming that only nonconceptual contents are intrinsically phenomenally conscious. But as I remarked at the outset of the section, not a great deal turns on this assumption. If one thinks that conceptual contents, too, can be phenomenally conscious, much the same questions concerning phenomenal consciousness in animals will arise, and for the most part they will have the same range of possible answers. More substantively, however, I shall also be assuming that phenomenally-conscious *states* characteristically comprise both conceptual and nonconceptual components.

## **6. Phenomenal consciousness is all-or-nothing**

Recall that the concept of phenomenal consciousness is a first-person one. Phenomenally-conscious states are ones that humans, at least, can be introspectively aware of, and which, when one is aware of them, are apt to give rise to “hard”-problem-type thought experiments. In general, such awareness is definitely present or definitely absent. Indeed, it is hard to imagine what it would be like for a mental state to be partially present to one’s awareness. Items and events in the world, of course, can be objects of merely partial awareness. Someone who witnesses a mugging on a train platform might say, for example, “It all happened so fast I was only partly aware of what was going on.” But this is about how *much* of the event one is conscious of, or how rich an interpretation one arrives at for the event. The experience in question is nevertheless determinately present, available to introspective awareness, and subject to “hard”-problem-type thought experiments. One can think, for example, “There could be someone like me in all physical, functional, and representational respects, who nevertheless lacked *that sort* of inchoate impression of the unfolding events.”

Despite this, a number of recent studies of conscious experience have employed a graded “perceptual awareness scale”, and have used it to suggest that consciousness might admit of degrees (Ramsey & Overgaard 2004; Overgaard et al. 2006; Andersen et al. 2016; Tagliabue et al. 2016). But the scale in question arguably measures degrees of detail and clarity in perceptual *content*, rather than degrees of mental-state consciousness. It is used in conjunction with reports of the content of experience

(for example, “square” or “diamond”), and comprises the four options (1) not seen at all: merely guessing; (2) merely glimpsed: a feeling there was something there; (3) almost clear experience: partial content seen; and (4) clear experience: unambiguous content. But there is still something that it is (unequivocally) *like* to have a mere glimpse of something, even if the content of the glimpse is left wholly ambiguous (beyond a mere impression of shape of *some* sort, perhaps). Degrees of content are one thing (and are undeniably real), whereas degrees of phenomenal consciousness are quite another (and arguably are *not* real).

The *contents* of consciousness can be more or less rich and determinate, then. In consequence, it certainly makes sense to say that one is more or less aware of a set of stimuli, or of the world around one. But this is about degrees of transitive creature consciousness, not degrees of phenomenal consciousness. Even if one is wrapped up in one’s own thoughts and barely attending to the screen in front of one, having only the vaguest impression of some sort of forest scene, still it seems it is definitely *like something* to have a vague visual impression of a forest scene. Similarly, if one is struggling to make out a shape in the dark as one walks home, still it seems, nevertheless, to be determinately—unequivocally—*like something* to have a visual experience of an indeterminate shape.

Consciousness can fade, of course. But in this case it is *intransitive* creature consciousness that fades. As one slips into sleep, or is slowly rendered unconscious by administration of an anesthetic, one will be subject to *fewer* conscious mental states and/or will have states with increasingly impoverished contents. But so long as one retains some degree of intransitive creature consciousness one will have *some* phenomenally-conscious mental states. And no matter how impoverished their contents, it will be determinately *like something* to be in them. Even if all that remains is an indistinct impression of flickering light, or a vague impression of people talking in the distance, the experience of a faint flickering light, or of indeterminate voices, seems to be unequivocally phenomenally conscious.

It is worth noting, too, that many of the stimuli used by experimental psychologists who study consciousness are at the very borders of discriminability, as we will see in more detail in Chapter 3. A faint shape might be flashed on a screen for a few milliseconds, for example, before being replaced by another (generally called a “masking stimulus”). If the timing and intensity parameters are set correctly, people may only detect the faint shape on about fifty per cent of the trials. Still, when the subject reports “seen”, it is assumed that the perceptual state is definitely phenomenally conscious; and when the subject reports “unseen” phenomenal consciousness of the stimulus is absent.

It is true that participants in such experiments will often express greater or lesser degrees of confidence in having seen the stimulus. Someone might report, for example, “I *think* I saw a shape that was oriented to the left, but I’m not sure—I might have imagined it.” Now this particular kind of case causes no problem for our thesis, since visual images as well as visual percepts are phenomenally conscious. Even if someone is unsure whether what they experienced was a visual percept or a visual image, still what they experienced was phenomenally conscious. More challenging would be cases where someone reports, “I *think* I saw a shape, but I’m not sure—I might have experienced nothing.” Two points are worth noticing here, however. One is that it seems to be definitely *like something* to be unsure

whether or not one saw a shape. The other is that what one is actually unsure of, here, is whether one saw a shape *or a blank screen*. Hence either way one has a phenomenally conscious experience. It is *like something* to see a faint shape. And it is likewise *like something* to see a blank screen.

Rosenthal (2018) argues that in addition to degrees of detail and vividness in the *content* of a perceptual state, there can be degrees of *awareness of* the occurrence of that perceptual state. As we have just noted, for example, one might be unsure whether one saw anything on a given trial in a backward-masking experiment. If a higher-order theory of consciousness were correct, then degrees of awareness of a state might amount to degrees of conscious status for that state, just as Rosenthal (2018) claims. But I will ultimately be defending a first-order account, according to which phenomenal consciousness can be equated with a certain sort of (first-order) access consciousness. If there is no perceptual state of the kind in question, of course, then *that* state cannot be phenomenally conscious. But it is nevertheless determinately *like something* to be unsure whether or not one saw anything on the screen at that moment.<sup>5</sup>

I conclude that we can't make sense of degrees of phenomenal consciousness. The concept of phenomenal consciousness is given to us through our introspective first-person awareness of our own mental states. And it seems, then, that anything we are introspectively aware of (provided it has fine-grained nonconceptual content) is a definite instance of the concept. This is a claim that will prove important when we turn to consider phenomenal consciousness in other species. For a number of the theories that have been put forward to explain consciousness in the human case are framed in terms that will only be instantiated in other species *to some or other degree*.

## 7. Other minds and others' consciousness

Finally, in this chapter, we should situate our topic in relation to the traditional philosophical problem of other minds. The problem is generally expressed like this: how do I know that other people (let alone other animals) have minds like my own? For all I ever see are their circumstances and behavior. But if the question is about minds and mental states in general, as opposed to phenomenally-conscious experiences more narrowly, then it makes a false presupposition. In effect, it takes for granted that knowledge of my own mind is prior to, and more basic than, my knowledge of the minds of others. Elsewhere I have argued that this gets things completely back-to-front (Carruthers 2011a). Our knowledge of mental states depends on the operation of an innately channeled "mindreading" or "theory of mind" faculty, which is present in nascent form in infancy, and which is designed in the first instance for attributing mental states

---

<sup>5</sup> In any case, even if we agreed that a fleeting indeterminate visual experience was to some lesser degree phenomenally conscious, this wouldn't help us to make sense of degrees of consciousness across species. For in the latter case we may be dealing with fully-detailed temporally-extended perceptual states, but ones that are only partly comparable to human phenomenally-conscious perceptual states—because they are available to fewer or less sophisticated consuming systems for the access-conscious information, for example. This point will prove important in Chapter 7.



to other people. Knowledge of one's own mental states results from turning that same mental faculty on oneself, relying not just on external behavioral and contextual cues, but also on the perceptual and imagistic contents that are made available to it as input (including one's own visual imagery and inner speech).

While our knowledge of mental states begins with an innately channeled mindreading faculty, it can thereafter be supplemented and corrected by science, of course. Thus the folk notion of *belief* is known to fragment into at least four distinct types of information storage: episodic memory, semantic memory, rote memory (as in "seven sevens are forty-nine"), and what Frankish (2004) calls "commitments", which are really intentions to behave and reason as if a certain proposition were true. We can rely on both sets of resources when attributing mental states to others, with greater or lesser degrees of confidence. And of course similar resources can be used to interpret the behavior of nonhuman animals as well. Chapter 2 will outline some of what is known on that front, temporarily setting the consciousness question to one side.

Embedded within the question of other *minds*, however, is a narrower issue, which one might call the problem of others' *consciousness*. I have introspective awareness of my own phenomenally-conscious experiences, of course, since attended perceptual and imagistic contents are "globally broadcast" (as we will see in Chapter 5), and made available as input to a range of different systems for reporting and decision making, including one's mindreading faculty. Indeed, as we stressed at the outset, the very notion of *phenomenal* consciousness is grounded in first-person acquaintance with one's own experiential states. I can wonder, therefore, how I can know that other people undergo states *like this*. And I can wonder how I can know that everyone else isn't a zombie.

The solution to the problem of others' consciousness relies on an inference to the best explanation. This is at its strongest when dealing with other adult humans. Such people belong to the same species as me, with the same sense-organs and with similar brains that are organized (to the best of my belief) in the same way that mine is. Moreover, they behave and respond to the world in ways similar to myself, crying out when injured, navigating around obstacles in the light but not in the dark; and so on. Similar sorts of evidence can be available for other animals, of course, but in a graded manner. The brains, sense-organs, and behavior of chimpanzees are more similar to mine than are the brains, sense-organs, and behavior of mice; which are in turn more similar to mine than are the brains, sense-organs, and behavior of chickens; and so on. A natural first thought, then, is that an inference to the best explanation when attributing phenomenal consciousness to other creatures besides oneself can be made with lesser and lesser *confidence* as one moves from other humans, through other great apes, to monkeys, to mice, to birds, to reptiles, and then to invertebrates like bees and spiders.<sup>6</sup>

---

<sup>6</sup> Notice that the inferential principle at work here seems to be something like this: creatures that are alike in one set of respects (brains, behavior, descent) are probably alike in other respects, too—specifically, in being phenomenally conscious. It is unclear how reliable this sort of inductive principle is in predicting unobvious properties of organisms, however. Indeed, that might depend on how detailed an understanding one has of the

Given this background of similarities, however, the most important fact about other humans (and only other humans), is they can talk to me about their own experiences, telling me that the nature of those experiences seems ineffable; and I can get them to puzzle over the “explanatory gap” and the question whether everyone but themselves might be a zombie. These latter facts, in particular, provide powerful evidence that other people’s experiences are presented to them in the same sort of first-person way that mine are presented to me, and are likewise *like something* for them to undergo. In short, they provide powerful evidence that other people, too, are phenomenally conscious (but without providing complete certainty, of course, since it remains *conceivable* to me that everyone else is a zombie).

Recall from Section 5, moreover, that one good theory-neutral way of characterizing phenomenal consciousness is to say that it comprises whatever properties of mental states give rise to typical “hard”-problem thought experiments. Whether one believes in qualia or not, everyone can agree that phenomenal consciousness is distinctive in giving rise to a special set of puzzles (at least in creatures capable of such puzzlement). The strongest grounds one can have for attributing such consciousness to others, then, is that some of their mental states *do* give rise to such puzzles *for them*. At least, this is true given a background of other commonalities in evolutionary descent, brain organization, mentality, and behavior. For of course we would have quite low confidence in the phenomenally-conscious status of a laptop computer that had been programmed to express such puzzlement, no matter how convincingly it did so.

As a result, and despite the fact that phenomenal consciousness is a first-person notion, we can reasonably claim to *know* that other humans undergo mental states that are phenomenally conscious (or at least *most* other humans—difficult cases will be discussed in Chapter 8). This is enough to enable a science of phenomenal consciousness to proceed, despite the first-person character of the subject matter. But it means that special priority must be given, in such a science, to evidence collected from normal adult humans.

Only a subset of the evidence described above is available in the case of nonhuman animals (as well as human infants), of course. They can’t talk to us, and so cannot provide the same sort of direct evidence that one can get of a first-person perspective on their experiences that one has for other adult humans. But they can be more or less similar to us in biological descent, in brain structure and organization, and in nonverbal behavior. In advance of further inquiry, these similarities provide *some* reason to think that the creatures in question are phenomenally conscious, with a degree of confidence graded by the degree of similarity between us. Chapter 3 will consider how strong this evidence is on its face (when considered in the absence of any scientific theory of consciousness), concluding that it isn’t very powerful. Then Chapters 4 and 5 will embark on the search for such a theory.

---

nature and role of the property being projected. (If one lacks any understanding of what the appendix does in human physiology, for example, then one lacks a basis for predicting its presence in other creatures, whether closely or distantly related.) In fact, the main moral of Chapter 3 will be that one cannot hope to project capacities for phenomenal consciousness across creatures in the absence of a good *theory* of consciousness.

The main point to stress here, however, is just that a theory of phenomenal consciousness needs to take its start from, and prioritize, evidence provided by adult human beings. This is because it is here that evidence for the sort of first-person acquaintance with phenomenal properties that we each find in ourselves is at its strongest, and it is this that provides the most direct evidence that we have of the existence of phenomenal consciousness in others.

## 8. Conclusion

This chapter has advanced two definite theses, one of which is more central to the project than the other. The important claim—which will be relied on in what follows—is that phenomenal consciousness is all-or-nothing. Either a mental state is *like something* for its subject to undergo, or it is not. There is no half-way house. More peripherally, I have also claimed that only nonconceptual contents make a constitutive contribution to the phenomenal properties of the mental states in which they occur (as opposed to a causal one).

In addition, a number of important conceptual distinctions have been drawn. One is between mental-state consciousness and creature consciousness. Within the former, we distinguished between access-conscious mental states and phenomenally-conscious mental states, where the latter notion is distinctively first-personal in nature; and within creature consciousness, we distinguished between transitive and intransitive varieties. The extent to which these concepts pick out distinct properties or converge on the same property will be discussed in what follows.

This chapter has also introduced the debate between qualia realism and qualia irrealism. The latter should be the default view for anyone who takes science seriously. We should believe in qualia only as a last resort—and perhaps not even then, even if it were to turn out that we can't provide a successful reductive explanation of phenomenal consciousness. Indeed, it might be more reasonable to conclude that consciousness is a scientific mystery (as does McGinn 1991), rather than accept an ontology driven by philosophical intuition.

Finally, we noted that we have, in advance of further inquiry, varying *degrees* of evidence for the presence of first-personal phenomenal consciousness in other creatures; among which by far the strongest evidence exists for other adult humans. This is because such people can talk to one, can reflect on and describe the nature of their experiences, and can (especially) display puzzlement about the place of those experiences in the natural order, just as one does oneself.