

What Is It Like to Be A Bat?

by Thomas Nagel (1974)

Analogies—for example, 'Red is like the sound of a trumpet'—are of little use. That should be clear to anyone who has both heard a trumpet and seen red.

Conscious experience is a widespread phenomenon. It occurs at many levels of animal life, though we cannot be sure of its presence in the simpler organisms, and it is very difficult to say in general what provides evidence of it. (Some extremists have been prepared to deny it even of mammals other than man.) No doubt it occurs in countless forms totally unimaginable to us, on other planets in other solar systems throughout the universe. But no matter how the form may vary, the fact that an organism has conscious experience at all means, basically, that there is something it is like to be that organism. There may be further implications about the form of the experience; there may even (though I doubt it) be implications about the behavior of the organism. But fundamentally an organism has conscious mental states if and only if there is something that it is to be that organism—something it is like for the organism.

We may call this the subjective character of experience. It is not captured by any of the familiar, recently devised reductive analyses of the mental, for all of them are logically compatible with its absence. It is not analyzable in terms of any explanatory system of functional states, or intentional states, since these could be ascribed to robots or automata that behaved like people though they experienced nothing.¹ It is not analyzable in terms of the causal role of experiences in relation to typical human behavior—for similar reasons. I do not deny that conscious mental states and events cause behavior, nor that they may be given functional characterizations. I deny only that this kind of thing exhausts their analysis. Any reductionist program has to be based on an analysis of what is to be reduced. If the analysis leaves something out, the problem will be falsely posed. It is useless to base the defense of materialism on any analysis of mental phenomena that fails to deal explicitly with their subjective character. For there is no reason to suppose that a reduction which seems plausible when no attempt is made to account for consciousness can be extended to include consciousness. Without some idea, therefore, of what the subjective character of experience is, we cannot know what is required of physicalist theory.

While an account of the physical basis of mind must explain many things, this appears to be the most difficult. It is impossible to exclude the phenomenological features of experience from a reduction in the same

¹ Perhaps there could not actually be such robots. Perhaps anything complex enough to behave like a person would have experiences. But that, if true, is a fact which cannot be discovered merely by analyzing the concept of experience.

way that one excludes the phenomenal features of an ordinary substance from a physical or chemical reduction of it—namely, by explaining them as effects on the minds of human observers. If physicalism is to be defended, the phenomenological features must themselves be given a physical account. But when we examine their subjective character it seems that such a result is impossible. The reason is that every subjective phenomenon is essentially connected with a single point of view, and it seems inevitable that an objective, physical theory will abandon that point of view.

Let me first try to state the issue somewhat more fully than by referring to the relation between the subjective and the objective ... This is far from easy. Facts about what it is like to be an X are very peculiar, so peculiar that some may be inclined to doubt their reality, or the significance of claims about them. To illustrate the connection between subjectivity and a point of view, and to make evident the importance of subjective features, it will help to explore the matter in relation to an example that brings out clearly the divergence between the two types of conception, subjective and objective.

I assume we all believe that bats have experience. After all, they are mammals, and there is no more doubt that they have experience than that mice or pigeons or whales have experience. I have chosen bats instead of wasps or flounders because if one travels too far down the phylogenetic tree, people gradually shed their faith that there is experience there at all. Bats, although more closely related to us than those other species, nevertheless present a range of activity and a sensory apparatus so different from ours that the problem I want to pose is exceptionally vivid (though it certainly could be raised with other species). Even without the benefit of philosophical reflection, anyone who has spent some time in an enclosed space with an excited bat knows what it is to encounter a fundamentally alien form of life.

I have said that the essence of the belief that bats have experience is that there is something that it is like to be a bat. Now we know that most bats (the microchiroptera, to be precise) perceive the external world primarily by sonar, or echolocation, detecting the reflections, from objects within range, of their own rapid, subtly modulated, high-frequency shrieks. Their brains are designed to correlate the outgoing impulses with the subsequent echoes, and the information thus acquired enables bats to make precise discriminations of distance, size, shape, motion, and texture comparable to those we make by vision. But bat sonar, though clearly a form of perception, is not similar in its operation to any sense that we possess, and there is no reason to suppose that it is subjectively like anything we can experience or imagine. This appears to create difficulties for the notion of what it is like to be a bat. We must consider whether any

method will permit us to extrapolate to the inner life of the bat from our own case, and if not, what alternative methods there may be for understanding the notion.

Our own experience provides the basic material for our imagination, whose range is therefore limited. It will not help to try to imagine that one has webbing on one's arms, which enables one to fly around at dusk and dawn catching insects in one's mouth; that one has very poor vision, and perceives the surrounding world by a system of reflected high-frequency sound signals; and that one spends the day hanging upside down by one's feet in an attic. In so far as I can imagine this (which is not very far), it tells me only what it would be like for me to behave as a bat behaves. But that is not the question. I want to know what it is like for a bat to be a bat. Yet if I try to imagine this, I am restricted to the resources of my own mind, and those resources are inadequate to the task. I cannot perform it either by imagining additions to my present experience, or by imagining segments gradually subtracted from it, or by imagining some combination of additions, subtractions, and modifications.

To the extent that I could look and behave like a wasp or a bat without changing my fundamental structure, my experiences would not be anything like the experiences of those animals. On the other hand, it is doubtful that any meaning can be attached to the supposition that I should possess the internal neurophysiological constitution of a bat. Even if I could by gradual degrees be transformed into a bat, nothing in my present constitution enables me to imagine what the experiences of such a future stage of myself thus metamorphosed would be like. The best evidence would come from the experiences of bats, if we only knew what they were like.

So if extrapolation from our own case is involved in the idea of what it is like to be a bat, the extrapolation must be incompletable. We cannot form more than a schematic conception of what it is like. For example, we may ascribe general types of experience on the basis of the animal's structure and behavior. Thus we describe bat sonar as a form of three-dimensional forward perception; we believe that bats feel some versions of pain, fear, hunger, and lust, and that they have other, more familiar types of perception besides sonar. But we believe that these experiences also have in each case a specific subjective character, which it is beyond our ability to conceive. And if there's conscious life elsewhere in the universe, it is likely that some of it will not be describable even in the most general experiential terms available to us. (The problem is not confined to exotic cases, however, for it exists between one person and another. The subjective character of the experience of a person deaf and blind from birth is not accessible to me, for example, nor presumably is mine to him.

This does not prevent us each from believing that the other's experience has such a subjective character.)

If anyone is inclined to deny that we can believe in the existence of facts like this whose exact nature we cannot possibly conceive, he should reflect that in contemplating the bats we are in much the same position that intelligent bats or Martians would occupy if they tried to form a conception of what it was like to be us. The structure of their own minds might make it impossible for them to succeed, but we know they would be wrong to conclude that there is not anything precise that it is like to be us: that only certain general types of mental state could be ascribed to us (perhaps perception and appetite would be concepts common to us both; perhaps not). We know they would be wrong to draw such a skeptical conclusion because we know what it is like to be us. And we know that while it includes an enormous amount of variation and complexity, and while we do not possess the vocabulary to describe it adequately, its subjective character is highly specific, and in some respects describable in terms that can be understood only by creatures like us. The fact that we cannot expect ever to accommodate in our language a detailed description of Martian or bat phenomenology should not lead us to dismiss as meaningless the claim that bats and Martians have experiences fully comparable in richness of detail to our own. It would be fine if someone were to develop concepts and a theory that enabled us to think about those things; but such an understanding may be permanently denied to us by the limits of our nature. And to deny the reality or logical significance of what we can never describe or understand is the crudest form of cognitive dissonance.

This brings us to the edge of a topic that requires much more discussion than I can give it here: namely, the relation between facts on the one hand and conceptual schemes or systems of representation on the other. My realism about the subjective domain in all its forms implies a belief in the existence of facts beyond the reach of human concepts. Certainly it is possible for a human being to believe that there are facts which humans never will possess the requisite concepts to represent or comprehend. Indeed, it would be foolish to doubt this, given the finiteness of humanity's expectations. After all there would have been transfinite numbers even if everyone had been wiped out by the Black Death before Cantor discovered them. But one might also believe that there are facts which could not ever be represented or comprehended by human beings, even if the species lasted for ever—simply because our structure does not permit us to operate with concepts of the requisite type. This impossibility might even be observed by other beings, but it is not clear that the existence of such beings, or the possibility of their existence, is a precondition of the significance of the hypothesis that there are humanly inaccessible facts. (After all, the nature of beings with access to humanly inaccessible facts is

presumably itself a humanly inaccessible fact.) Reflection on what it is like to be a bat seems to lead us, therefore, to the conclusion that there are facts that do not consist in the truth of propositions expressible in a human language. We can be compelled to recognize the existence of such facts without being able to state or comprehend them.

I shall not pursue this subject, however. Its bearing on the topic before us (namely, the mind-body problem) is that it enables us to make a general observation about the subjective character of experience. Whatever may be the status of facts about what it is like to be a human being, or a bat, or a Martian, these appear to be facts that embody a particular point of view.

I am not adverting here to the alleged privacy of experience to its possessor. The point of view in question is not one accessible only to a single individual. Rather it is a type. It is often possible to take up a point of view other than one's own, so the comprehension of such facts is not limited to one's own case. There is a sense in which phenomenological facts are perfectly objective: one person can know or say of another what the quality of the other's experience is. They are subjective, however, in the sense that even this objective ascription of experience is possible only for someone sufficiently similar to the object of ascription to be able to adopt his point of view—to understand the ascription in the first person as well as in the third, so to speak. The more different from oneself the other experiencer is, the less success one can expect with this enterprise. In our own case we occupy the relevant point of view, but we will have as much difficulty understanding our own experience properly if we approach it from another point of view as we would if we tried to understand the experience of another species without taking up its point of view.²

This bears directly on the mind-body problem. *For if the facts of experience—facts about what it is like for the experiencing organism—are accessible only from one point of view, then it is a mystery how the true character of experiences could be revealed in the physical operation of that organism.* The latter is a domain of objective facts par excellence—

² It may be easier than I suppose to transcend inter-species barriers with the aid of the imagination. For example, blind people are able to detect objects near them by a form of sonar, using vocal clicks or taps of a cane. Perhaps if one knew what that was like, one could by extension imagine roughly what it was like to possess the much more refined sonar of a bat. The distance between oneself and other persons and other species can fall anywhere on a continuum. Even for other persons the understanding of what it is like to be them is only partial, and when one moves to species very different from oneself, a lesser degree of partial understanding may still be available. The imagination is remarkably flexible. My point, however, is not that we cannot know what it is like to be a bat. I am not raising that epistemological problem. My point is rather that even to form a conception of what it is like to be a bat (and a fortiori to know what it is like to be a bat) one must take up the bat's point of view. If one can take it up roughly, or partially, then one's conception will also be rough or partial. Or so it seems in our present state of understanding.

the kind that can be observed and understood from many points of view and by individuals with differing perceptual systems. There are no comparable imaginative obstacles to the acquisition of knowledge about bat neurophysiology by human scientists, and intelligent bats or Martians might learn more about the human brain than we ever will.

This is not by itself an argument against reduction. A Martian scientist with no understanding of visual perception could understand the rainbow, or lightning, or clouds as physical phenomena, though he would never be able to understand the human concepts of rainbow, lightning, or cloud, or the place these things occupy in our phenomenal world. The objective nature of the things picked out by these concepts could be apprehended by him because, although the concepts themselves are connected with a particular point of view and a particular visual phenomenology, the things apprehended from that point of view are not: they are observable-from the point of view but external to it; hence they can be comprehended from other points of view also, either by the same organisms or by others. Lightning has an objective character that is not exhausted by its visual appearance, and this can be investigated by a Martian without vision. ...

In the case of experience, on the other hand, the connection with a particular point of view seems much closer. It is difficult to understand what could be meant by the objective character of an experience, apart from the particular point of view from which its subject apprehends it. After all, what would be left of what it was like to be a bat if one removed the viewpoint of the bat? But if experience does not have, in addition to its subjective character, an objective nature that can be apprehended from many different points of view, then how can it be supposed that a Martian investigating my brain might be observing physical processes which were my mental processes (as he might observe physical processes which were bolts of lightning), only from a different point of view? How, for that matter, could a human physiologist observe them from another point of view?

We appear to be faced with a general difficulty about psychophysical reduction. ... The less it depends on a specifically human viewpoint, the more objective is our description. ... [But] If the subjective character of experience is fully comprehensible only from one point of view, then any shift to greater objectivity—that is, less attachment to a specific viewpoint—does not take us nearer to the real nature of the phenomenon: it takes us farther away from it.

In a sense, the seeds of this objection to the reducibility of experience are already detectable in successful cases of reduction; for in discovering sound to be, in reality, a wave phenomenon in air or other media, we leave behind one viewpoint to take up another, and the auditory, human or

animal viewpoint that we leave behind remains unreduced. Members of radically different species may both understand the same physical events in objective terms, and this does not require that they understand the phenomenal forms in which those events appear to the senses of members of the other species. Thus it is a condition of their referring to a common reality that their more particular viewpoints are not part of the common reality that they both apprehend. The reduction can succeed only if the species-specific viewpoint is omitted from what is to be reduced.

But while we are right to leave this point of view aside in seeking a fuller understanding of the external world, we cannot ignore it permanently, since it is the essence of the internal world, and not merely a point of view on it. Most of the neobehaviorism of recent philosophical psychology results from the effort to substitute an objective concept of mind for the real thing, in order to have nothing left over which cannot be reduced. If we acknowledge that a physical theory of mind must account for the subjective character of experience, we must admit that no presently available conception gives us a clue how this could be done. The problem is unique. If mental processes are indeed physical processes, then there is something it is like, intrinsically, to undergo certain physical processes. What it is for such a thing to be the case remains a mystery.

What moral should be drawn from these reflections, and what should be done next? It would be a mistake to conclude that physicalism must be false. Nothing is proved by the inadequacy of physicalist hypotheses that assume a faulty objective analysis of mind. It would be truer to say that physicalism is a position we cannot understand because we do not at present have any conception of how it might be true. Perhaps it will be thought unreasonable to require such a conception as a condition of understanding. After all, it might be said, the meaning of physicalism is clear enough: mental states are states of the body; mental events are physical events. We do not know which physical states and events they are, but that should not prevent us from understanding the hypothesis. What could be clearer than the words 'is' and 'are'?

But I believe it is precisely this apparent clarity of the word 'is' that is deceptive. Usually, when we are told that X is Y we know how it is supposed to be true, but that depends on a conceptual or theoretical background and is not conveyed by the 'is' alone. ... This explains the magical flavor of popular presentations of fundamental scientific discoveries, given out as propositions to which one must subscribe without really understanding them. For example, people are now told at an early age that all matter is really energy. But despite the fact that they know what 'is' means, most of them never form a conception of what makes this claim true, because they lack the theoretical background.

At the present time the status of physicalism is similar to that which the hypothesis that matter is energy would have had if uttered by a pre-Socratic philosopher. We do not have the beginnings of a conception of how it might be true. In order to understand the hypothesis that a mental event is a physical event, we require more than an understanding of the word 'is'. The idea of how a mental and a physical term might refer to the same thing is lacking, and the usual analogies with theoretical identification in other fields fail to supply it. They fail because if we construe the reference of mental terms to physical events on the usual model, we either get a reappearance of separate subjective events as the effects through which mental reference to physical events is secured, or else we get a false account of how mental terms refer (for example, a causal behaviorist one).

Strangely enough, we may have evidence for the truth of something we cannot really understand. Suppose a caterpillar is locked in a sterile safe by someone unfamiliar with insect metamorphosis, and weeks later the safe is reopened, revealing a butterfly. If the person knows that the safe has been shut the whole time, he has reason to believe that the butterfly is or was once the caterpillar, without having any idea in what sense this might be so. (One possibility is that the caterpillar contained a tiny winged parasite that devoured it and grew into the butterfly.)

It is conceivable that we are in such a position with regard to physicalism. ... Very little work has been done on the basic question (from which mention of the brain can be entirely omitted) whether any sense can be made of experiences' having an objective character at all. Does it make sense, in other words, to ask what my experiences are really like, as opposed to how they appear to me? We cannot genuinely understand the hypothesis that their nature is captured in a physical description unless we understand the more fundamental idea that they have an objective nature (or that objective processes can have a subjective nature). ...

Apart from its own interest, a phenomenology that is in this sense objective may permit questions about the physically basis of experience to assume a more intelligible form. Aspects of subjective experience that admitted this kind of objective description might be better candidates for objective explanations of a more familiar sort. But whether or not this guess is correct, it seems unlikely that any physical theory of mind can be contemplated until more thought has been given to the general problem of subjective and objective. Otherwise we cannot even pose the mind-body problem without sidestepping it.