Animal Consciousness: What Matters and Why

BY DANIEL C. DENNETT

ARE animals conscious? The way we are? Which species, and why? *What is it like* to be a bat, a rat, a vulture, a whale?

But perhaps we really do not want to know the answers to these questions. We should not despise the desire to be kept in ignorance—are there not many facts about yourself and your loved ones that you would wisely choose not to know? Speaking for myself, I am sure that I would go to some lengths to prevent myself from learning all the secrets of those around me—whom they found disgusting, whom they secretly adored, what crimes and follies they had committed, or thought I had committed! Learning all these facts would destroy my composure, cripple my attitude towards those around me. Perhaps learning too much about our animal cousins would have a similarly poisonous effect on our relations with them. But if so, then let us make a frank declaration to that effect and drop the topic, instead of pursuing any further the pathetic course upon which many are now embarked.

For current thinking about animal consciousness is a mess. Hidden and not so hidden agendas distort discussion and impede research. A kind of comic relief can be found—if you go in for bitter irony—by turning to the "history of the history" of the controversies. I am not known for my spirited defenses of René Descartes, but I find I have to sympathize with an honest scientist who was apparently the first victim of the wild

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misrepresentations of the lunatic fringe of the animal rights movement. Animal rights activists such as Peter Singer and Mary Midgley have recently helped spread the myth that Descartes was a callous vivisector, completely indifferent to animal suffering *because of* his view that animals (unlike people) were mere automata. As Justin Leiber (1988) has pointed out, in an astringent re-examination of the supposed evidence for this, "There is simply not a line in Descartes to suggest that he thought we are free to smash animals at will or free to do so *because* their behavior can be explained mechanically." Moreover, the favorite authority of Descartes's accusors, Montaigne, on whom both Singer and Midgley also uncritically rely, was a gullible romantic of breathtaking ignorance, eager to take the most fanciful folktales of animal mentality at face value, and not at all interested in *finding out*, as Descartes himself was, how animals actually work!

Much the same attitude is common today. There is a curious tolerance of patent inconsistency and obscurantism and a bizarre one-sidedness in the treatment of evidence regarding animal minds. Elizabeth Marshall Thomas writes a book, *The Hidden Life of Dogs* (1993), which mixes acute observation and imaginative hypothesis-formulation with sheer fantasy, and in the generally favorable welcome the book receives, few if any point out that it is irresponsible, that she has polluted her potentially valuable evidence with well-meant romantic declarations that she could not have any defensible grounds for believing. If you want to *believe* in the consciousness of dogs, her poetry is just the ticket. If you want to *know* about the consciousness of dogs, you have to admit that although she raises many good questions, her answers are not to be trusted. That is not to say that she is wrong in all her claims, but that they *just will not do* as answers to the questions, not if we really want to know the answers.

A forlorn hope, some say. Certain questions, it is said, are quite beyond science at this point (and perhaps forever). The cloaks of mystery fall conveniently over the very issues that

promise (or threaten) to shed light on the *grounds* for our moral attitudes toward different animals. Again, a curious asymmetry can be observed. We do not require absolute, Cartesian certainty that our fellow human beings are conscious—what we require is what is aptly called *moral* certainty. Can we not have the same moral certainty about the experiences of animals? I have not yet seen an argument by a philosopher to the effect that we cannot, with the aid of science, establish facts about animal minds with the same degree of moral certainty that satisfies us in the case of our own species. So whether or not a case has been made for the "in principle" mystery of consciousness (I myself am utterly unpersuaded by the arguments offered to date), it is a red herring. We can learn enough about animal consciousness to settle the questions we have about our responsibilities. The moral agenda about animals is important, and for that very reason it must not be permitted to continue to deflect the research, both empirical and conceptual, on which an informed ethics could be based.

A striking example of one-sided use of evidence is Thomas Nagel's famous paper "What is it Like to be a Bat?" (1991). One of the rhetorical peculiarities of Nagel's paper is that he chose bats and went to the trouble to relate a *few* of the fascinating facts about bats and their echolocation, because, presumably, those hard-won, third-person-perspective scientific facts tell us *something* about bat consciousness. What? First and least, they support our conviction that bats *are* conscious. (He did not write a paper called "What is it Like to be a Brick?") Second, and more important, they support his contention that bat consciousness is very unlike ours. The rhetorical peculiarity—if not outright inconsistency—of his treatment of the issue can be captured by an obvious question: if a few such facts can establish *something* about bat consciousness, would more such facts not establish more? He has already relied on "objective, third-person" scientific investigation to establish (or at least render rationally credible)

the hypothesis that bats are conscious, but not in just the way we are. Why wouldn't further such facts be able to tell us in exactly what ways bats' consciousness isn't like ours, thereby telling us what it *is* like to be a bat? What kind of fact is it that only works for one side of an empirical question?

The fact is that we all do rely, without hesitation, on "third-person" behavioral evidence to support or reject hypotheses about the consciousness of animals. What else, after all, could be the source of our "pretheoretical intuitions"? But these intuitions in themselves are an untrustworthy lot, much in need of reflective evaluation. For instance, do you see "sentience" or "mere discriminatory reactivity" in the Venus Fly Trap, or in the amoeba, or in the jellyfish? What more than mere discriminatory reactivity—the sort of competence many robots exhibit—are you *seeing* when you *see* sentience in a creature? It is, in fact, ridiculously easy to induce powerful intuitions of not just sentience but full-blown consciousness (ripe with malevolence or curiosity or friendship) by exposing people to quite simple robots *made to move in familiar mammalian ways at mammalian speeds.*

Cog, a delightfully humanoid robot being built at MIT, has eyes, hands, and arms that move the way yours do—swiftly, relaxedly, compliantly (Dennett, 1994). Even those of us working on the project, knowing full well that we have not even *begun* to program the high level processes that might arguably endow Cog with consciousness, get an almost overwhelming sense of being in the presence of another conscious observer when Cog's eyes still quite blindly and stupidly follow one's hand gestures. Once again, I plead for symmetry: when you acknowledge the power of such elegant, lifelike motions to charm you into an illusion, note that it ought to be an open question, still, whether you are also being charmed by your beloved dog or cat or the noble elephant. Feelings are too easy to provoke for them to count for much here.

If behavior, casually observed by the gullible or generous-hearted, is a treacherous benchmark, might composition—

material and structure—provide some important leverage? History offers a useful perspective on this question. It was not so long ago—Descartes's day—when the hypothesis that a material brain by itself could sustain consciousness was deemed preposterous. Only immaterial souls could *conceivably* be conscious. What was inconceivable then is readily conceivable now. Today, we can readily conceive that a brain, without benefit of immaterial accompanists, can be a sufficient seat of consciousness, even if we wonder just how this could be. This is surely a *possibility* in almost everybody's eyes, and many of us think the evidence for its truth mounts close to certainty. For instance, few if any today would think that the "discovery" that, say, lefthanders don't have immaterial minds but just brains would show unmistakably that they are just zombies.

Unimpressed by this retreat, some people today baulk at the *very idea* of silicon consciousness or artifactual consciousness, but the reasons offered for these general claims are unimpressive to say the least. It looks more and more as if we will simply have to look at what entities—animals in this case, but also robots and other things made of nonstandard materials—*actually can do*, and use that as our best guide to whether animals are conscious and, if so, why and of what.

I once watched with fascination and, I must admit, disgust while hundreds of vultures feasted on a rotting elephant carcass in the hot sun of a June day in Kenya. I found the stench so overpowering that I had to hold my nose and breath through a kerchief to keep from gagging, all the time keeping my distance, but there were the vultures eagerly shouldering each other aside and clambering inside the carcass for the tastiest morsels. (I will spare you the most mind-boggling details.) Now I am quite confident, and I expect you agree with me, that I was thereby given very good evidence that those vultures do not share my olfactory quality space. In fact, as I have subsequently learned, these Old World vultures, unlike their rather distant New World cousins, do not rely on olfaction at all; they use their keen eyesight to spot carrion.

The peculiar nauseating odors of rotting carrion, carried by such well-named amines as *cadaverine* and *putrescine*, are attractants to the New World turkey vultures (*Cathartes aura*), however, and the presumed explanation is that in the New World these birds evolved in an ecology in which they hunted for food hidden under a canopy of trees, which diminished the utility of vision and heightened the utility of olfaction. David Houston (1986) has conducted experiments using fresh, ripe, and very-ripe chicken carcasses, hidden from sight in the forests of a Panamanian island, to titrate the olfactory talents of turkey vultures. So we're making progress; we now know—to a moral certainty—something about the difference between what it is like to be an African vulture and what it is like to be a Central American turkey vulture.

So let's go on. What does a rotting chicken carcass smell like to a turkey vulture? At first blush it may seem obvious that we can confidently set aside the philosophers' problem of other minds in this instance and assume, uncontroversially, that these vultures rather go in for the smell of carrion. Or does anybody suppose that vultures might be heroic martyrs of the scavenger world, bravely fighting back their nausea while they perform their appointed duties?

Here, it seems, we correct one extrapolation from our own case by another: we dismiss our imputation to them of our own revulsion by noting their apparent *eagerness*—as revealed by their behavior. When we exhibit such eagerness, it is because we *like* something, so they must like what they are doing and feeling. Similarly, we do not worry about the poor seal pups on their ice floe, chilling their little flippers. We would be in agony, lying naked on the ice with the wind blowing over us, but they are designed for the cold. They are not shivering or whimpering, and indeed they exhibit the demeanor of beasts who could not be more content with their current circumstances—home sweet home.

"But wait!" says the philosopher. "You are being awfully sloppy in these everyday attributions. Let's consider what is

possible in principle. Vulture revulsion is possible in principle, is it not? You would not make their observed behavior *criterial* of pleasure, would you? Are you some benighted *behaviorist*? The suggestion that it makes no sense for vultures to be disgusted by their designated diet is nothing but Panglossian optimism. Perhaps vultures have been misdesigned by evolution; perhaps vulture ancestors found themselves in a sort of evolutionary cul-de-sac, hating the taste and smell of the only food available in their niche, but having no choice but to overcome their distaste and gag it down; perhaps they have since developed a sort of stoic demeanor, and what you have interpreted as gusto is actually desperation!"

Fair enough, I reply. My rush to judgment was perhaps a bit rash, so let's explore further to see whether any supporting evidence can be found for your alternative hypothesis. Here is a relevant fact: turkey vultures are attracted by the smell of one-day-old or two-day-old carcasses, but they ignore older, still more pungent fare. It is conjectured that the toxin level in such flyblown remains eventually is too great even for the toxin-tolerant vultures, who leave them for the maggots. Insects, it is believed, use the onset of these later products of decomposition as their cue that a carcass is sufficiently decomposed to be a suitable site for egg-laying and, hence, maggot formation. This still leaves unanswered the residual question of whether turkey vultures actually *like* the smell of middle-aged carrion. At this point, my knowledge of actual or contemplated vulture research gives out, so I will have to consider some invented possibilities, for the time being. It would be fascinating to discover something along the lines of an incompletely suppressed gag-reflex as part of the normal vulture feeding behavior, or perhaps some traces of approach-avoidance opponent systems tugging away at each other in their brains, a sort of activity not to be found, we might imagine, in the brains of birds with more savory diets. Such discoveries would indeed add real support to your surprising hypothesis, but, of course, they would be just more "behav-

ioral" or "functional" evidence. Once again, a superficially plausible but retrospectively naive or oversimple interpretation would be overthrown by more sophisticated use of behavioral considerations. And you can hardly accept the support of this imagined evidence without agreeing that *not* discovering it would count *against* your alternative and in *favor* of my initial interpretation.

This might be—indeed ought to be—just the beginning of a long and intricate examination of the possible functional interpretations of events in the vultures' nervous systems, but let us cut to the chase, for I imagine our dissenting philosopher to insist in the end, after one or another hypothesis regarding complexities of vulture *reactivity* to carrion had been effectively confirmed, that still no amount of such merely third-personal investigation could ever ("in principle") tell us what carrion *actually smelled like* to a vulture. This would be asserted not on the basis of any further argument, mind you, but just because eventually this is the "intuitive" card that is standardly played.

What I find insupportable in this familiar impasse is the coupling of blithe assertion of consciousness with the equally untroubled *lack of curiosity* about what this assertion might amount to, and how it might be investigated. Leiber (1988) provides a handy scorecard:

> Montaigne is ecumenical in this respect, claiming consciousness for spiders and ants, and even writing of our duties to trees and plants. Singer and Clarke agree in denying consciousness to sponges. Singer locates the distinction somewhere between the shrimp and the oyster. He, with rather considerable convenience for one who is thundering hard accusations at others, slides by the case of insects and spiders and bacteria; they, *pace* Montaigne, apparently and rather conveniently do not feel pain. The intrepid Midgiey, on the other hand, seems willing to speculate about the subjective experience of tapeworms . . . Nagel . . . appears to draw the line at flounders and wasps, though more recently he speaks of the inner life of cockroaches.

The list could be extended. In a recent paper, Michael Lockwood (1993) supposes, as so many do, that Nagel's "what

it is like to be" formula *fixes a sense of consciousness*. He then says: "Consciousness in this sense is presumably to be found in all mammals, and probably in all birds, reptiles and amphibians as well." It is the "presumably" and "probably" to which I want us to attend. Lockwood gives no hint as to how he would set out to replace these terms with something more definite. I am not asking for certainty. Birds aren't just *probably* warm-blooded, and amphibians aren't just *presumably* air-breathing. Nagel confessed at the outset not to know—or to have any recipe for discovering—where to draw the line as we descend the scale of complexity (or is it the cuddliness scale?). This embarrassment is standardly waved aside by those who find it just obvious that there is something it is like to be a bat or a dog, equally obvious that there is *not* something it is like to be a brick, and unhelpful *at this time* to dispute whether it is like anything to be a fish or a spider. What does it mean to say that it is or it isn't?

It has passed for good philosophical form to invoke mutual agreement here that we know what we're talking about even if we can't explain it yet. I want to challenge this. I claim that this standard methodological assumption has no *clear* pre-theoretical meaning—in spite of its undeniable "intuitive" appeal—and that since this is so, it is ideally suited to play the deadly role of the "shared" intuition that conceals the solution from us. *Maybe* there really is a huge difference between us and all other species in this regard; *maybe* we should consider "radical" hypotheses. Lockwood says "probably" all birds are conscious, but *maybe* some of them—or even all of them—are rather like sleepwalkers! Or what about the idea that there could be unconscious pains (and that animal pain, though real, and—yes—morally important, was unconscious pain)? *Maybe* there is a certain amount of generous-minded delusion (which I once called the Beatrix Potter syndrome) in our bland mutual assurance that as Lockwood puts it, "*Pace* Descartes, consciousness, thus construed, isn't remotely, on this planet, the monopoly of human beings."

How, though, could we ever explore these "maybes"? We could do so in a constructive, anchored way by first devising a theory that concentrated exclusively on *human* consciousness—the one variety about which we will brook no "maybes" or "probablys"—and then *look and see* which features of that account apply to which animals, and why. There is plenty of work to do, which I will illustrate with a few examples—just warm-up exercises for the tasks to come.

In *Moby Dick,* Herman Melville asks some wonderful questions about what it is like to be a sperm whale. The whale's eyes are located on opposite sides of a huge bulk: "the front of the Sperm Whale's head," Melville memorably tells us, "is a dead, blind wall, without a single organ or tender prominence of any sort whatever" (Ch. 76). As Melville notes: "The whale, therefore, must see one distinct picture on this side, and another distinct picture on that side; while all between must be profound darkness and nothingness to him" (Ch. 74).

> Nevertheless, any one's experience will teach him, that though he can take in an indiscriminating sweep of things at one glance, it is quite impossible for him, attentively, and completely, to examine any two things—however large or however small—at one and the same instant of time; never mind if they lie side by side and touch each other. But if you now come to separate these two objects, and surround each by a circle of profound darkness; then, in order to see one of them, in such a manner as to bring your mind to bear on it, the other will be utterly excluded from your contemporary consciousness. How is it, then, with the whale? . . . is his brain so much more comprehensive, combining, and subtle than man's, that he can at the same moment of time attentively examine two distinct prospects, one on one side of him, and the other in an exactly opposite direction?

Melville goes on to suggest that the "extraordinary vacillations of movement" exhibited by sperm whales when they are "beset by three or four boats" may proceed "from the helpless perplexity of volition, in which their divided and diametrically opposite powers of vision must involve them" (Ch 74).

Might these "extraordinary vacillations" rather be the whale's attempt to keep visual track of the wheeling boats? Many birds, who also "suffer" from eyes on opposite sides of their heads, achieve a measure of "binocular" depth perception by bobbing their heads back and forth, giving their brains two slightly different views, and permitting the relative motion of parallax to give them approximately the same depth information we get all at once from our two eyes with their overlapping fields.

Melville assumes that whatever it is like to be a whale, it is similar to human consciousness in one regard: there is a single boss in charge, an "I" or "ego" that either superhumanly distributes its gaze over disparate scenarios, or humanly flicks back and forth between two rivals. But might there be even more radical discoveries in store? Whales are not the only animals whose eyes have visual fields with little or no overlap; rabbits are another. In rabbits there is no interocular transfer of learning! That is, if you train a rabbit that a particular shape is a source of danger by demonstrations carefully restricted to its *left* eye, the rabbit will exhibit no "knowledge" about that shape, no fear or flight behavior, when the menacing shape is presented to its *right* eye. When we ask what it is like to be that rabbit, it appears that at the very least we must put a subscript, *dexter* or *sinister*, on our question in order to make it well-formed.

Now let's leap the huge chasm that separates our cousins, the whale and the rabbit, from a much more distant relative, the snake. In an elegant paper, "Cued and detached representations in animal cognition," Peter Gärdenfors (unpublished) points out "why a snake can't think of a mouse."

> It seems that a snake does not have a central representation of a mouse but relies solely on transduced information. The snake exploits three different sensory systems in relation to prey, like a mouse. To strike the mouse, the snake uses its *visual* system (or thermal sensors). When struck, the mouse normally does not die

> immediately, but runs away for some distance. To locate the mouse, once the prey has been struck, the snake uses its sense of *smell*. The search behavior is exclusively wired to this modality. Even if the mouse happens to die right in front of the eyes of the snake, it will still follow the smell trace of the mouse in order to find it. This unimodality is
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> > particularly evident in snakes like boas and pythons, where the prey often is held fast in the coils of the snake's body, when it e.g. hangs from a branch. Despite the fact that the snake must have ample proprioceptory information about the location of the prey it holds, it searches stochastically for it, all around, only with the help of the olfactory sense organs (Sjölander, 1993, p. 3).
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> Finally, after the mouse has been located, the snake must find its head in order to swallow it. This could obviously be done with the aid of smell or sight, but in snakes this process uses only *tactile* information. Thus the snake uses three separate modalities to catch and eat a mouse.

Can we talk about what the snake *itself* "has access" to, or just about what its various parts have access to? Is any of that obviously sufficient for consciousness? The underlying presumption that Nagel's "what is it like" question makes sense at all, when applied to a snake, is challenged by such possibilities.

I have argued at length, in *Consciousness Explained* (1991), that the sort of informational unification that is the most important prerequisite for *our* kind of consciousness is not anything we are born with, not part of our innate "hardwiring," but in surprisingly large measure an artifact of our immersion in human culture. What that early education produces in us is a sort of benign "user-illusion"—I call it the Cartesian Theater: the illusion that there is a place in our brains where the show goes on, towards which all perceptual "input" streams, and whence flow all "conscious intentions" to act and speak. I claim that other species—and human beings when they are newborn—simply *are not beset* by the illusion of the Cartesian Theater. Until the organization is formed, there is simply no user in there to be fooled. This is undoubtedly a radical suggestion, hard for many thinkers to take seriously, hard for them even to *entertain*. Let me repeat it, since many

critics have ignored the possibility that I mean it—a misfiring of their generous allegiance to the principle of charity.

In order to be conscious—in order to be the sort of thing it is like something to be—it is necessary to have a certain sort of informational organization that endows that thing with a wide set of cognitive powers (such as the powers of reflection and re-representation). This sort of internal organization does not come automatically with so-called "sentience." It is not the birthright of mammals or warm-blooded creatures or vertebrates; it is not even the birthright of human beings. It is an organization that is swiftly achieved in one species, ours, and in no other. Other species no doubt achieve *somewhat similar* organizations, but the differences are so great that most of the speculative translations of imagination from our case to theirs *make no sense*.

My claim is not that other species lack our kind of *self*-consciousness, as Nagel (1991) and others have supposed. I am claiming that what must be added to mere responsivity, mere discrimination, to count as consciousness *at all* is an organization that is not ubiquitous among sentient organisms. This idea has been dismissed out of hand by most thinkers.[1] Nagel, for instance, finds it to be a "bizarre claim" that "implausibly implies that babies can't have conscious sensations before they learn to form judgments about themselves." Lockwood is equally emphatic: "Forget culture, forget language. The mystery begins with the lowliest organism which, when you stick a pin in it, say, doesn't merely react, but actually *feels* something."

Indeed, that is where the *mystery* begins if you insist on starting *there*, with the assumption that you know what you mean by the contrast between merely reacting and actually feeling. And the mystery will never stop, apparently, if that is where you start.

In an insightful essay on bats (and whether it is like anything to be a bat), Kathleen Akins (1993) pursues the sort of detailed investigation into functional neuroscience that Nagel eschews,

and she shows that Nagel is at best ill-advised in simply *assuming* that a bat *must* have a point of view. Akins sketches a few of the many different stories that can be told from the vantage point of the various subsystems that go to making up a bat's nervous system. It is tempting, on learning these details, to ask ourselves "and where in the brain does the bat *itself* reside," but this is an even more dubious question in the case of the bat than it is in our own case. There are many parallel stories that could be told about what goes on in you and me. What gives one of those stories about *us* pride of place at any one time is *just this*: it is the story you or I will tell if asked (to put a complicated matter crudely).

When we consider a creature that isn't a teller—has no language—what happens to the supposition that one of *its* stories is privileged? The hypothesis that there is one such story that would tell us (if we could understand it) what it is actually like to be that creature dangles with no evident foundation or source of motivation—except dubious tradition. Bats, like us, have plenty of relatively peripheral neural machinery devoted to "low level processing" of the sorts that are routinely supposed to be entirely unconscious in us. And bats have no machinery analogous to our machinery for issuing public protocols regarding their current subjective circumstances, of course. Do they then have some *other* "high level" or "central" system that plays a privileged role? Perhaps they do and perhaps they don't. Perhaps there is no role for such a level to play, no room for any system to perform the dimly imagined task of elevating merely unconscious neural processes to consciousness. After all, Peter Singer has no difficulty supposing that an insect might keep its act together without the help of such a central system. It is an open empirical question, or rather, a currently unimagined and complex set of open empirical questions, what sorts of "high levels" are to be found in which species under which conditions.

Here, for instance, is one possibility to consider: the bat

lacks the brain-equipment for *expressing* judgments (in language), but the bat may nevertheless have to *form* judgments (of some inarticulate sort), in order to organize and modulate its language-free activities. Wherever these inarticulate judgment-like things happen is where we should look for the bat's privileged vantage point. But this would involve just the sort of postulation about sophisticated judgments that Nagel found so implausible to attribute to a baby. If the distinction between conscious and unconscious has nothing to do with anything sophisticated like judgment, what else could it involve?

Let us return to our vultures. Consider the hypothesis that for all I could ever know, rotting chicken carcass smells to a turkey vulture exactly the way roast turkey smells to me. Can science shed any light, pro or con, on this hypothesis? Yes, it can almost effortlessly refute it: since *how roast turkey tastes to me* is composed (and exhausted) by the huge set of reactive dispositions, memory effects, and so on, and so forth, that are detectable in principle in my brain and behavior, and since many of these are utterly beyond the machinery of any vulture's brain, it is flat impossible that anything could smell to a vulture the way roast turkey smells to me.

Well, then, what *does* rotting chicken smell like to a turkey vulture? (Exactly?) How patient and inquisitive are you prepared to be? We can uncover the corresponding family of reactive dispositions in the vulture by the same methods that work for me, and as we do, we will learn more and more about the no doubt highly idiosyncratic relations a vulture can form to a set of olfactory stimuli. But we already know a lot that we *won't* learn. We will never find a vulture being provoked by those stimuli to wonder, as a human being might, whether the chicken is not just slightly *off* tonight. And we won't find any amusement or elaborate patterns of association or Proustian reminiscence. Am I out in front of the investigations here? A little bit, but note what kind of investigations they are. It turns out that we end up where we

began: analyzing patterns of behavior (external and internal—but not "private"), and attempting to interpret them in the light of evolutionary hypotheses regarding their past or current functions.

The very idea of there being a dividing line between those creatures "it is like something to be" and those that are mere "automata" begins to look like an artifact of our traditional presumptions. I have offered (Dennett, 1991) a variety of reasons for concluding that in the case of adult human consciousness there is no principled way of distinguishing when or if the mythic light bulb of consciousness is turned on (and shone on this or that item). Consciousness, I claim, even in the case we understand best—our own—is not an all-or-nothing, on-or-off phenomenon. If this is right, then consciousness is not the sort of phenomenon it is assumed to be by most of the participants in the debates over animal consciousness. Wondering whether it is "probable" that all mammals have *it* thus begins to look like wondering whether or not any birds are *wise* or reptiles have *gumption*: a case of overworking a term from folk psychology that has losts its utility along with its hard edges.

Some thinkers are unmoved by this prospect. They are still unshakably sure that consciousness—"phenomenal" consciousness, in the terms of Ned Block (1992, 1993, 1995, forthcoming)—*is* a phenomenon that is either present or absent, rather as if some events in the brain glowed in the dark and the rest did not.[2] Of course, if you simply will not contemplate the hypothesis that consciousness might turn out *not* to be a property that thus sunders the universe in twain, you will be sure that I must have overlooked consciousness altogether. But then you should also recognize that you maintain the mystery of consciousness by simply refusing to consider the evidence for one of the most promising theories of it.

Postscript: Pain, Suffering, and Morality

In the discussion following my presentation at the conference at the New School, attention was focused on a question about animal consciousness that is not explicitly addressed above: according to my model, how would one tell which animals were capable of pain or suffering (or both)? Drawing on the presentations and discussions later in the conference, I offer here an oversimplified sketch of the direction my theory recommends for answering this question.[3]

The phenomenon of pain is neither homogeneous across species nor simple. We can see this in ourselves, by noting how unobvious the answers are to some simple questions. Are the "pains" that usefully prevent us from allowing our limbs to assume awkward, joint-damaging positions while we sleep experiences that require a "subject" (McGinn, 1995), or might they be properly called unconscious pains? Do they have moral significance in any case? Such body-protecting states of the nervous system might be called "sentient" states without thereby implying that they were the experiences of any self, any ego, any subject. For such states to matter—whether or not we call them pains or conscious states or experiences—there must be an enduring, *complex* subject *to whom* they matter because they are a source of suffering. Snakes (or parts of snakes!) may feel pain—depending on how we choose to define that term—but the evidence mounts that snakes lack the sort of over-arching, long-term organization that leaves room for significant suffering. That does not mean that we ought to treat snakes the way we treat worn out tires, but just that concern for their suffering should be tempered by an appreciation of how modest their capacities for suffering are.

While the distinction between pain and suffering is, like most everyday, nonscientific distinctions, somewhat blurred at the edges, it is, nevertheless, a valuable and intuitively satisfying mark or measure of moral importance. When I step on your toe, causing a brief but definite (and definitely

conscious) pain, I do you scant harm—typically none at all. The pain, though intense, is too brief to matter, and I have done no long-term damage to your foot. The idea that you "suffer" for a second or two is a risible misapplication of that important notion, and even when we grant that my causing you a few seconds pain may irritate you a few more seconds or even minutes—especially if you think I did it deliberately—the pain itself, as a brief, negatively-signed experience, is of vanishing moral significance. (If in stepping on your toe I have interrupted your singing of the aria, thereby ruining your operatic career, that is quite another matter.)

Many discussions seem to assume tacitly: (1) that suffering and pain are the same thing, on a different scale; (2) that all pain is "experienced pain"; and (3) that "amount of suffering" is to be calculated ("in principle") by just adding up all the pains (the awfulness of each of which is determined by duration-times-intensity). These assumptions, looked at dispassionately in the cold light of day—a difficult feat for some partisans—are ludicrous. A little exercise may help: would you exchange the sum total of the suffering you will experience during the next year for one five-minute blast of no doubt excruciating agony that summed up to the "same amount" of total pain-and-suffering? I certainly would. In fact, I would gladly take the bargain even if you "doubled" or "quadrupled" the total annual amount—just so long as it would be all over in five minutes. (We are assuming, of course, that this horrible episode does not kill me or render me insane—after the pain is over—or have other long-term effects that amount to or cause me further suffering; the deal was to pack all the suffering into one jolt.) I expect anybody would be happy to make such a deal. But it doesn't really make sense. It implies that the benefactor who provided such a service gratis to all, *ex hypothesi*, would be doubling or quadrupling the world's suffering—and the world would love him for it.

It seems obvious to me that something is radically wrong with the assumptions that permit us to sum and compare

suffering in any such straightforward way. But some people think otherwise; one person's *reductio ad absurdum* is another's counter-intuitive discovery. We ought to be able to sort out these differences, calmly, even if the best resolution we can reasonably hope for is a recognition that some choices of perspective are cognitively impenetrable.

Notes

[1] Two rare—and widely misunderstood—exceptions to this tradition are Julian Jaynes (1976) and Howard Margolis (1987), whose cautious observations survey the field of investigation I am proposing to open:

> A creature with a very large brain, capable of storing large numbers of complex patterns, and capable of carrying through elaborate sequences of internal representations, with this capability refined and elaborated to a very high degree, would be a creature like you and me. Somehow, as I have stressed, consciousness conspicuously enters the scheme at this point of highly elaborate dynamic internal representations. Correctly or not, most of us find it hard to imagine that an insect is conscious, at least conscious in anything approximating the sense in which humans are conscious. But it is hard to imagine that a dog is not conscious in at least something like the way an infant is conscious (Margolis, 1987, p. 55).

[2] John Searle also holds fast to this myth. See, for example, Searle, 1992, and my review, 1993.

[3] For a more detailed discussion, see "Minding and Mattering," pp. 448–454 in Dennett, 1991.

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