

Consciousness: a just-so story

I am conscious, and you probably are too. But why? What biological function does this remarkable ability subserve?

Nicholas Humphrey Biologists who have thought, but not thought enough, about consciousness will be found toying with two contradictory ideas. First—the legacy of the positivist tradition in philosophy—that consciousness is an essentially private thing, which enriches the spirit but makes no material difference to the flesh, and whose existence either in man or other animals cannot in principle be confirmed by the objective tools of science. Second—the legacy of evolutionary biology—that consciousness is an adaptive trait, which has evolved by natural selection because it confers some (as yet unspecified) advantage on those individuals who possess it.

Put in this way, the contradiction is apparent. Biological advantage means an increased ability to stay alive and reproduce; it exists, if it exists at all, in the public domain. Anything which confers this kind of advantage—still more, anything whose evolution has specifically depended on it—cannot therefore remain wholly private. If consciousness is wholly private it cannot have evolved. Or if it has evolved, it must in Hamlet's words be but private north-north-west; when the wind is southerly it must be having public consequences. If the blind forces of natural selection have been able in the past to get a purchase on these consequences, so now should a far-seeing science.

Yet scholars will, I suspect, continue to tolerate the contradiction, paying lip service both to the privacy and to the evolutionary adaptiveness of consciousness, until they are offered a plausible account of just wherein the biological advantage lies. At present, so far from having a testable hypothesis which we could apply to species other than our own, we lack even the bones of a good story about consciousness in human beings. I here present one: a Just-So story.

But first some pointers to what, in the context of this story, I take "consciousness" to mean. I rely on there already being between us the basis for a common understanding. I assume that you yourself are another conscious human being; that you have a personal conception of what consciousness is like; that you have experienced, waking and sleeping, both its presence and its absence; and that having noticed the contrasts you have already formed some notion of what consciousness is for. I assume moreover that although you may never have had occasion to pronounce on it, you will not find it difficult to recognise someone else's pronouncements (mine, below) as true to your own case.

Provided, that is, you are in fact a conscious human being, and not as it happens an unconscious robot or a philosopher from Mars. Provided, also, that you have not been too much influenced by Ludwig Wittgenstein. When Wittgenstein in his *Philosophical Investigations*, alluded to consciousness as a "beetle" in a box—"No one can look into anyone else's box, and everyone says he knows what a beetle is only by looking at his beetle ... Everyone might have something different in his box ... The box might even be empty"—he chose the name of a thing which has no obvious use to us, and thereby implicitly ruled out the possibility that the things in our several boxes might bear a functional resemblance to each other. But suppose the thing in the box had been called, let's say, a "pair of scissors". One person's pair of scissors might indeed look rather different from another's: long scissors, short scissors,

scissors made of brass or steel. But scissors, to be scissors, have to cut. There is really no danger that what we both agree to call a "pair of scissors" could in my case be a jelly-baby while in your case is empty air.

From all I know about myself, what strikes me—and seems to give some kind of cutting edge to consciousness



—is this. The behaviour of human beings, myself included, is in every case under the control of an internal nervous mechanism. This mechanism is responsive to and engaged with the external environment but at the same time operates in many ways autonomously, collating information, hatching plans, and making decisions between one course of action and another. Being internal and auton-

mous it also, for the most part, operates away from other people's view. You cannot see directly into my mechanism, and I cannot see directly into yours. Yet, *in so far as I am conscious*, I can see as if with an inner eye into my own.

During most of my waking life I have been aware that any own behaviour is accompanied by certain conscious feelings-sensations, moods, desires, volitions and so on-which together form the structure and content of my conscious mind. So regular indeed is this accompaniment, so rarely does anything happen to me without its being either preceded or paralleled by the experience of a conscious feeling, that I have long ago come to regard my conscious mind as the very same thing as the internal

its smell."

Thus consciousness (some would say "self-consciousness", though what other kind of consciousness there is I do not know) provides me with an explanatory model, a way of making sense of my behaviour in terms which I could in no way otherwise devise. And to the extent that it's successful, it is successful presumably because the workings of my conscious mind do in reality bear some kind of formal (if limited) correspondence to the workings of my brain. "Hunger" corresponds to a state of my brain; "wishing" corresponds to a state of my brain; even the organising principle of consciousness, my concept of my "self", corresponds to an organising principle of brain states. Not that physiologists have yet come up with an analysis of brain activity along these lines. But that, for the moment, is their problem, not mine. As a child of the evolutionary process, whose ancestors have been in this business for many millions of years, I am, in relation to my own behaviour like the ancient astronomer in the picture, who has found a way of looking in directly on the wheels and cogs which move the stars across the heavens: the stars are my behaviour, the cogwheels are the mechanism which controls it, and the astronomer peering in on them is I myself.

So what?

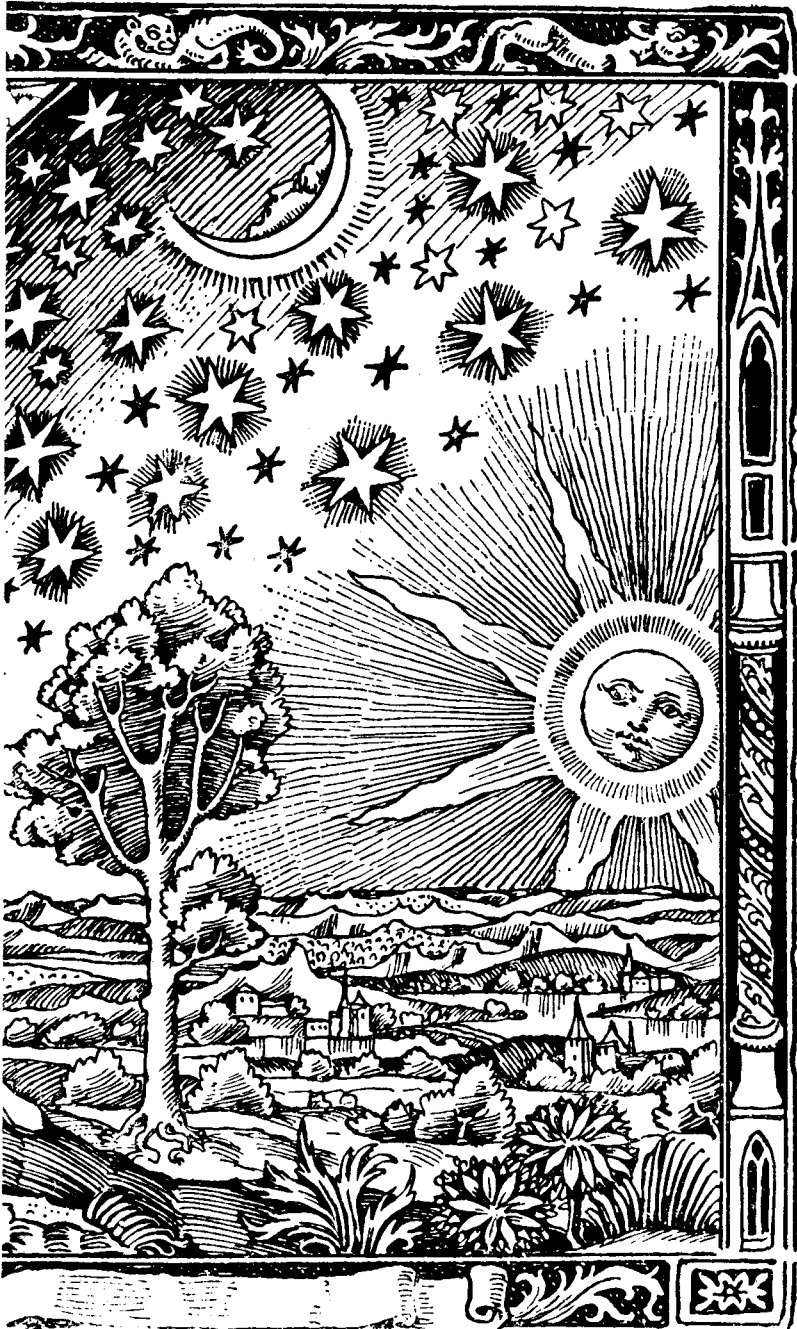
Percipient but not conscious

So, once upon a time there were animals ancestral to man who were not conscious. That is not to say that these animals lacked brains. They were no doubt percipient, intelligent, complexly motivated creatures, whose internal control mechanisms were in many respects the equals of our own. But it is to say that they had no way of looking in upon the mechanism. They had clever brains, but blank minds. Their brains would receive and process information from their sense organs without their minds being conscious of any accompanying sensation; their brains would be moved by, say, hunger or fear without their minds being conscious of any accompanying emotion; their brains would undertake voluntary actions without their minds being conscious of any accompanying volition ... And so these ancestral animals went about their lives, deeply ignorant of an inner explanation for their own behaviour.

To our way of thinking such ignorance has to be strange. We have experienced so often the connection between conscious feelings and behaviour, grown so used to the notion that our feelings are the causes of our actions, that it is hard to imagine that in the absence of feelings behaviour could carry on at all. It is true that in rare cases human beings may show a quite unexpected competence to do things without being conscious of their inner reasons: the case, for example, of "blind-sight", where a patient with damaged visual centres in the brain can point to a light without being conscious of any sensation accompanying his seeing (and without, as he says, knowing how he does it). But the patient himself in such a case confesses himself baffled; and you and I will not pretend that that would not be our reaction too.

Such bafflement, however, was one among the many things our unconscious ancestors were spared. Having never in their lives known inner reasons for their actions, they would not have missed them when they were not there. And whether we can imagine it or not, we should assume that, for the life-style to which they were adapted, "unconsciousness" was no great handicap. With these animals it was their behaviour itself, not their capacity to give an inner explanation of it, that mattered to their biological survival. As the occasion demanded they acted hungry, acted fearful, acted wishful and so on, and they were none the worse off for not having the feelings which might have told them why.

mechanism which controls my bodily behaviour. If I ask myself *why* I am doing something, like as not my answer will be framed in conscious mental terms: I am doing it *because* I am aware of this or that going on inside me. "Why am I looking in the larder? Because I'm feeling hungry ... Why am I raising my right arm? Because I wish to ... Why am I sniffing this rose? Because I like



Nonetheless, these animals were the ancestors of modern human beings. They were coming our way. Though their lives may once have been comparatively brutish and relatively short, as generations passed they began to live longer, their life-histories grew more complicated, -and their relationships with other members of their species became more dependent, more intimate, and at the same time more unsure. Sooner or later the capacity to explain themselves and to explain others-to take on, if it's not too grand a word, the role of a natural "psychologist", capable of understanding and predicting their own and others' behaviour within the social group--would become something they could no longer do without. At that stage would not their lack of consciousness have begun to tell against them?

Watch your brain working

Not necessarily. At least not at first, and not to the extent that all that's said above implies. For inner explanations are not the only kind of explanations of behaviour. Debarred as our unconscious ancestors may have been from looking in directly on the workings of their brains, they could still have observed behaviour from outside: they could have observed what went into the internal mechanism and what came out, and so have pieced together an external, objectively based explanatory model. "Why am I (Humphrey) looking in the larder?" Not, maybe, "Because I'm feeling hungry", but rather "Because it's five hours since Humphrey last had anything to eat" or "Because Humphrey has shown himself to be less fidgety after a snack".

In short, while our ancestors lacked the capacity to explain themselves by "introspection", there was nothing to stop them doing it by the methods of "behaviourism". "The behaviourist," wrote one of its first modern champions, J. B. Watson, "sweeps aside all medieval conceptions. He drops from his scientific vocabulary all subjective terms such as sensation, perception, image, desire, purpose, and even thinking and emotion." And who better placed to follow this recommendation than an unconscious creature for whom -such conceptions could not have been further from his mind? In fact, it is we conscious human beings who have trouble being hardheaded behaviourists: it is we who, as that other great behaviourist B. F. Skinner has lamented, "seem to have a kind of inside information about our behaviour. We have feelings about it. And what a diversion they have proved to be! . . . Feelings have proved to be one of the most fascinating attractions along the path of dalliance."

Why, then, when ignorance of the inner reasons for behaviour might have been bliss, did human beings ever become wise? Adam, the behavioural scientist, might with Newtonian detachment have simply sat back and watched the apple fall; but, no, he ate it.

What tempted him was a leap in the complexity of social interaction, calling in its turn for a leap in the psychological understanding of oneself and others. Suddenly the old-time psychology which was good enough for our unconscious ancestors, which is still apparently good enough for Watson and for Skinner, was no longer good enough for their descendants, Behaviourism could take a natural psychologist only so far. And human beings were destined to go further.

At what point the threshold was crossed we cannot tell. But there is evidence that by three or four million years ago, and possibly much earlier, our ancestors had already embarked on what was in effect a new experiment in social living. Leaving behind the relatively dull life of their ape-like forebears-leaving behind their thick skins, large teeth and heavy bones, leaving behind their habitation in the forest and their hand-to-mouth existence as vegetarian gypsies they sought this new life as hunter-gatherers on

the African savanna. They sought it with stone tools, they sought -it with fire; they pursued it with forks and hope. But above all, they sought it through the company of others of their kind. For it was membership of a cooperative social group which made the life of hunting and gathering on the plains a viable alternative to what had gone before. Life from now on was to be founded on collaboration, centred on a home base and a place in the community. This community of familiar souls would provide the context in which individuals could reap the rewards of cooperative enterprise, where they could benefit from mutual exchange of materials and ideas, and where (against all subsequent advice) they could become borrowers and lenders and then borrowers again-borrowers of time, of care, of goods and services. But most important, the community would provide them as they grew up first with a nursery and then with a kind of polytechnic school where they could learn from others the practical techniques on which the life of the hunter-gatherer depended.

But the intense social engagement which this new life style entailed spelt trouble. For human beings would not, overnight, abandon self-interest in favour of the common good. And while it is true that each individual stood to gain by preserving the social system as a whole, each continued also to have his own particular loyalties; to himself, to his kin and to his friends. A society based, as this was, on an unprecedented degree of interdependency, reciprocity and trust, was also a society which offered unprecedented opportunities for an individual to manoeuvre and out-manoeuve others in the group.

Thus the scene was set for a long-running drama of personal and political intrigue. Men and women were headed to become actors in a human comedy, played out upon the flinty apron stage which formed their common home. It was a comedy which would be tragedy for some. It was a play of ambitions, jealousies, loves, hates, spites and charities, where success meant success in the conduct of personal relationships. And when the curtain fell it was to those who, as natural psychologists, had shown the greatest insight into human nature that natural selection would give the biggest hand.

Imagine now two different kinds of player, with very different casts of mind. One the traditional unconscious behaviourist, who based his psychology entirely upon external observation; the other a new breed of introspectionist, who took the short cut of looking directly in upon the workings of his brain.

The behaviourist search for patterns

The behaviourist starts with a blank slate. In the manner familiar to those of us who have followed the progress of behaviourism as a modern science, he patiently collects evidence about what he sees happening to himself and other people, he correlates "stimuli" and "responses", he looks for "contingencies of reinforcement", he tries to infer the existence of "intervening variables" . . . and thus, without prejudice, he searches for a pattern in it all.

This programme for doing psychology is not, let it be said, a hopeless one. It must have sufficed for our unconscious ancestors for many million years. It probably still suffices for most if not all non-human social animals alive today. With a bit of luck it might have sufficed for those who began to live the life of social human beings, had they but world enough and time, had there been no one else around with the gift of doing the job much better.

But now there was someone else around, and world, time and luck were all at once in short supply. An introspectionist had entered on the scene: someone who starts with a slate on which the explanatory pattern is already half sketched in. From earliest childhood the introspectionist has had the opportunity to observe the causal



structure of his own behaviour emerging in full inner view: he has sensed the connection between stimulus and response, he has felt the positive and negative effects of reinforcement, he has been directly appraised of the intervening variables, and he has daily experienced the unifying presence of his conscious self.

In the first instance, certainly, the introspectionist's explanatory model applies only to his own behaviour not to others'. But once, in his own case, a pattern of connections has been forced on his attention, the idea of that pattern will dominate his perception in other cases where the connections are not openly on show. Once, in his own case, an outer effect has been seen to have an obvious inner cause, the idea of that cause will help him to make sense of situations where the effect alone can be observed. Cover the face in Figure 1, and try *not* to imagine the face in Figure 1. Notice that a fire in your own private hearth causes smoke to issue from your chimney, and *try not* to imagine that the smoke coming from the house across the road implies the presence of a fire within.

Thus the introspectionist's privileged picture of the inner reasons for his own behaviour is one which he will immediately and naturally project on other people. He can and will use his own experience to get inside other people's skins. And since the chances are that he himself is not in reality untypical of human beings in general - since the chances are that, just as from house to house there is generally no smoke without fire, so from person to person there is generally no looking in the larder without hunger, no running away without fear, no rage without anger, etc.-this kind of imaginative projection gives him an explanatory scheme of remarkable generality and power.

Thomas Hobbes in the *Leviathan* made the point, as few philosophers since then have dared to "[Assuming on] the similitude of the thoughts and passions of one man to the thoughts and passions of another, whosoever looketh into himself, and considereth what

he doth, when he does *think, opine, reason, hope, fear &c* and upon what grounds he shall thereby read and know what are the thoughts and passions of all other men upon the like occasions."

Let us return then to the age old human play. Scattered among the population of unconscious behaviourists, there arose in time these conscious prodigies. Soon enough an unconscious Watson would find himself up against a conscious Iago, an unconscious Skinner would find himself laying suit to a conscious Portia . . . Natural selection was there to supervise their exits and their entrances.

It was clear where the story for the human species had to end.

But for the rest of the animal kingdom? As the bias of my story must have shown, I am not convinced that any other species has followed the same path to consciousness as man. But studies of the social systems of other species are not far advanced, and studies of how individual animals themselves do their psychology have hardly begun. It may yet turn out that there are, in fact, non-Shuman

species whose social systems rival the complexity of man's; it may yet turn out that individuals of those species are, in fact, making use of explanatory systems which bear the hallmarks of a mind capable of looking in upon the inner workings of the brain. Stories have been wrong before. The cat, we know, does not walk by itself. But the rhino? Nothing suggests that the rhino gets inside another rhino's skin.

Meanwhile, for the obvious candidates-the social carnivores, the great apes there will be biologists who in fairness want to leave the question undecided. Undecided, but not undecidable. In medieval England a jury could bring in four alternative verdicts at a trial: Guilty, Not Guilty, *Ignoramus* (we do not know), *Ignorabimus* (we shall not know).

"Ignorabimus" would be a counsel of philosophical despair. "Ignoramus" is the proper verdict for biologists. For if consciousness has evolved we shall know it by its works. □



Thomas Hobbes: "whosoever looketh into himself shall know the thoughts and passion of all other men"