

Kinds of Minds: Towards an Understanding of Consciousness by Daniel C. Dennett. (London: Weidenfeld & Nicolson, 1996. Pp. viii + 184. £11.95)*

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Daniel Dennett's new book aims to introduce a general audience to current work in the evolutionary modelling of minds. This work, of which Dennett is one of the pioneers, is assuming increasing importance in contemporary cognitive science. A second, and equally important, aim of the book is to challenge the Cartesian, anthropomorphic, and realist prejudices of the lay public.

Dennett begins, in his deceptively easy style, with a list of questions prompting the reader to consider which organisms might or might not possess minds. These questions are designed to bring readers up short and force them to think about where to draw the line:

'We left Houston at dawn, headin' down the road – just me and my truck.'

Strange. If this fellow thinks his truck is such a worthy companion that it deserves shelter under the umbrella of 'we,' he must be very lonely. Either that, or his truck must have been customized in ways that would be the envy of roboticists everywhere. In contrast, 'we – just me and my dog' doesn't startle us at all, but 'we – just me and my oyster' is hard to take seriously. In other words, we're pretty sure that dogs have minds, and we're dubious that oysters do. (p. 4)

This problem is not only of theoretical interest, but also raises important ethical issues (pp. 4-5). In attributing mentality to a creature, we also grant it certain rights. Unfortunately, there is no agreement within the scientific and philosophical communities as to what the possession conditions for minds are.

Dennett begins by warning the reader away from what he takes to be a blind alley, and sketches once again his well-known, instrumentalist view of the mind. To have a mind, he points out, is to have *intentional states* – states with representational content. And it is easy to set the possession conditions for such states very high – so high, according to some philosophers, that animals do not really count as having minds at all. This, Dennett thinks, is a mistake. Intentionality, he holds, is a widespread natural phenomenon, and human thought is just a fancier version of the sensitivities and tropisms exhibited by simple systems such as plants, cells, and primitive robots. We can think of such systems as pursuing goals and registering environmental information that is

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relevant to attaining them. Of course, these systems do not explicitly *represent* the goals they seek; but the goals are nonetheless real, since they are the ones which evolutionary processes (or, in the case of robots, their human creators) have designed them to pursue. Such systems *have* reasons for their actions, but their reasons are, as Dennett puts it, ‘free floating’. For example, a fledgling cuckoo ousts the eggs of its unwitting adoptive parents:

Why does it do this? Because those eggs contain rivals for the attentions of its surrogate providers. By disposing of these rivals, it maximizes the food and protective care it will receive. The newborn cuckoo is, of course, oblivious; it has no inkling of this rationale for its ruthless act, but the rationale is *there*, and has undoubtedly shaped this innate behaviour over the eons. ... I call such a rationale ‘free floating,’ because it is nowhere *represented* in the fledgling, or anywhere else ... The strategic principles involved are not explicitly encoded but just implicit in the larger organization of designed features. (p. 49)

Just as the cuckoo's ‘dumb’, instinctive behaviour is a product of evolutionary design, so Dennett suggests, are our more sophisticated representational abilities.

Many philosophers draw a distinction between *derived* and *original* (or *intrinsic*) intentionality. Pictorial and written representations have derived intentionality – their content is derived from the intentions of their human users and producers. The content of our thoughts, by contrast, is not derived, but intrinsic to them. Dennett again demurs. All intentionality, he argues, external *and* internal, is derived:

a merely mental image of your mother – or Michelle Pfeiffer – is about its object in just as derived a way as the sketch you draw. It is internal, not external, but it is still an artefact created by your brain and means what it does because of a particular position in the ongoing economy of your brain's internal activities and their role in governing your body's complex activities in the real, surrounding world. (p. 52)

This immediately raises the question of just what role explicit internal representations (mental images of words and pictures) have in the mental economy. In order to shed some light on this question, Dennett adopts an evolutionary perspective.

He begins by introducing a metaphor: the evolution of the mind, he suggests, involved a progressive ascent of the *Tower of Generate and Test*. The Tower consists of four floors, each of which represents a more efficient way of solving day-to-day survival problems. Each progressive solution is a ‘better move’ than the one before. Thus, the ground floor is inhabited by *Darwinian* creatures that are blindly generated by natural selection and possess different hardwired phenotypes. Their responses to survival problems are determined by their genetic inheritance and are quite inflexible.

The second floor is inhabited by *Skinnerian* creatures. These can vary their phenotypic response to the environmental contingencies they encounter. Skinnerian creatures also possess hardwired reinforcement mechanisms that bias them to make what Dennett terms ‘Smart Moves’. A Skinnerian creature will vary its response to stimuli until something good comes of it, whereupon it will become conditioned to produce the same response again should similar stimuli be encountered. Such conditioning is possible, of course, only if the initial response is not fatal.

Popperian creatures, who inhabit the third floor, run less risk of making fatal first moves. These creatures have an *inner environment* – a mental representation of the external world – and can run internal simulations of various courses of action. In this way, they can calculate the likely effects of candidate actions and eliminate the ones likely to have undesirable consequences – thus ‘permitting their hypotheses to die in their stead’ as Karl Popper puts it.

Popperian creatures are much smarter than their Skinnerian cousins. However, their ability to form and test hypotheses is still limited by their genetic endowment. Their representational abilities, in particular, may remain relatively encapsulated, so that information from one domain is not routinely made available for the solution of problems occurring in others. *Gregorian* creatures, who live on the next floor, are smarter yet. They supplement their innate problem-solving abilities with *mind tools* acquired from their peers. They have learned Richard Gregory’s lesson that tools not only *display* intelligence, but *create* it too. A well-designed tool meshes with our native abilities and extends them in new and far-reaching ways. (Think, for example, of how a pair of scissors extends our ability to manipulate and shape artefacts.) The mind tools which Gregorian creatures possess are culturally transmitted tricks, shortcuts, and strategies which enable them to arrive more swiftly at Smart Moves for solving problems. The most powerful of these mind tools, Dennett suggests, are words.

This picks up themes from Andy Clark’s recent work. Clark argues that language augments existing computational abilities in several ways. For instance, language enables us to make plans and coordinate our actions. If you tell a friend you will meet at 1 p.m. on Monday for lunch, then your friend can time her other activities accordingly. Language also permits the mental rehearsal of self-directed commands and exhortations in order to focus behaviour, aid recall, and reinforce learning. Clark writes:

The role of public language and text in human cognition is not limited to the preservation and communication of ideas. Instead, these external resources make available concepts, strategies and learning trajectories which are simply not available to individual, un-augmented brains. Much of the true power of

language lies in its underappreciated capacity to reshape computational spaces which confront intelligent agents. (Clark 1995 p. 18)

We are Gregorian creatures and the manipulation of words and other mind tools (*memes* as Dawkins calls them) is the distinctive mark of human mentality. But it is not a mark of mentality *as such*; mind tools are just another of Mother Nature's strategies for keeping us ahead in the complex game of survival, and they derive their content from their role in these strategies.

All of this is very attractive, and is well motivated by a desire to rid cognitive science of Cartesian and essentialist thinking. Dennett provides us with a good structure to pin our speculations upon, a way of avoiding the gritty problem of intrinsic intentionality, and some account of how the human mind differs from that of the not-so-flexible Popperian Creatures. All of this seems to provide a potentially fruitful frame for future empirical work.

But the lay-person, picking up this Science Masters publication, may be left with a nagging doubt. 'Granted', they may say, 'the reasons that motivate frogs and bats and cats are free-floating, not intrinsic; but surely *ours* aren't? We don't just act *for* reasons, we act *on* them.' This is a legitimate worry, and it suggests that Dennett's model of derived intentionality is too loose as it stands. It is all very well to argue that our representational mechanisms have been selected for because they confer adaptive advantages, but the lay reader may wonder why these mechanisms do not give us a kind of intrinsic intentionality, qualitatively different from the free-floating rationales of more primitive creatures. And even if intrinsic intentionality is illusory, as Dennett claims, it would be nice to have some explanation of why we dupe ourselves into believing in it.

The more expert reader, looking to see how the land lies within cognitive science, may end up asking the same question. Dennett's speculations on the role of natural language in the Gregorian mind may raise hopes of a more substantial solution to the problems of human intentionality. Might not our natural language abilities be the origin of higher-order thinking and the source of real, cognitively potent mental representations? Such hopes are dashed if language functions merely as a tool, facilitating and co-ordinating low-level tasks.

The later chapters of the book are less focused, but rewarding nonetheless. Here Dennett continues his exploration (begun in his *Consciousness Explained*) of the idea that the high-level structure of the human mind is determined by cultural programming rather than biology. The human mind, he suggests, is highly organized community of low-level mechanisms in complex dynamical co-dependence with its environment. (He notes, for example, how some old people need their familiar home environment in order to function cognitively.) The final chapter is a vigorous and salutary polemic against woolly-minded

anthropomorphism. The further reading section at the end is a wildly eclectic mix of stuff, some of which would baffle the general reader.

Those who have read Dennett's weightier tomes will learn little from this book, but anyone unfamiliar with his work will find it stimulating, provoking, and illuminating. As usual, Dennett's avuncular tone makes for an easy read.

References

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