NEURONS V FREE WILL
Anthony Gottlieb

The notion of free will is under attack again, this time from the advance of neuroscience. Anthony Gottlieb explains...

On the evening of October 10th 1769, in one of his typically curt dismissals of a philosophical problem, Dr Johnson silenced Boswell, who wanted to talk about fate and free will, by exclaiming: "Sir...we know our will is free, and there's an end on't." Nearly two and a half centuries later, free will and responsibility are debated as much as ever, and the issue is taking some new twists.

Every age finds a fresh reason to doubt the reality of human freedom. The ancient Greeks worried about Ananke, the primeval force of necessity or compulsion, and her children, the Fates, who steered human lives. Some scientifically minded Greeks, such as Leucippus in the fifth century BC, regarded the motion of atoms as controlled by Ananke, so that "everything happens…by necessity." Medieval theologians developed a different worry: they struggled to reconcile human freedom with God's presumed foreknowledge of all actions. And in the wake of the scientific revolution of the 17th century, philosophers grappled with the notion of a universe that was subject to invariable laws of nature. This spectre of "determinism" was a reprise of the old Greek worry about necessity, only this time with experimental and mathematical evidence to back it up.

In the 20th century, the new science of psychology also seemed to undermine the idea of free will: Freud's theory of unconscious drives suggested that the causes of some of our actions are not what we think they are. And then along came neuroscience, which is often thought to paint an even bleaker picture. The more we find out about the workings of the brain, the less room there seems to be in it for any kind of autonomous, rational self. Where, in the chain of events leading up to an action, could such a thing be found? Investigations of the brain show that conscious will is an "illusion", according to the title of an influential book by a Harvard psychologist, Daniel Wegner, in 2002—a conclusion that has been echoed by many researchers since. In 2011, Sam Harris, an American writer on neuroscience and religion, wrote that free

will "could not be squared with an understanding of the physical world", and that all our behaviour "can be traced to biological events about which we have no conscious knowledge".

Really? There are now hopeful signs of what might be called a backlash against the brain. Hardly anybody doubts that the grey matter in our skulls underpins our thoughts and feelings, in the sense that a working brain is required for our mental life. This is not a new, or even a modern, idea: Hippocrates proclaimed as much in the fifth century BC. But there is a growing realisation among some neuroscientists that looking at flickers of activity inside our heads can be a misleading way to see how our minds work. This is because many of the distinctively human things that people do take place over time and outside their craniums. Perhaps the brain is the wrong place to look if you want to find free will. This is a theme of recent books by Michael Gazzaniga, a neuroscientist at the University of California at Santa Barbara, and Raymond Tallis, a retired British doctor and neuroscientist. As Dr Tallis puts it in his "Aping Mankind: Neuromania, Darwinitis and the Misrepresentation of Humanity", trying to find human life in the brain is like trying to hear the rustle of a forest by listening to a seed.

In part, this backlash against the brain results from the conviction that today's technologies for investigating it have been hyped. The existence of diagnostic hardware such as fMRI and PET scanners, which let you peek inside brains while they are still alive and thinking, has encouraged some neuroscientists to think they can find the locus of moral responsibility, the seat of love and all manner of things in the gaudy images produced by brain scans. But although our mental lives depend on the brain, it doesn't necessarily follow that our behaviour is best understood by looking inside it. It's like the old joke about a drunk who drops his car keys at night and walks down the road to look for them under a distant streetlight—not because that's where they're likely to be, but because it's where he can see.

As well as casting illumination in what is sometimes the wrong place, today's scanners are still rather dim streetlights. Since they cannot see the activity of neurons, fMRI scanners make do with changes in blood oxygen levels, and PET scanners indirectly measure changes in blood flow, to spot where something is (or rather, was) going on. These techniques can detect the trails only of large bursts of neural activity, and will miss anything involving less than many millions of brain cells. The art of neuro-imaging has been in full swing for not much more than a decade. In a study of its reliability, two psychologists at the University of California at Santa Barbara concluded in 2010 that the discipline had emerged from infancy, but was still rather a mixed-up adolescent.

That may be an understatement as far as experiments on thinking, emotion and personality are concerned. A team of psychologists at MIT and the University of California at San Diego, who were puzzled by the suspiciously definitive results of many brain-scan studies on these topics, asked the authors of 55 such papers how they had analysed their data. The team reported in 2009 that over half the studies used faulty methods that were guaranteed to shift the results in favour of the correlations they had been looking for between mental activity and blips in parts of the brain. It's worth bearing this in mind the next time you read about a brain-scan study which purportedly reveals how and why we do what we do.

No doubt brain scanners, and our ability to interpret them, will improve in due course. But the problem with trying to investigate some aspects of our mental life via the workings of the brain is not just a practical one. This fact is nicely illustrated by Dr Tallis's discussion of a series of experiments that have been widely taken to undermine the notion of free will. In the 1980s, the late Benjamin Libet, a neurophysiologist at the University of California, San Francisco, wired up his subjects so that he could monitor the timing of some electrical events in their brains. He asked them to flex their wrists whenever they felt like it, and to register the exact time when they decided to do so. The results seemed to show that our actions can be triggered before we form an intention, rather than afterwards, thus leaving no time for conscious will to play a role in what we do. Similar tests have been repeated and refined many times, and appear to confirm that the feeling of deliberation can be a mirage. But while twitches of the wrist may be simple to monitor, they're an odd place to search for free will.

It sounds like the problem of the drunk and his streetlights again. Tallis points out that taking part in such experiments involves performing all sorts of other actions, too, such as setting an alarm to get to the laboratory on time, declining other appointments, catching a bus, finding the right room, consenting to the project, listening to instructions, and so on. Mundane as they are, such activities are better examples of the sorts of actions that we'd like to regard as free and rational than are twitches of the wrist. And it would be crazy to think that conscious deliberation isn't really involved in them.

Stepping back from investigations of the brain, and looking at our actions in the broader context of everyday life—considering our interactions with others, for example—does not in itself provide the knock-down demonstration of free will that Dr Johnson would have liked. But it is at least a good beginning on't.

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