Looking ahead to future brain studies

The New Brain Sciences: Perils and Prospects
edited by Dai Rees & Steven Rose
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The brain sciences are undoubtedly burgeoning. In recent years, molecular biochemistry and genomic mapping have been combining with fancy functional imaging techniques to tell us more and more about the brain's internal workings.

Still, is all this new knowledge really such a good thing? The contributors to *The New Brain Sciences* are not sure. As Steven Rose explains in the introduction: "You will find no gung-ho overoptimistic forecasts of the wondrous cornucopia of benefits that neuroscience might bring here." True, he immediately adds: "Nor, though, are our authors doom-sayers with an almost automatic rejectionism in response to new findings." However, even if they aren't automatic rejectionists, most of the authors certainly seem to be worried about something.

In the end, though, this book is rather reassuring. The general tenor of the essays is that there is nothing in the new brain sciences to overturn anything we hold dear. Only muddled thinking, the contributors say, could make you suppose that neuroscience is going to radically alter our lives.

The articles are derived from a pair of recent conferences, and are divided into three sections. The first part asks whether we are more than the sum of our biochemical parts; the second considers whether biochemical determinism means that we are not authors of our own actions; and the final section wonders whether neuroscientific advances will lead to new medical techniques.

The contributors to the first section are emphatically of the anti-reductionist party. The philosopher Mary Midgley parades once more in her familiar colours, stressing that there is more to human nature than can be gleaned from the workings of neurotransmitters. Her message is echoed by the evolutionary psychologist Merlin Donald and the sociologist Hilary Rose. These authors are of course quite right, but I did wonder who they took their opposition to be. Poor Richard Dawkins comes in for some flak, but it's not exactly clear what for. It might also have been helpful if these essays had distinguished more clearly between the uncontentious methodological point that theories outside neuroscience can help us to understand people and the rather more controversial metaphysical issue of whether we are made of anything more than molecules.

The second section is particularly concerned with responsibility in a legal context. If it turns out that someone was predisposed to commit a crime because of some genetically determined feature of their brain, should they be punished? All the contributors agree that this wouldn't necessarily be a good excuse. For better or worse, we currently hold people responsible for their choices, provided that they are capable of deliberation. If they have the bad luck to be lumbered with a nefarious nature, we expect them to curb it: paedophiles aren't held to account merely for being attracted to children, but rather for succumbing to their desires. This doesn't change just because your criminal tendencies are foisted on you by your genes. If you are capable of deliberation, it's still up to you whether or not you give in to those tendencies.

This theme is repeated in a series of lucid articles from the philosopher Peter Lipton, the ethologist Patrick Bateson, the appeals-court judge Stephen Sedley and the academic medical lawyer Alexander McCall Smith. Those who know of the latter only from his fictional chronicles of the No. 1 Ladies' Detective Agency in Botswana will not be surprised by the elegant prose with which he carries out his day job.

By and large, the third section is not particularly enthusiastic about the medical promise of recent neuroscientific advances. But even here the pessimism is diluted. Alongside articles reminding us about the poor track record of neurosurgical intervention, and about the incoherence of much of the work on genes and intelligence, there is a markedly calm discussion by Paul Cooper of the role that the drug Ritalin (methylphenidate) can play in treating attention-deficit/hyperactivity disorder. There are also two useful articles analysing the ethics of stem-cell research and the prospects for resulting therapies. An insightful contribution by David Healy explains the techniques used by pharmaceutical companies to market their wares, and left me hungry for more on the way that commercial imperatives are distorting the development of new drugs.

Overall, this volume does much to combat various kinds of bad reductionist thinking. But it does little to show that the 'new brain sciences' pose any particular threat to anything. Prospective readers should also be warned that there is scarcely any information about the brain sciences themselves. Still, there is no harm in being reminded once more that there is more to life than basic scientific knowledge. ■

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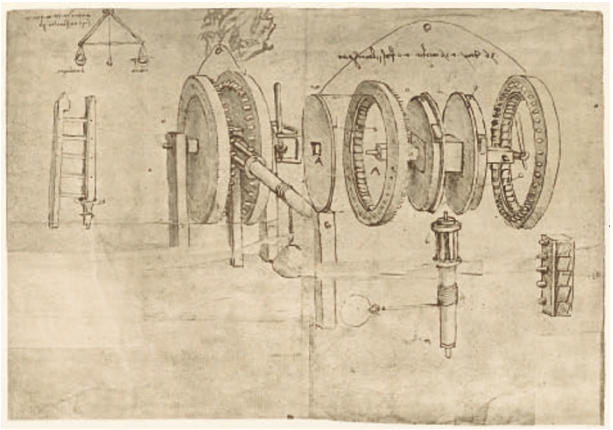
Exhibition

Leonardo's legacy



The *Codex Atlanticus* is a collection of more than a thousand sheets of the scientific and technical drawings of Leonardo da Vinci, put together at the end of the sixteenth century by Pompeo Leoni, a sculptor. Leoni was trying to organize Leonardo's work into categories, cutting and pasting drawings from original notebooks on to the atlas-sized pages that give the *Codex Atlanticus* its name. Some drawings were damaged in the process and others lost.

History continued to be unkind to the drawings. The codex was appropriated by Napoleon at the end of the eighteenth century, before being returned from Paris to Milan in the mid-nineteenth century. Early photographers, most fortunately as it turned out, captured images of the sheets on huge glass plates, and these formed the basis of a luxurious reproduction in 1906 of the entire codex. The original sheets were poorly restored in the 1950s and the early photographs are more valuable to historians than the original sheets.

Copies of the 1906 edition — a collaboration between the Accademia dei Lincei, Italy's national academy, and the publisher Anthelios — are now rare. But one forms the centrepiece of an exhibition currently on view in the austere, baroque rooms of the Accademia dei Lincei in Rome. The sheets are displayed alongside modern interpretations, or counterparts, of the drawings: there is a reconstruction of Leonardo's helicopter in wood and a Ferrari engine, for example.

In mid-March the exhibition begins an extensive European tour, taking in Budapest, Bratislava, Warsaw, Bolzano and other European cities in 2006, before moving to the United States and Japan in 2007. **A.A.**