

# Ghost in the machine

Harry Collins

**The Fourth Discontinuity: The Co-evolution of Humans and Machines.** By Bruce Mazlish. Yale University Press: 1993. Pp. 272. £22.50, \$35.00.

IF I had to bet on what would be a hot academic topic in the next 5 to 10 years, it would be the 'eternal triangle' — the relationship between humans, animals and machines. Neural nets are the latest cycle of renewed hope for those who believe that the borderline between humans and machines is fading, while some apes do seem to have developed levels of

being] . . . impossible that there should be enough different devices in a machine to make it behave in all the occurrences of life as our reason makes us behave" (Descartes quoted on p. 23).

In the first part of the book, Mazlish takes us through automata and the Industrial Revolution, with a quick look at how the ideas worked themselves into myths, such as the Golem, and into fictional characters such as Frankenstein, the associates of the Wizard of Oz, and Isaac Asimov's robots. The contributions of Linnaeus, Darwin, Freud and Pavlov to the mechanization of the idea of humankind and the establishment of the continuity between humans and animals are covered in the first two chapters of part two of the book. Chapter Seven discusses Babbage, Thomas Huxley and provides a particularly interesting exposition of Samuel Butler's thoughts on machines.

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Part three of the book brings us up to date with biogenetics and 'artificial intelligence'. Mazlish's title, *The Fourth Discontinuity*, is taken from Jerome Bruner's idea that cognitive history comprises the establishment of three great continuities: the Greeks established that all matter, heavenly or earthly, was continuous and governed by the same laws; Darwin helped us to understand that humans are biologically continuous with animals and all other life forms; and Freud established that the infant and the adult, the mentally ill and the mentally healthy, primitive civilization and evolved civilization are all based on the same fundamental human drives. These, according to Bruner and Mazlish, were three great 'smashings of

the ego'; in each case humankind learned that its place in the Universe is less special than it believed. The fourth ego-smashing is to be the establishment of our continuity with machines.

Grand sweeps of argument like these are best delivered with hindsight. In the case of the fourth discontinuity the work is still to be done. The final chapters, which are supposed to deliver the promise, are disappointing. They are hedged about with many a "could be", "potential" and "if Marvin Minsky is right". That game is too easy to play; it tells us too little about machines and too much about coffee-table chat at the Massachusetts Institute of Technology. We already know that if Marvin Minsky is right the corners of the eternal triangle will soon be changing places and my computer will keep me as a

pet, but we also know that Minsky thought language understanding was a topic for a student summer project.

There are lots of ways for those coming from the humanities and social sciences to approach the eternal triangle. A more ambitious historical approach would analyse the way in which the establishment and destruction of the various boundaries in specific locations at specific times served people's interests. In the case of machines we might look closely at, say, the church's special interest in the soul, or capital's interest in diminishing the perceived uniqueness of human skills. A contemporary study in this vein would ask not 'what is the truth of the matter?', but 'who is using Hubert Dreyfus?', 'who is using Marvin Minsky?' and 'how does this affect the reception of their ideas?'. Another avenue is to try to bring to the debate something special that has been overlooked by the psychologists, engineers and mathematicians; something that only those from the humanities and social sciences understand about people and their knowledge. This requires that one engage to some degree with the technicalities of the field and try to contribute to technical progress. A handful of social scientists, of whom Lucy Suchman is the most obvious example, have had some success here; Mazlish seems ignorant of their work.

I find the last chapters of this book worrying because of the lack of ambition they express for the role of the social sciences. Mazlish is content to 'reveal' the vision of some of his more technologically accomplished colleagues without engaging in or with the arguments. □

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REASONS

## Identity crisis — man or machine?

language understanding that would be impressive in a one-way 'Turing test'.

Not all books that discuss hot topics are themselves hot, of course. Mazlish's book is most useful as a work of reference: a brief encyclopaedia of what various historical figures have already written on the subject. Thus, we soon discover how hard it is to say anything on the topic that has not already been covered, at least in outline, by Descartes: ". . . if there were a machine which had such a resemblance to our bodies, and imitated our actions as far as possible, there would always be two absolutely certain methods of recognizing that it was still not truly a man. The first is that it could never . . . modify its phrases to reply to the sense of whatever was said in its presence, even as the most stupid men can do. The second . . . [relies on it

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