

Philosophy and the Brain

J. Z. Young

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Reviewed by Dr Alex Comfort

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If there is one certainty about the twenty-first century it is that philosophy will re-enter science, or science philosophy, on an unprecedented scale. The intellectual repercussions of two sciences - physics and computer construction - are almost wholly responsible. Life sciences, including both biology and psychology, lie still on the Newtonian-Cartesian side of an intellectual crevasse, watching the quantum physicists rather as a crowd watches an air show. It is they who are in for the biggest shocks.

Professor J. Z. Young's admirable book does not bridge the crevasse. In its coverage of biology it gives one of the most succinct and informative accounts in print of what is currently known and not known concerning brain function, sensation, memory, imaging and the like.

In dealing with general biology it tackles the key phenomenon, the capacity of living matter uniquely to accumulate the process information by a system of coding, which probably began with molecular selfreplication, passed into evolutionary coding involving DNA, and finally added cerebral programming and data processing of the kind we experience in ourselves. It is this capacity which distinguishes living from nonliving systems - Professor Young puts his finger on the nature of the apparently teleological or "purposive" aspect of evolving organisms, and of selfregulation within organisms, which Schopenhauer called "will" and Bergson "life force."

Our perception of coding and processing is a computer-derived insight people are currently writing programmes which illustrate very clearly that for this type of directed complexity to appear one needs neither vitalism nor supernaturalism. Vitalists were correct in thinking that living matter is qualitatively different from nonliving, but did not correctly analyse the difference.

This piece of lucid argument certainly contributes to philosophy and justifies the title. There are also minor themes, such as the evolution of ethics which so interested Haidane, that are directly philosophical.

It might sound ungenerous, in view of the amount of solid exposition about the brain, to say that this book stands at the end of a scientific era rather than at the start of a new one. After all, its preconceptions (reductionist in a nonhostile sense of the word) are those of the vast consensus of present day life scientists.

What they study are middle order phenomena: the trouble is that phenomena" means "appearings". The biologist is not acutely aware that since all science is conducted by and through the hardware and software of brains, the substrate of observation is not external reality but a highly-edited transform of it.

The physicist, by contrast, is so aware. In discussing Mind he might well put this point first. In fact most of relativity and quantum mechanics is directed to getting round human position-artefacts, including middle-order commonsense, by an egregious use of the brain's spare

computing capacity. Unfortunately the results, even when they are philosophically devastating, appear as very dense mathematics.

One can see how devastating when one considers, for example, the commonsense experience of seriality - "passing time." A physicist can point out that elapsing time, as opposed to time as a dimension of space-time, has no objective counterpart, it is something built into our brain display, not into nature, since spacetime exists en bloc. As Luther put it, "God sees time not as a line, but all of a heap."

This is both difficult to absorb and not very disturbing when one is talking about quantum relativity. But what does it do to evolution, ontogeny and even cosmology? There is a context in which these apparently commonsense serial processes (which is how we display them in experience) are not sequences but coherent superpositions.

Our heads are doomed to put the salami together from the slices. Our heads see the past as determinate and the future as indeterminate - but this is as much a restriction of our brain display as the inability of my pocket calculator to do sums involving imaginary numbers is a limitation due to the cheapness of the chip it contains.

It seems, one must reiterate, ungenerous to drag this, and all the other problems raised by the interpretation of physics, into a review of a book on philosophy and the brain. On the other hand science is a single enterprise, and so is philosophy, if by that one means the search for an algorithm which best displays "all that is the case."

Professor Young's book does tell us what is known about the way the phenomena of mind are mediated by brain, and that is important, but at his doors are a shouting mob of physicists asking questions about the observer paradox and the ability of the brain to collapse wave functions - thereby generating "ordinary experience" - and crying out for succour from the life sciences: physics is increasingly about the way brains bend reality.

In fact, to Young's identification of coding as the distinguishing character of living matter one ought to add the creation of seriality, which is a sort of rider to the information gathering capacity. In a Kantian sense, life generates "elapsing time," not the other way around. Crabs have it as we do.

One has to bring this in, then, because homuncularity (the sense that there is an "I" inside us) still defies neurological analysis. The experience can be upset by pathology or brain damage, but this does not dispose of the question, now revived in a strictly experimental context, not a philosophical or religious one, whether brain generates "mind" or transduces it. The effect of physics on the ghost in the machine is not to render it more concrete, but to make the machine equally ghostly, since the subatomic particles of which brains are made appear to require "Mind" as a primitive constituent for their definition.

Whenever philosophy now addresses the brain and the brain-mind correlation (even if, like Professor Young's account, we incline to token physicalism and treat Mind as a program) it is hard to see how some of these tiresomely counterintuitive models against which we are all initially prejudiced because of their disreputable history, can be kept out.

Addressing them, and either incorporating or getting rid of them, is likely to be the twenty-first century task. Physicists will need to start with Professor Young's book as a source of information about neurology and biology, and then go on to ask questions. Philosophers will

be prudent to let the physicists and the life-scientists in on their problems and wait for the outcome.

Philosophy, as Professor Young clearly sees, is now back in the form which originally caused us to give scientists doctorates in philosophy, and more bets are off today than at any time since the Eleatics, who asked most of the current questions. My own bet for the final product is that it will quite likely look alarmingly like neo-Buddhism rather than the logical positivism we most of us take scientifically for granted, but only "elapsing time" will tell.

There is a lot of scientific material here, however, which bears directly on philosophy at a less rarefied level - MacKay's point about free will, for example, that we are constitutionally unable to know what we will do until we have done it, a special case of the dependency of philosophy on experience and experience on brain mechanism which philosophers have under-valued. But the book remains most satisfying as a comprehensive modern primer of physiology, covering the structure of perception systematically, and refusing combat on the metaphysical issues it raises - leaving them, that is, to us, on a basis of experimental information.

In this, Professor Young reminds us of the expert as a Cabinet crisis meeting, telling the decision-makers what is and isn't on the cards. This is a role which scientists like, and tend to describe as "avoiding metaphysics." I personally think the attitude of self-denial has been a little overdone by some of the best life scientists: the physicists have been rather bolder, and, of course, the strictly heuristic approach is inclined to bring in its own unrecognised metaphysic along with the groceries.

Professor Young approaches some of the really tricky problems, but backs off them. He points out that the brain is organised on a basis of certain concepts of time and space - the Kantian *a-prioris* - and infers that the signals we receive from outside are displayed in ways consonant with the environment: why some people can intuit things like non-Euclidean geometry is unclear.

Now the part of the brain display which generates our innate, four-space map (three dimensions plus time) probably is structured as he says (which is why we cannot draw or visualise a hypersolid). But it is by no means clear that all brain processes are Kantian ahead of this experimental filter - if they were we probably would not have the impulsion to do mathematics.

Kant saw this, and concluded that non-Euclidean geometrics could not be made to interface with our heads, but unfortunately they do. Even the dissolution of positional "self" is quite feasible, to a yogi, and occasionally to others unintentionally. They find it distinctly upsetting, but it is apparently a very old human experience, generative of a great deal of human religion and ritual.

Where the going metaphysic of science, physics apart, inserts itself here is in the assumption that what we perceive is in fact configurative with the source of the perceptions. It was Haidane who said that nature is probably not only odder than we think but odder than we can think. One of the innate features of our experience maybe that we get around this by dumping the offdiagonal terms, and that organisms have evolved, on practical grounds, a brain which does precisely this.

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