

Root and branch

◆ *In the delightful Design in Nature, Claus Mattheck presents the "single design rule" that natural selection uses to build the super-light but extra strong structures abundant in nature: roots, branches, thorns, skeletons and claws. By applying these insights to technology we can also help to optimise objects we create. Crammed with technical drawings, stress patterns and equations, the book is a visual feast for engineers and industrial designers, while the photographs and exuberant prose make it accessible to all. Published by Springer-Verlag, £30/\$44.95, ISBN 3540629378*

Jewel of the Nile

◆ *In Protodynastic Egypt, Barbara Adams and Krzyszto Ciaowicz offer a lucid account of the period between 3200 and 3050 BC. A bridge between prehistory and history, this short but crucial transition period saw the colonisation of the Nile Delta, the rise of the aristocracy, and the emergence of state institutions that foreshadowed the pharaonic splendour of the Dynastic era. Published by Shire Egyptology, £4.99, ISBN 0747803579.*

Breaking the grip of materialism

Unsnarling the World-Knot by David Ray Griffin, University of California Press, £35/\$45, ISBN 0520209443

IT'S one of the big questions that no one has yet answered satisfactorily. What is the relationship between mind and the physical world?

Exploring this relationship can be fascinating, but we still conduct our investigations in the shadow of René Descartes's famous proposition that mind and matter are utterly different, first put forward in the 17th century. So powerful is the Cartesian notion that reality consists of a duality of mind and matter, that it has proved the greatest stumbling block in the search for an adequate theory of mind.

In *Unsnarling the World-Knot*, David Griffin objects to the fact that most modern philosophers still consider only two philosophies as useful: dualism and materialism (everything derives

from the same in some respect. They are both made of "atoms of experience").

Griffin does not fully come to terms with the fact that science has already abandoned the narrow materialist view of bits of matter pushing each other around. Even as early as Newton's law of gravitation, and most obviously with quantum physics, science has embraced the view that the world consists of relationships (often described as laws) between different types of processes and states.

Griffin does agree with the idea that abstract objects, such as logical relationships, can affect our minds. Sometimes we are convinced by an argument because it is logically valid, but validity is not a mental state. This is a view champi-

oned by philosopher Karl Popper and Australian physiologist John Eccles. So not only do we have mind and body, but also abstract objects such as numbers, theories, logical relationships, plans, works of art and so on.

I fear that Griffin fails to understand Popper and Eccles when they say that complete knowledge of how the mind affects the body is impossible. They are not pointing to something that distinguishes the mind-body problem, but to a general ultimate limit on understanding any causal relationship. So anybody concerned with the mind-body problem could profit

by reading Griffin. He lays out the arguments clearly for and against considering that the fundamental units of our world consist of experience. □

Ray Scott Percival runs the Karl Popper Web at <http://www.eeng.dcu.ie/~tkpw>



T. O'Leary/Millennium

from the physical, including the mind). Griffin, however, insists that we have a third choice: pan-experientialism. Experience may characterise all the units of matter.

Griffin assumes that if two types of thing are fundamentally different they cannot interact. This is why he feels that he has to make mind and mat-

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