

Declaring their peaceful coexistence is not the same as extinguishing the slowly burning fuse. We need to know what *is* the place of the mental in the Universe. Perhaps Midgley would have benefited here from invoking the debates on the 'anthropic principle' — the cosmological principle that theories of the origin of the Universe are constrained by the need to allow individual human existence. Or greater attention to the more serious of the recent religion–science discussions might have helped. Then there's Gaia, a thesis that has understandably made scientists, and most especially biologists, wince. As an ethical metaphor it raises no problems; but is it true? Clearly, the planet as a whole lacks the structures of a cell or the organic interconnectedness of a higher organism. Lovelock's integration may be attractive: "For me, Gaia is a religious as well as a scientific concept, and in both spheres it is manageable. ... God and Gaia, theology and science, even physics and biology are not separate but a single way of thought." But there's some serious work to be done to make these claims stick.

Still, Midgley writes perceptively — and beautifully — about many things. She understands the power of mathematical physics without needing to deny that there are also "social facts". Just as philosophers need to get the world right, so scientists equally need to know the philosophical and ethical arguments that Midgley rehearses — even if matters are less black and white than she sometimes pretends. But, in the end, it is the poetry, including the poetry of Midgley's

prose, that makes the book worth reading. Like her, readers will sometimes have wondered with John Keats:

*Do not all charms fly
At the mere touch of cold philosophy?*

Yet they will agree with eighteenth-century poet and physician Mark Akenside that there is beauty and poetry in even the most rigorous understanding of nature:

*Nor ever yet
The melting rainbow's vernal-tinctured
hues
To me have shone so pleasing, as when first
The hand of science pointed out the path
In which the sun-beams gleaming from
the west
Fall on the watery cloud.* ■

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Art in the plastic age

The Impact of Modern Paints

by Jo Crook & Tom Learner

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The realization of ideas in art depends on the technology available to the artist. The twentieth century's major technological contribution was the invention of 'synthetic' paints. Water-based polymer

solutions and emulsions overcame the limitations of slow-drying, expensive oil paints. Although synthetic paints were originally developed for the household market, artists soon began to experiment with the new technology.

Synthetic paints are basically plastics in water. Thus, they dry by fast evaporation (oils dry by slower oxidation), and because the base solvent is water, a wider range of soluble pigments is available, improving the range of colours. The composition of the paint can be fine-tuned to provide properties such as drip resistance. And synthetic paints can be used on anything from paper to aluminium.

The Impact of Modern Paints investigates how artists have exploited the new paint technology. Jo Crook and Tom Learner, art conservationists at London's Tate Gallery, consider 10 artists from the Tate collection, including Andy Warhol, Bridget Riley and David Hockney. Between the 1950s and 1970s these artists were pioneers of the new paints. The practice of their art frequently veers towards science, their experiments in what could be done with the new synthetics being perhaps as important as their contributions to the conceptual development of art.

So the stage is set for a fascinating first-hand account of how Roy Lichtenstein, John Hoyland, Hockney and others have taken advantage of synthetic paint technology. But, disappointingly, the book contains few insights. Crook and Learner seem oddly unenthusiastic about their subject, and the text is spoilt by some particularly banal quotes from the artists. Obvious technical tricks are too often described in inordinate detail. And some comparison between synthetic and 'traditional' oil techniques would have been interesting, if the purpose really is to assess the impact of the new technology.

Nevertheless, the book does contain a brief but clear layman's account of the science of modern paint, and there are many excellent reproductions. Obliquely lit detail shots give a perspective unavailable to the casual gallery visitor, allowing an appreciation of texture as well as colour. The glossary is useful, if idiosyncratic ('paint' is defined, 'gesso' isn't).

The links between modern art and modern materials science are many and tantalizing. I suspect there is an intriguing story waiting to be told — but one that this book only hints at. Unfortunately, although they dab in a few interesting details, the authors have neglected to prepare the canvas, let alone apply the undercoat. ■

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David Hockney's *A Bigger Splash*: the artist took advantage of new paint technology.