

Seeing sense

Annie Cattrell's sculptures of the five senses are on display at the Royal Institution in London.

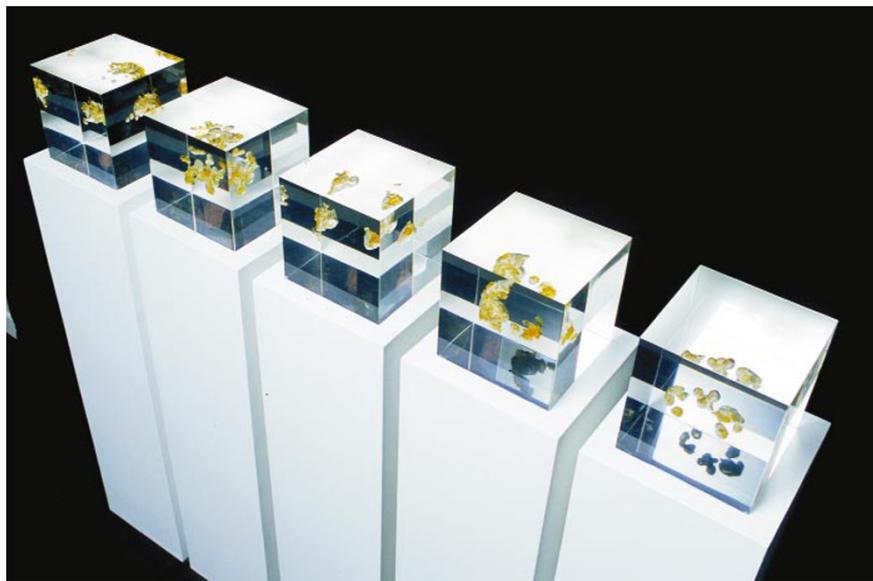
Martin Kemp

The mission of the Royal Institution, founded in 1799, focuses on the aspiration to "diffuse knowledge, and, through philosophical lectures and experiments, apply science for the common purposes of life". Visual demonstration has always been central to this aim, not least through the popular discourses delivered by Michael Faraday in the nineteenth century. Faraday was apprenticed to a book-binder before rising to become the greatest hands-on scientist of his generation.

Among the visual wonders that Faraday demonstrated at the Royal Institution were the first exhibited 'photogenic drawings' (early photographs) by William Henry Fox Talbot. Their rushed display in January 1839 was triggered by the startling French announcement at the Academy of Sciences two weeks earlier of Louis-Jacques-Mandé Daguerre's 'invention' of what came to be called photography.

Fittingly, the exhibition "From Within" by Annie Cattrell, the Royal Institution's artist in residence last year, includes photograms (direct exposures) in the manner of Talbot. She has made images of a sectioned human skull, created by exposing the skull and its cranial cap directly over photographic paper and flooding its interior with light from a handheld torch. The negative reversal inherent in these photograms eerily maps the contours and orifices of the cranium against a black substratum, and seems to reveal its cavernous interior as a radiant source of mental illumination. In the spirit of Faraday, Cattrell has also prepared a video of magnetized iron filings, ingenious visualizations in cut paper of frictional forces, and a small installation of images of water placed between the faces of cut diamonds and subjected to extreme pressures.

The brain itself is the subject of Cattrell's most sustained exploration of how abstract visualizations in science can be turned into tangible reality. Her set of cubic sculptures *The Five Senses* is the culmination of three years of intense research. Two of the sculptures were finished in time for the "Head On" exhibition at the Science Museum in London last year, and now all five are complete. They rework a long-standing iconographical theme, which proved particularly popular in prints from the Renaissance onwards.



In *The Five Senses*, Annie Cattrell explores the physical underpinnings of consciousness.

Among the texts that Cattrell studied was *The Human Brain* by Susan Greenfield, the Royal Institution's current director. Cattrell also discussed the work and collaborated with various brain scientists, including Steve Smith and Morten Kringelbach of the University of Oxford, and Mark Lythgoe of the Institute of Child Health in London, who granted her access to brain activity data generated by functional magnetic resonance imaging. The technique of rapid prototyping, courtesy of Californian company 3D Systems, translated the data into three-dimensional form.

Cattrell is seeking to grasp the "physicality of consciousness" by exploring the "delicate dialogue between the exterior world and our individual blueprint". She models this dialogue by casting in resin the morphological patterns of brain activity that correspond to the stimulation of each of the five senses. Neural activity is transformed into glistening apparitions that float in the cranial cavity like a kind of mental plasma. The refractive and reflective crystalline cubes, within which the skull is by implication inscribed, optically slice the golden configurations into shifting interplays of plans and elevations as the spectator moves past them.

In imaging the brain by casting and modelling, Cattrell stands in a long line going back to Leonardo da Vinci, who cast the ventricles of an ox brain, believing that the fluid in the ventricles was the medium within which the mental faculties operated. Of particular fascination to Cattrell are the almost unbelievably refined creations of the great wax modellers of the eighteenth and nineteenth centuries, including wax brains created by Joseph Towne that are in the Gordon Museum at Guy's Hospital, London. But whereas Towne's demonstrations can be characterized as pedagogy charged with beauty, Cattrell is in no sense working as an illustrator. Rather, as an artist she imaginatively translates the technical data, in all its awesome detail, into perceptible and beautiful forms that do full justice to the scientists' own excitement in creative visualization.

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Annie Cattrell's exhibition "From Within" can be seen at the Faraday Museum of the Royal Institution, London, until mid-September.

of hegemony', 'diffusion in the east' (which has nothing to do with gases), or 'brain drains and paperclip operations'. 'Standard model' discusses GUTs and TOEs but not body parts (TOEs being 'theories of everything' and GUTs referring to 'grand unified theories'). The value of the thematic listing is shown by finding 'tacit knowledge' as a sub-heading of 'Epistemology and methodology', which, in turn, is an entry under 'The body of scientific knowledge'.

This volume is the culmination of much scholarship and enormous effort (one rare error is a reference to the "noble" prize in the preface). The result is delightful to browse, but it is difficult to see how the book could be used systematically. It is of no help, for example, in tracing the history of anaesthesia. Unintentional insight into the planned use of the book is perhaps given by repeated phrases such as "depicts for a general audience", indicating an emphasis more on seeing and

hearing than on reading. Indeed, I cannot escape a feeling that the time for print publication of such texts is passing. Electronic publication would provide easier searching and updating, and could more easily accommodate changing fashions. In short, this is one of those useful books for which it may be hard to find a use. ■

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