

with animals. In conservation biology, we should err on the side of caution when forced to make recommendations based on imperfect information. He makes a thoughtful case that because we cannot be sure that animals are not conscious, emotional individuals, it is wise to treat them with dignity and tread lightly. We need to be reminded of this point.

In short, this is a thought-provoking book that forces the reader to consider issues that are important but are often left at the fringes of our work. I found a lot with which I agreed, and a lot with which I disagreed. Examples of each might be revealing.

First, two disagreements. Bekoff argues that "classical definitions cannot be given for key terms in cognitive ethology, but it is not neces-

sary to give them in order to have a viable field of research". On this issue, I agree with Donald Griffin, who in his book *The Question of Animal Awareness* (Rockefeller University Press, 1976) took pains to state at the outset "this is what I mean by mental experiences" and went on to define 'mind', 'awareness', 'intention' and 'consciousness'. In my view, one cannot test a falsifiable hypothesis that a species has intention without first clearly defining what intention is. Bekoff also supports Stephen Jay Gould's assertion that "the plural of anecdote is data". I agree that anecdotes can offer important insights, but anecdotes are collected and disseminated selectively, whereas data are collected systematically or randomly. The plural of anecdote is not 'data', but 'essay'.

And here are two agreements. "We will never learn about animal morality if we close the door on the possibility that it exists. It is still far too early to draw the conclusion that human morality is different in kind from animal morality and walk away in victory." And: "While ignorance may be bliss, ignoring questions about our ethical responsibilities to animals compromises not only their lives and our integrity, but also the quality of scientific research". Marc Bekoff, by forcing us to consider animal minds and our ethical obligations to animals, is pushing the field of behaviour in interesting directions.

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A ship, gradually lowering sail

The Long History of Old Age

edited by Pat Thane

Thames & Hudson/Oxford University Press: 2005. 320 pp. £25/\$49.95

Douwe Draaisma

Even when advanced in years, Lady Sarah Cowper (1644–1720) was still a keen observer, especially of other women. After meeting with "Lady W." she confided to her diary that W. had "rent her face with painting. She is at least as old as I am and hugely infirm yet affects the follies and airs of youth, displays her breasts and ears, adorns both with sparkling gems while her eyes look dead, skin rivell'd, cheeks sunk, shaking head, trembling hands." Lady Sarah strongly felt that one should act one's age. She herself was perhaps 'elderly', but definitely not 'old'. She admitted to being old only when she was in her mid-sixties, and then it was related to diminishing eyesight and the loss of her faculties for reading and writing, rather than to her age as such.

Lady Sarah's observations are discussed in *The Long History of Old Age*, a delightfully written and illustrated monograph edited by Pat Thane, who has herself a long history of writing on old age. Defining 'old' in terms of infirmities and physical weakness, as Lady Sarah did, turns old age into a category with diffuse boundaries — certainly more diffuse than they are today, when in many Western countries 65 is the age of mandatory retirement. For most of the history of old age, pensions or annuities never coincided with retirement from work, and most people laboured as long as their health permitted.

The team of historians headed by Thane sets the record straight on many popular conceptions of old age. It is not true that before the twentieth century hardly anyone reached old age. Life expectancy was considerably lower, but this was due to high infant and child mortality rates. Those who reached adulthood had a good chance of living into



The downward path: a seventeenth-century view of a man's progression through life.

their sixties. It is equally untrue that older people are less respected today than they used to be, or that it was common for children to welcome their ageing, sickly parents into their own household.

In her introductory chapter, Thane provides evidence that the belief that the elderly were treated with more respect in the past is itself very old. As for two or three generations living together in one happy household, demographic statistics tell a grimmer tale. In the ancient Greek and Roman worlds, a ten-year-old would have only a 50% chance of having any of his grandparents alive. And if you lived to be 60 in the eighteenth century, you had only a one-in-three chance of having at least one surviving child. Given the average age of marriage and the infant mortality rate in the

nineteenth century, a three-generation family was probably rarer than a four-generation family today. When parents lived with the family of their children, it was often for reasons of need and poverty. Then, as today, the elderly liked to keep their independence as long as was reasonably possible.

What this book does superbly is the wedding of demographic information, scarce as this often is, to evidence taken from the visual arts, literature, philosophy and personal documents such as letters and diaries. Some of the finest parts of the story are in the illustrations. The captions are perceptive, brief essays in themselves, that are obviously written by an (unspecified) author with an eye trained in the history of art.

Considering the span — from antiquity to

the twentieth century — and the diversity of sources, it is only natural that the overall image of old age is one of variety. In the fourteenth century, when Dante compared the final stage of life with a ship gradually lowering sail before entering harbour — an image of tranquillity and acceptance — miniaturists painted old people to symbolize vices such as pride, sloth and avarice, reserving elegant maidens for the virtues of mercy and charity. Old and ugly were often felt to be natural companions, as were young and beautiful. What strikes me in the various depictions of old age, both literary and visual, is the prevalence of mockery and hostility. The old were sometimes viewed as experienced and wise, offering advice superior to the “beardless counsel” of the young, but more often as distrustful, garrulous,

obscene (if impotent) and miserly, sometimes all at once.

For a long time most old people were poor as well. In particular, day labourers and piece-workers earned less and less as their strength diminished. Often they were dealt the more menial jobs. There was no such thing as official demotion; nature took care of that by declining physical power. Under these conditions it makes sense that the grandparent spoiling the child only appears at the end of the seventeenth century, and then only in the leisured classes.

In this long history of old age the second half of the twentieth century can be seen to bring several paradoxes. Today there are many professions where the physical reasons for retirement have disappeared, yet retirement is still mandatory.

‘Old’ bodies are healthier and better conserved than ever — a 70-year-old looks perhaps like someone aged 60 at the beginning of the twentieth century — yet many older people seek cosmetic surgery to look younger or engage in activities associated with youth. It is still as if something isn't quite right about being old and acting your age. Perhaps this resistance to ageing shows the tenacity of age-old stereotypes equating ‘old’ with ‘obsolete’ and ‘infirm’. What's worse, these stereotypes may also reflect, as Lady Sarah Cowper's comments on Lady W. testify, the opinions of those who are old themselves — well, elderly. ■

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Nuclear-powered image

A short film playing with concepts of quantum physics makes it big.

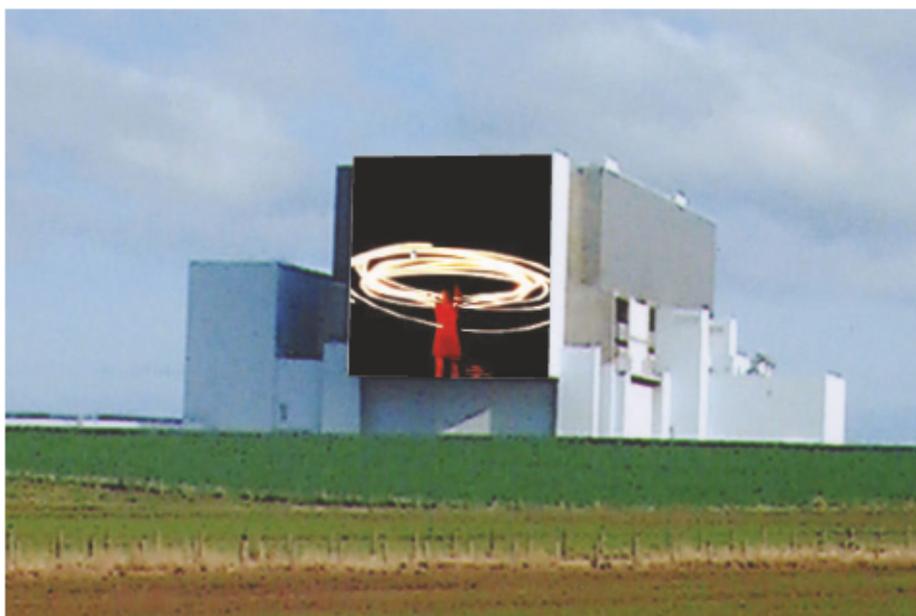
Alison Abbott

In Ken McMullen's six-minute video loop *Lumen de Lumine*, filmed in an abandoned particle-accelerator tunnel at CERN, the European particle-physics laboratory in Geneva, a dancer in a cadmium-red dress swings a light bulb above her head, slowly letting out its flex.

At first she controls the bulb's movement, but as the flex lengthens, the bulb's increasing momentum is transferred to her body, which sways rhythmically to maintain balance. The bulb is the only source of light in the underground cavern, and when it moves behind her the woman is cast from light into darkness. The loop closes when she draws in the flex, puts down the bulb and the light is switched off.

On 9 February, in a preview of what it is hoped will be Europe's largest ever public art installation, the lonely figure will be projected on to the giant wall of the Torness nuclear power station in Scotland. The loop will play continuously through the night. The promoter, Scottish arts impresario Ricky DeMarco, is looking for funding for a year-long run.

The film was created for the ‘Signatures of the Invisible’ exhibition in 2000, consisting of artworks produced in a collaboration between CERN physicists and European artists (see *Nature* **410**, 414; 2001). It has been remastered for this new setting, which adds its own dimensions to McMullen's reflections on quantum physics.



K. MCMULLEN

As the light shuts off at the end of the loop, the woman whispers “Sein oder nicht sein, das ist die Frage”. The opening line of Hamlet's most famous soliloquy is given in German, to acknowledge the German scientists who developed quantum theory. The film's seemingly simple balletic sequence mirrors the contradictory elements of the quantum world, where the precise position of subatomic particles can never be known for certain. Does the figure dance in the light or in the dark? Is her dress red or black? Neither, both. The nuclear power station represents another duality by reminding us that we can split the atom for good, or for evil.

Torness power station is positioned within sight of the main road and rail links between

Edinburgh and London, used by some 16 million travellers each year. The travellers will never see the same image twice. Its clarity will change according to the weather and light conditions, and the image will also depend on the position from which it is viewed — a reference to Einstein's relativity theory, where length and time change according to speed.

A discussion of some of the issues of ‘Signatures of the Invisible’ between artist and poet John Berger and CERN physicists is available on Ken McMullen's DVD *Art, Poetry and Particle Physics*, part of his *Pioneers in Art and Science* series.

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