Science in culture

A hobbit-forming image

Peter Schouten's painting of *Homo floresiensis*.

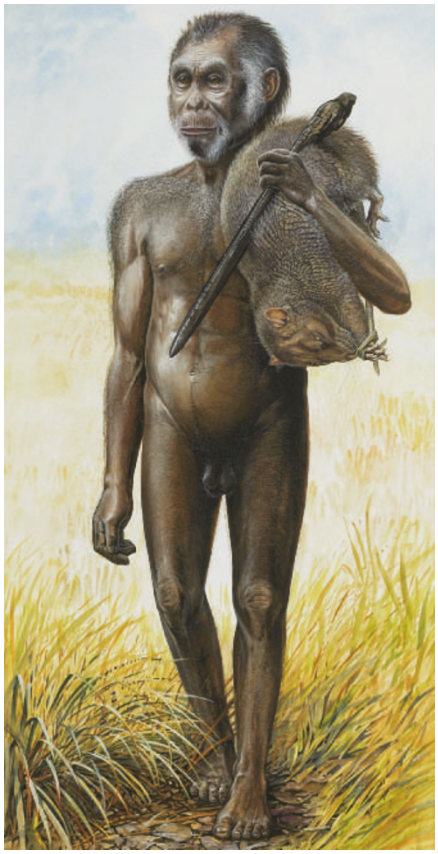
Martin Kemp

The 'wild man of the woods' (*Homo silvestris*) regularly featured in Renaissance and later illustrations of 'primitive men'. He tended be rather hairy, but less so than a typical ape. Before Darwin's time, these primitive men did not routinely exhibit ape-like features; they were basically like us, only ruder in aspect.

By contrast, post-darwinian 'missing links' have been portrayed as just that, exhibiting bodily and facial features stranded somewhere between contemporary apes and modern humans. Darwinian 'ape-men' are almost invariably portrayed as miserable and destitute, living in grinding discomfort, clearly waiting desperately for evolution to happen — even if not in their lifetimes.

These portrayals of prehistoric humans are now joined by the image of *Homo floresiensis* painted by the Australian artist Peter Schouten, which achieved front-page coverage in international newspapers towards the end of October. 'Lifelike' reconstructions meet a basic human instinct to see what someone looked like, whether it be William Shakespeare or a Stone Age labourer. Such images flourish in the popular domain but tend to be denigrated within science, although few palaeontologists can ultimately resist the temptation to visualize extinct creatures in living flesh and blood.

Scientists will readily recognize that Schouten, like any artist relying largely on bones, had to make some key assumptions, not least with respect to fleshy and surface features, including secondary sexual characteristics. For a historian of images, a series of questions arise about the 'character' with which the envisaged figure is endowed. We cannot portray any figure without giving it some kind of definite persona, however subjectively its characteristics may be read by different spectators. The features that speak most powerfully to us — the eyes, nose and mouth — are among the most speculative.



P. SCHOUTEN

Schouten's diminutive man is hairier than a modern human. He is male — early women rarely appear outside a family or tribal context. He returns from the hunt, with tethered trophy and multi-purpose digging stick; wooden weapons have long since been standard equipment for hairy men. We almost never show primitive men carrying bunches of fruit or doing anything less than macho. He does not quite share the standard look of down-and-out melancholy, but seems to manifest a certain stoic acceptance of his condition. In any event, he does not look like a bundle of fun.

For the historian, the circumstances behind the production and use of such an image are integral to understanding both why it looks the way it does and how it is viewed. Schouten has specialized in such reconstructions, having illustrated *A Gap in Nature* by Tim Flannery, director of the South Australian Museum. Flannery suggested to Richard 'Bert' Roberts of the University of Wollongong that Schouten be asked to produce a picture of Flores Man. The resulting painting was purchased jointly by the university and the National Geographic Society, and the society then acquired the image rights (their television channel will air a programme on the discovery early next year). The image was released to the public as soon as the original scientific papers appeared in *Nature* (**431,** 1043–1046, 1055–1061, 1087–1091; 2004) on 28 October.

The illustrations published in *Nature* remained impeccably within what would be widely accepted as 'scientific': an evolutionary tree in two formats; graphs of relative brain and body sizes and of relative skeletal dimensions; sets of osteological photographs (one on the cover); and a computer-generated section. The main article by Peter Brown and co-workers is rigorously sober in its cataloguing of the skeletal remains, with judicious extrapolations about the hominin's diminutive stature.

But the battered skull and bony fragments do not stick in our memory in the way that Schouten's skilful painting does. The process of discovery and publication has thrown up an instant icon that will be very hard to dislodge. We can change our mind about recorded facts, but a potent image, for good or for ill, tends to become indelible.

Martin Kemp is professor of the history of art at the University of Oxford, Oxford OX1 1PT, UK, and co-director of Wallace Kemp Artakt.

Burning questions

Tending Fire: Coping with America's Wildland Fires
by Stephen J. Pyne
Shearwater: 2004. 226 pp. $25

Ross Bradstock

Major wildland fires are spectacular to look at, and the drama continues into their political and social fallout. It is a truism that fires shape the nature of ecosystems and biodiversity, but they can also shape human institutions and values. This is the central thesis of Stephen Pyne's latest book, *Tending Fire*, in which he attempts to get to grips with fire not only as a biophysical problem, but also as a socio-political one.

Pyne argues that the United States' problem with fires is symptomatic of a deeper clash over the values that society places on its wildlands. The problem is exacerbated because the public institutions traditionally involved in managing fires are not capable of dealing with this debate. Part of Pyne's solution is a call for a greater input from the humanities into the study of wildland fires. An understanding of the history of fire policy and management, and of the psychology and art of fire, among other things, could help those responsible for fire management to function with more self-awareness, he argues.

The public ownership of wildlands will endure, Pyne surmises, because there is an implicit consensus about their value as ecosystems that have been spared the worst ravages of exploitation. But the debate will continue about the appropriate level of intervention and institutional arrangements needed to manage fire. The monolithic control of fire policy and management on public lands by "imperial" institutions (such as the US Department of Agriculture's Forest Service) is starting to unravel. Pyne foresees an era of cooperative devolution, in which localized decision-making and hands-on action is shared among public and private players. He highlights as a model the role of the Nature Conservancy in the United States, which is both an active manager and a community-level broker of fire management ideas and solutions.

Tending Fire is a condensation of general themes and arguments — a summation of Pyne's larger works. It focuses on the great

R. FRANCIS/AP

California burning: US wildfire policy is caught up in a greater clash over the value of wildlands.

public wildlands of the western United States, which are the scene of catastrophic wildfires wrought in equal part by nature and by the putative failings of the people charged with their management. The "pyric transition" — the switch from 'natural' biomass fire to the industrial use of fossil fuels — is briefly recapitulated. Pyne recounts its progression from "free-running" fire, experienced by indigenous peoples, to European colonial exploitation (including overgrazing, clearing, logging and mining), the creation of reserves, and the advent of bureaucratic command and control.

The core of the book is an account of the four fundamental pillars of fire management: suppression, 'let burn', prescribed fire, and fuel treatment. Pyne counsels that relying on any one alone is doomed to failure, as history has shown. They all have their place in solving the fire problem, but in what particular mix? Beyond noting that different mixes are likely to be required in different ecosystems at different times and places, Pyne offers no comprehensive solution.

His vision, focused on ponderosa pine forests, is heavily qualified. Forceful arguments, such as the need for mechanical thinning and the re-introduction of surface fires, are tempered by caveats. For example, wildfires are inevitable and serve useful ecological purposes, and anyway, the best solution depends on the locality, as crown fires may be required in chaparral and high-altitude conifer forests. At times the juxtaposition of solutions is breathtaking: devolution of planning responsibility to the community on one hand, with increased government regulation of urban design on the other. Pyne does, however, paint a slick picture of climate change and the consequences of burning fossil fuels, and of the international pressures that may be brought to bear on US fire management to reduce emissions.

Ultimately, *Tending Fire* succeeds as a visceral and widely accessible account of the problem of wildfires. Pyne does not solve it but lays it out in all its maddening, self-contradictory splendour. His attempts to sketch a way forward, although useful, amplify the paradoxes and the choices available. Wisely, he counsels that, at best, both art and science can illuminate the consequences of differing choices but are not surrogates for decision-making.

The book concludes with a call for a biological theory of fire. This is a noble effort but the sketch offered is disappointing. The nostrum that fire is a by-product of life (biomass) is useful, but falls short. Fire is frustrating because we do not properly understand how it works at the spatial and temporal scales at which we confront it. Physical and ecological knowledge is shackled within micro-scale, reductionist paradigms that are inadequate for understanding fire and its consequences on a larger scale. Coping with fire is about understanding and manipulating forms of heterogeneity and biophysical feedbacks that we have barely grasped and that are not amenable to 'bottom-up' scientific enquiry. It is about recognizing that fire poses both risks and benefits at several levels. Compromises and trade-offs must be engineered accordingly, but the functional knowledge required for effective management is lacking. Fire is a transcendent phenomenon in both biophysical and socio-political senses. *Tending Fire* contributes to our awareness of this, but there is a long road ahead. ■

Ross Bradstock is at the Bushfire Co-operative Research Centre and the Biodiversity Conservation Science Section, New South Wales Department of Environment and Conservation, Box 1967, Hurstville, NSW 2220, Australia.

New in paperback

Life on a Young Planet: The First Three Billion Years of Evolution on Earth
by Andrew Knoll
Princeton University Press, £12.50, $18.95
"Expresses better than most the bumptious vitality and sheer fun of open-minded research."
Stephan Bengston, *Nature* **423,** 481 (2003).

Eating Apes
by Dale Peterson
University of California Press, £15.95, $15.95
An account of efforts to publicize the trade in wild meat, "now perceived as one of the most important threats to global biodiversity."
Guy Cowlishaw, *Nature* **424,** 131 (2003).

The Discovery of Global Warming
by Spencer Weart
Harvard University Press, £9.95, $14.94, €13.90
"Up-to-date, balanced historically, beautifully written, and short and to the point."
Steven Schneider, *Nature* **427,** 197 (2004).

Memory from A to Z
by Yadin Dudai
Oxford University Press, £19.95, $39.50
"An engaging, informative and sometimes playful collection of essays"
Larry Squire, *Nature* **423,** 119 (2003).

The Man Who Changed Everything: The Life of James Clerk Maxwell
by Basil Mahon
Wiley, £8.99, $14.95, €13.50
"Not merely an absorbing account of Maxwell's life but also an explanation of why his work is at the foundation of the modern world."
John Maddox, *Nature* **425,** 765 (2003).

The Particle Odyssey: A Journey to the Heart of Matter
by Frank Close, Michael Marten and Christine Sutton
Oxford University Press, £17.95, $25
"A beautifully illustrated and eminently readable introduction to high-energy physics"
Ken Peach, *Nature* **419,** 879 (2002).

DNA: The Secret of Life
by James D. Watson with Andrew Berry
Knopf, $24.95
"More inclusive and better reading than similar attempts by science journalists."
Maxine Singer, *Nature* **422,** 809 (2003).

Correction

In his review of Graeme K. Hunter's book *Light is a Messenger* (*Nature* **431,** 1037–1038; 2004), Kenneth C. Holmes stated that there was an error in Figure 0.2 in the book. In fact, this figure is intended to show a polychromatic, rather than a monochromatic, diffraction experiment, in which case the Bragg reflections are correctly displayed.