

## EXHIBITION

## Geological fireworks

Neapolitan artists used to provide pictorial souvenirs for the eighteenth-century grand tourists who trekked up Mount Vesuvius to peer into its smouldering crater. They depicted its eruptions, usually against a night sky to heighten the dramatic effects of glowing, molten lava and trajectories of fiery sparks.

Henry Johnston-Lavis (1856–1914), while working as a doctor in Italy, collected such paintings and prints of historic eruptions and earthquakes, as well as rare books, including William Hamilton's *Campi Phlegraei* (1776–79), an account of his observations on the 'fields of fire' near Naples. Johnston-Lavis also collected albumen prints of photographs, and geological specimens.

After studying both medicine and geology at University College London (UCL), Johnston-Lavis became an authority on the volcanoes of southern Italy. He published the first geological map of Mount Vesuvius in 1891 and was appointed professor of volcanology at the Royal University of Naples in 1893. His observations have aided the reconstruction of past eruptions, and his knowledge of how their nature evolved over time has contributed to the modern study of geological hazards.

An exhibition, *Violent Earth*, drawn from Johnston-Lavis' collection of volcanological material, which he bequeathed to UCL, can be seen at UCL's Strang Print Room on weekday afternoons until 28 April. **C.M.**



UCL ART COLLECTIONS

## Living with infection

## Diseases and Human Evolution

by Ethne Barnes

University of New Mexico Press: 2005.

484 pp. \$29.95

## Tony McMichael

The widespread resurgence of infectious diseases since the 1970s has stimulated many books about this ancient scourge. Following the lightning strike of HIV/AIDS in the early 1980s and its subsequent spreading wildfires, our sensitivity to threats from the realm of infectious disease has been reawakened. The many recent strikes, mostly from viral respiratory diseases, attest to the rising activity of ever-opportunistic microbes in an interconnected and rapidly changing modern world.

This book by the palaeopathologist Ethne Barnes traces the long history of human infectious diseases. Ever since humans first settled in villages, a succession of microbes, mostly animal-derived, have adapted to this auspicious medium. Some have become endemic infections; others make occasional forays from animal sources and may trigger devastating human epidemics. Patterns of infectious disease have changed kaleidoscopically as our forebears' culture evolved from agrarianism to nineteenth-century industrialization. Today we generate ecological niches for microbes through intense food production, greater human mobility, crowded peri-urban poverty and modern medical manoeuvres, such as transfusion and transplantation.

Barnes has digested a voluminous scientific literature and gives an orderly, well-written and comprehensive account of the topic. For a succession of types of infectious disease, she discusses origins and sources, genetic adaptations (of both microbe and human), microbial biology, population-health impacts, clinical features and, in some cases, control policies. The 23 chapters are approximately chronological, encompassing the parasites that first travelled with post-australopithecine hunter-gatherers, the revolution in human-microbial relations ushered in by farming and the consequent rise of various human-adapted infections (malaria, schistosomiasis, trypanosomiasis, tuberculosis, leprosy). Then there's the amplification of infectious diseases by urbanization and, in recent centuries, their spread by seafaring empires. Dramatic epidemics have occurred along the way — Europe, for example, has suffered from the bubonic plague (especially the fourteenth-century Black Death) and syphilis. In the crowded squalor of early industrialization, whole populations, and especially the urban poor, were ravaged by smallpox, cholera, tuberculosis, measles and other infectious diseases. In today's world, influenza is going global; many new infectious diseases are emerging, including HIV/AIDS and severe acute respiratory syndrome (SARS); and surprises have arisen such as Britain's mad cow disease and its human version, variant Creutzfeldt-Jakob disease.

The word 'disease' in the book title is some-

what misleading. Barnes accords little space to non-infectious diseases and, even then, the brief discussions of asthma and other immune disorders, heart disease, diabetes and various cancers tend to highlight the possible contributions of infectious agents. Indeed, the writing here is less enthusiastic and engaged than it is in the author's favoured microbial heartland. Certainly, until early last century the great bulk of (non-violent) deaths everywhere were due to infections and starvation. But today well over half the world's deaths are due to non-infectious diseases. And there is an expanding literature on how the biological legacy of human evolution predisposes us to many of those non-infectious diseases, especially as the living conditions in today's societies deviate ever further from the formative conditions of pre-agrarian life. Maybe there is another book to be written, to round out the story.

The author invokes the discomfiting military idiom that permeates much of the writing about this topic: chapter 2 is titled 'The war between microbes and men'. This language was adopted early in the basic public-health models of infectious disease — in which researchers estimate 'attack rates' and talk about targets, microbial enemies and defence mechanisms. Modern molecular biology has embellished the idiom with notions of molecular missiles, antigenic camouflage and so on. However, this 'us against them' perspective can distort our understanding of the evolutionary basis and ecological complexity of infectious-disease transmission and virulence. In the rapidly changing world we live in today, we need a greater understanding if we are to lessen, proactively, the risks of new infectious diseases arising. Defensive reactivity —

although it is necessary — will not be enough.

There is much interesting detail in this book. The opening chapter sets the stage well, discussing how the intertwined stories of cultural and genetic evolution are fundamental to the emergence and spread of infectious diseases. The book's narrative would have been enriched by a more explicit exploration of these unifying threads throughout. All too briefly, and therefore superficially, the final

several pages consider the high-risk path that we humans are now following. In a "crowded world" that is "out of order", more attention must be paid to how infectious disease may cut swaths through increasingly vulnerable populations in a world of rising microbial mobility.

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## Unearthing religion

### Inside the Neolithic Mind: Consciousness, Cosmos and the Realm of the Gods

by David Lewis-Williams & David Pearce  
Thames & Hudson: 2005. 320 pp. £18.95

#### Nicholas J. Conard

David Lewis-Williams, professor emeritus at the University of the Witwatersrand in South Africa and member of its Rock Art Research Institute, shows no sign of losing the desire to confront his archaeological colleagues with new and controversial ideas.

If his earlier book *The Mind in the Cave* (Thames & Hudson, 2002) rocked the boat of mainstream archaeological science with its innovative and insightful analysis of the origins of art and the replacement of Neanderthals by modern humans, then his new one, *Inside the Neolithic Mind*, co-written with David Pearce, is nothing less than an attempt to capsize the vessel of mainstream archaeology altogether.

*The Mind in the Cave* contained a fair amount of marxist theory, and opened with a quotation from Karl Marx. The opening chapter of *Inside the Neolithic Mind* also states broad support for marxist approaches and the work to this end by V. G. Childe, but focuses instead on the nature of human consciousness. It presents Coleridge's opium-induced poem

*Kubla Khan* as an example of a form of consciousness analogous to that experienced by the makers of the earliest monumental architecture at sites including the religious centre of Göbekli Tepe in Turkey and the chamber tombs of Knowth and Newgrange in Ireland.

This discussion of Coleridge's poem is just the start of a literary and scientific tour de force that touches on the works of Dante, Jean-Jacques Rousseau, Aristotle, St Paul, Thomas Aquinas, Rudyard Kipling and other figures who are not the standard fare of scientific archaeology. Many academic and field archaeologists will retrench and find polemic arguments against the authors' unconventional ideas and methods. But I think Lewis-Williams and Pearce have done the scientific community a service by continuing to push the frontiers of archaeological knowledge.

Building on detailed discussions of the neurophysiology and cognitive science of altered and heightened states of consciousness, combined with diverse archaeological and ethnographic evidence, Lewis-Williams and Pearce lay the groundwork for their analysis. Given the multilayered complexity of the book, it is best to turn to the authors' words. Concerning their methods, they argue that their neurological approach "is thus in no way deterministic: all the stages and experiences of consciousness

that we distinguish are mediated by culture". They go on to state that "it is impossible to discuss ancient religions and cosmologies in anything but a superficial, periphrastic way without recognizing the input of the human nervous system as it daily produces varied states of consciousness".

The authors define religion broadly to include experience, belief and practice. Without rejecting a position based on Marxist theory, they argue that religion was the driving force behind what Childe referred to as the Neolithic revolution. According to Lewis-Williams and Pearce, "It was religious experience that gave people the power to command the construction of megalithic monuments and to sacrifice animals and very probably human beings in order to keep the cosmos in good order." In other words, animal and human sacrifices "kept the elite in power". The authors urge archaeologists to consider "new types of explanation that do not assume humankind's impotence in the face of environment".

Lewis-Williams and Pearce argue that researchers can use scientific knowledge about consciousness to solve questions in archaeology. They also suggest that mainstream studies of technology and ecological adaptations ignore key variables that drive cultural change, including religion.

Although I accept many of the authors' basic premises, I find it disconcerting that their explanations are not readily refutable. Or, if they are, the authors do not give us clear guidelines on how their hypotheses and interpretations can be tested. This issue also needs to be addressed, particularly with regard to Lewis-Williams' influential work on shamanism.

The authors go further, arguing that their work can be used as a framework in which to analyse current belief in supernatural beings, whether in the form of Christian, Islamic or other kinds of fundamentalism. In this sense they no doubt share my dismay at polls indicating that more than half the population of the United States, including the president, do not accept the validity of evolutionary theory. They comment: "If an American president announces that his decisions are guided by God, alarm bells start ringing." Clearly the authors see their study of Neolithic religion as relevant in the context of today's world.

Like *The Mind in the Cave*, this well produced and finely illustrated book will be of interest to all archaeologists who think that the events of the Stone Age cannot be understood solely by the study of technology, environmental change and calorie counting of the behavioural-ecological school. Most colleagues will not change their research strategies to emulate those presented in *Inside the Neolithic Mind*. But the smart ones will pause a little longer before dismissing the archaeology of religion. ■

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Can neurological studies shed light on the building of Neolithic religious centres such as Göbekli Tepe?