



The Colosseum in Rome: a much-needed €25-million conservation project is set to begin next month.

CONSERVATION

Shoring up the wonders

Forty years on from UNESCO's world heritage convention, **Alison Abbott** contemplates the state of Italy's vast legacy.

Even in the brightest sunshine, Mount Vesuvius casts a threatening shadow over Naples in southern Italy. Residents live in fear of the volcano, whose murderous eruption in AD 79 propelled lava and ash over surrounding towns, including Pompeii and Herculaneum, burying them.

For centuries, the ancient towns remained safely sealed from the elements; they were rediscovered only in the eighteenth century. Archaeological excavations since then have revealed much about life in Roman times, but Pompeii in particular dominates the public's imagination. The 66-hectare site, two-thirds of which has been excavated, receives more than 2 million visitors a year. Many Neapolitans make their living thanks to the tourist industry created by the catastrophe.

But a new shadow has fallen on the sites. The collapse of some structures during the past few years — including Pompeii's Schola Armaturarum or 'House of the Gladiators' in November 2010 — has raised questions

about whether Italy is taking good enough care of its considerable cultural heritage. Concerns have been inflamed by a well-publicized series of calamities, small and large, at several other sites in Italy, including stones falling from the walls of the Colosseum a year ago.

Italy has the largest number of entries of any country on the World Heritage List, which was created on 16 November 1972 under the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage. Along with Italy's place on the list comes moral pressure to safeguard its heritage — artefacts, artworks and architectures from the Etruscan and Roman periods, through the Renaissance and up to the twentieth-century dictatorship of Mussolini, which put an end to Italian glory. Minor amphitheatres in remote towns like Cassino and specialized scientific collections such as the University of Pavia's eccentric hoard of pathological specimens are considered no

less important than better-known items.

It is often forgotten just how much Italy is doing right where its heritage is concerned. Many important sites and artworks are in fine shape — for example, the painstakingly restored *Last Supper* by Leonardo da Vinci in Milan. Between 1977 and 1999, under the guidance of Pinin Brambilla Barcilon, conservators used techniques such as chemical analysis of different layers of the fresco in microscopic core samples and infrared reflectoscopy to see below the surface of the fresco without harming it. Indeed, Italy has several world-class conservation and restoration institutes, including the International Centre for the Study of the Preservation and Restoration of Cultural Property in Rome and the Opificio delle Pietre Dure in Florence.

Yet political support for culture in Italy dwindled from the 1980s onwards, and funds continue to shrink alarmingly. Retiring staff working at cultural heritage sites are not replaced. The proportion of the state budget dedicated to culture shrank from 0.39% in 2000 (more than €2 billion, or US\$2.6 billion) to 0.19% in 2011 (less than €1.5 billion).

The consequences are evident at the Vesuvius archaeological sites. Any city will quickly deteriorate if its roofs are not fixed and its drains not cleared. Over the decades, water from below and above has caused salts to leach through walls, destabilizing them, damaging mosaics and destroying frescos.

The problems are as much managerial as financial. Pompeii acquired substantial subsidies through the European Union (EU) Structural Funds in the 1980s and 1990s. But instead of using those to conserve the exposed remains, the superintendency embarked on glamorous new excavation work to impress politicians. This went so badly that, at one point, the EU suspended payment.

In 1997, just 16 out of the Pompeii superintendency's 711 staff were archaeologists, architects and art historians; in the era of computers, 34 were typists. Successive governments went on to shamelessly ignore Pompeii's autonomy. The 2006 government siphoned off €30 million of Pompeii's income for spending elsewhere. In 2008, the government declared a one-year state of emergency for the site, later extended by a further year.

Responsibility for all aspects of cultural heritage in Italy is centralized within the ministry of culture, whose regional offices, called superintendencies, mediate local needs and prevent unauthorized activities.

This system protects heritage from crass development, but can be damagingly slow in operation. Moreover, staff at all sites — from

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archeologists to ticket collectors — are government employees with jobs for life. The inflexibilities make long-term planning almost impossible.

During the past decade or so, successive governments have experimented with new approaches to funding conservation, with some clear successes. The Egyptian Museum in Turin has, since 2005, been managed by a private foundation. This has renovated and modernized the museum, to international acclaim. And shoe magnate Diego Della Valle is paying €25 million for urgently needed conservation work on Rome's Colosseum that is being directed by the ministry. In return, he gets exclusive rights to use the image of the edifice to promote his products for 15 years. Alarmed academics have tried to equate such activities with privatization. But the heritage itself remains firmly in the possession of the state, which retains full power to control conservation or restoration projects.

Now the Pompeii superintendency has a further €105 million of EU structural funds to spend on securing its site, efficiently and effectively, under stern oversight — and within just three years. This will be a challenge, although the project acquired a further 20 or so architects and archaeologists this year.

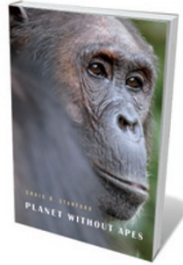
Herculaneum, fortunately, won the support of philanthropist David W. Packard, son of the co-founder of the Hewlett-Packard information-technology company. His Packard Humanities Institute in Los Altos, California, has been running the Herculaneum Conservation Project in partnership with the superintendency and the British School at Rome for the past 11 years. This international, interdisciplinary team of archaeologists, architects and conservationists do unglamorous practical conservation work. This could be mending the ancient drainage networks, repairing roof coverings or driving out the pigeons whose voluminous, acidic excreta destroy frescos. The work is mostly low-tech — for example, the best solution they've found for the pigeons is to encourage falconers to visit the site regularly.

The Herculaneum project has inspired at least one other consortium of foreign scientists to bid to help to conserve and restore some frescoed houses in Pompeii, working in partnership with the Italians.

Such respectful international support for Italy's cultural heritage is fundamental. But the country will have to help itself by relaxing outdated labour laws and modernizing management of its cultural heritage systematically. Italy can't do much about Vesuvius' shadow. It can do a lot about the political shadows it casts on itself. ■ [SEE EDITORIAL P.302](#)

Alison Abbott is Nature's senior European correspondent.

Books in brief



Planet Without Apes

Craig B. Stanford HARVARD UNIV. PRESS 272 pp. \$25.95 (2012)
Will electronic gadgetry bring down the great apes? The link may seem surreal, but in this study of the plight of gorillas, chimpanzees, orangutans and bonobos, primatologist Craig Stanford reveals how mining coltan, a mineral used in electronics, destroys primate habitats and fuels the illegal bushmeat trade. In his wide-ranging call for action, Stanford — co-director of the Jane Goodall Research Center in Los Angeles, California — lays out the critical threats, arguing that humanity's closest cousins are viewed as savage 'others' and subjected to a genocidal urge last seen in the colonial era.



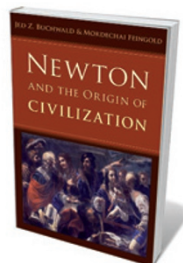
Jefferson's Shadow: The Story of His Science

Keith Thomson YALE UNIV. PRESS 322 pp. \$30 (2012)
Architect, philosopher, critic of slavery, slave-owner: the contradictions of American 'founding father' Thomas Jefferson are well known. That he was a scientist is not. Natural historian Keith Thomson redresses the balance in this finely wrought biography. Immersed in the work of Isaac Newton and Francis Bacon, Jefferson was arguably the most clued-up American naturalist of his time. This scintillating intellectual traced climate fluctuations, delighted in data tables, pored over fossils and helped to introduce the nation to palaeontology, geography, scientific archaeology and climatology.



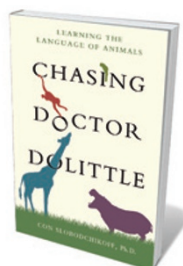
A Single Sky: How an International Community Forged the Science of Radio Astronomy

David P. D. Munns MIT PRESS 264 pp. \$34 (2012)
During the past 60 years, radio technology has transformed astronomy from a venerable practice reliant on visible light to an astounding new window on the cosmos. As historian David Munns reveals, it was all down to an international network of scientists who defied the rivalries of the cold war to ensure collaborative exploration of a 'single sky'. This remarkable science, forged by American, British, Australian and Dutch radio astronomers, ultimately led to the mapping of the Milky Way.



Newton and the Origin of Civilization

Jed Z. Buchwald and Mordechai Feingold PRINCETON UNIV. PRESS 544 pp. £34.95, \$49.50 (2012)
Isaac Newton spent most of his 84 years in pursuit of knowledge — mathematical to metaphysical. In this tome, historians Jed Buchwald and Mordechai Feingold unveil yet another strand: historical chronology. When Newton's *Chronology of Ancient Kingdoms Amended* was published in 1728, it drew fire for its dramatic revisions to timelines of civilizations past. Yet Newton, the authors show, approached the study — using astronomy and population dynamics — with the same rigour he brought to science.



Chasing Doctor Dolittle: Learning the Language of Animals

Con Slobodchikoff ST. MARTIN'S PRESS 320 pp. \$25.99 (2012)
An alarmed prairie dog can recognize and communicate the colour, shape, size and species of a predator. So says biologist Con Slobodchikoff, who — after 25 years of studying these hefty ground squirrels of the US grasslands — posits that animals have language. He bases his theory on a physiological and structural system not unlike the skeletal system that has parallels in humans and other vertebrates (think of human vocal chords and the avian double syrinx).