



WATCH SITE UPDATE

CONSERVATION IN THE

A decade after Pompeii was included on WMF's inaugural List of 100 Most Endangered Sites, problems at the site and others on the Bay of Naples persist.

by ANDREW WALLACE-HADRILL

The visitor to the ancient Roman sites of Pompeii and Herculaneum can easily recapture the drama of their destruction when Vesuvius erupted in A.D. 79. But, unknowingly, he or she is also witnessing a second, slower, but no less devastating destruction. For everything that is most precious about these extraordinary sites, and which does most to evoke a past world—the delicate frescoes on the walls, the wooden beds and shutters—is also most subject to decay. Gradually, inexorably, the sites are disintegrating. It is a long process that stretches back some two and a half centuries, set in motion when the first excavations brought to light the remains of the ancient cities in the late 1740s. If we could view a high-speed film of the sites taken over several years, we would be horrified to see just how much crumbles and disappears, day by day.



SHADOW OF VESUVIUS

It is easy to observe the signs of this process: streets and houses barred off with danger signs; doors not merely locked, but nailed shut with wooden planks; rusty iron scaffolding and worn plastic sheeting veiling areas of collapse. Anyone accustomed to maintaining his own property is sure to notice far more: cracked concrete beams revealing rusted iron reinforcements; damp rising up frescoed walls and the tide mark left by that damp visible in salts leaching through the plaster, which have caused it to blister and flake; and water pooled on mosaic floors and moss and vegetation spreading over what were once mosaic pavements, but have since disintegrated into their component parts. Such telltale signs arouse suspicion of deep neglect and the likelihood of serious structural faults. And rightly so, for these are all symptoms of a profound and widespread malaise that continues to plague one of the world's greatest archaeological treasures.

How can it be that these sites have been allowed to become a conspicuous example of a conservation crisis, despite the international limelight in which they are bathed, and the constant attention of the media? And what can be done about it? If you want to play the blame game, it is only too easy to find culprits. Did the excavators think through the long-term conservation consequences before they exposed these remains to the daylight? Does the tourism industry that profits so much from these sites put back its fair contribution? Do the politicians who control the funds understand the risks they are taking with the future by not investing in conservation? Is the heritage agency set up in a way that enables it to do its job of protecting the site? The answers to all these questions are heart-breakingly negative. Nevertheless, the situation is not impossible and unmanageable.

It is essential to acknowledge what an extraordinary demand we are making in expecting these fragile remains—which witness nearly three million visitors annually—to survive intact.

**LIKE THE CASA DEI CASTI AMANTI
IN REGIO IX, INSULA 12, ABOVE,
MANY BUILDINGS AT POMPEII ARE
OFF-LIMITS TO THE PUBLIC. AT
LEAST THIS HOUSE IS COVERED TO
PROTECT IT FROM THE ELEMENTS.**



UN PIANO PER POMPEI

Following the inclusion of Pompeii on WMF's inaugural Watch List in 1996, the organization partnered with the Soprintendenza Archeologica di Pompei (SAP) to launch a campaign to digitally document and assess the condition of the ancient Roman city, block by block, insula by insula—including more than 242,000 square meters of walls surfaces, 17,000 of which are painted; 20,000 square meters of plasterwork; and 12,000 square meters of floors, some of which have mosaics. As a critical step in the development of a masterplan for the site, *Un Piano per Pompei* was created to aid the SAP in conservation planning and site management.

By 1997, the first digitized interactive map of Pompeii—created by Giovanni Longobardi and Andrea Mandara of the Studio di Architettura—was released along with the criteria that were to be used to evaluate the condition of its urban fabric. Drafted on a 1:1,000 scale, the GIS-based map of the .67-square-kilometer site would ultimately be linked to thousands of records detailing the conditions of individual buildings and abundant archival material. In 1999, the completed map was issued in ArcView and a multidisciplinary team began the arduous task of linking it to Neapolis, a comprehensive database for Pompeii composed of more than 170,000 data sets.

In the decade since the first map was issued, still more data has been added and the information has been integrated into a planning scheme for the Pompeii region—not just the ancient remains but the modern town that has grown up around the site—so that local officials can begin addressing such issues as tourism management in tandem with on-site restoration campaigns.



When the Bourbons began to explore Herculaneum in the mid-eighteenth century, they left themselves no legacy of conservation problems. Their subterranean tunnels smashed mercilessly through structures; treasures of decoration were hacked brutally from their context, and transported to the Royal Palace at Portici where they were trimmed and fitted to heavy wooden frames. If one chooses to preserve selected highlights at the expense of the destruction of the rest, the policy is sustainable; over two centuries later, these artifacts, if often dusty and neglected, survive in reasonably good condition in the National Museum in Naples.

But ironically, what caused far more damage than the original policy of tunneling was that of open-air excavation, developed at Pompeii in the late eighteenth century. Though the public was rewarded with a spectacular open-air museum, the structures were exposed to a long, slow assault by atmospheric agents.

Giuseppe Fiorelli, superintendent for Pompeii from 1863 to 1875, was the first to take a holistic view of the Vesuvian sites, recognizing the vital importance of context and the fact that little shops and workshops were as fascinating as grand mansions. Understanding the visitor appeal of leaving frescoes and mosaics in situ, Amedeo Maiuri, who worked at Pompeii from 1924 to 1961, took this policy to its limit by displaying in their original position fixtures and fittings, casts of doors and furniture, original wooden doors and presses. Above all at Herculaneum, he created a new concept of the ancient city as living museum, displaying artifacts in cases, such as the rope and windlass from a well, the amphorae and jugs from a wineshop, the carbonized grain, figs, and nuts from a grocery.

Unlike great public monuments, baths, and amphitheaters, however, Roman domestic structures were never built to endure forever. Their wattle-and-daub partitions and wooden cantilevered balconies, which do so much to evoke how “the other half” lived, are inherently ephemeral and certainly no match for the A.D. 79 volcanic eruption, which smashed down even the strongest structures, sweeping their upper levels out into the sea. Add to this weakening of structures caused by the Bourbon tunnels, aerial bombardment by the Allies in 1943, and ongoing seismic activity in the area, which peaked in 1980. All the while, the elements have continued to exact their toll—sunlight bleaching frescoes, rain penetrating roofs and trickling down surfaces, damp rising from floors, and the continually corrosive action of a climate that fluctuates between extreme heat in the summer and bitter cold in the winter, when Vesuvius is often blanketed in snow.

A STILL LIFE FROM THE PRAEDIAE OF JULIA FELIX, A LARGE TOWNHOUSE COVERING AN ENTIRE CITY BLOCK, AND ONE OF THE FIRST BUILDINGS TO BE UNEARTHED AT POMPEII.



VIA DELL'ABBONDANZA PROJECT

In addition to *Un Piano per Pompei*, a variety of documentation efforts are underway at Pompeii and other sites in the shadow of Vesuvius, among them the Via dell'Abbondanza Project, launched by Jennifer and Arthur Stephens in 2004. Using a combination of high-definition digital photography and precise, geomatic rectification, the Houston-based duo has been able to create accurate orthographic photomosaics of the famed Pompeian thoroughfare, which runs for some 33 blocks (nearly 900 meters) east-west through the ancient Roman city. "Beyond providing a view of the building frontages that could not otherwise be seen, the photomosaics [above and on opening spread] are enabling us to document the variety and condition of the many structures along the street, stretches of which have been exposed to the elements for 150 years or more," says Jennifer Stephens, adding that by comparing their images of individual buildings with those of earlier excavators, they can gauge the degradation over time. What has become obvious in the images, she says, is just how much building fabric and decoration has been lost in recent years. It is an alarming fact that has made their mission to document as much of the site as possible all the more important. For more on the Via dell'Abbondanza Project see www.pompeiiiperspectives.org

The challenge, then, is not to preserve ancient cities or villas in their entirety, but to extend the lifespan of an elaborate composite of ancient remains and modern reconstruction, built with the changing and often still-untested technologies of the day. We should never forget, as we ourselves bring in the latest technologies to the aid of the sites, that each generation has done the same, and that some experiments have proven disastrous. Reinforced concrete seemed the obvious contemporary solution in the mid-twentieth century. It was not clear at the time that unless mixed under careful supervision and then maintained, this material would rust, expand, and disintegrate within 50 years, and require replacement with the timber that should have been used in the first place. Portland cement was the unquestioned staple of the building trade, produced locally and cheaply, and familiar in its application to every worker in the industry. It has taken decades of experience to show the damage it causes when applied to ancient structures—being harder, less flexible, and less durable than the lime and volcanic sand mix of antiquity and often impregnated with salts which leach destructively through the frescoes it is meant to protect. Soaking carbonized wood in paraffin wax seemed a good idea at the time, until the heat of the sun caused it to melt out. The same wax smeared on frescoes gave a spurious appearance of freshness, while stopping the plaster from breathing; the paraloids that replaced the wax in the 1980s proved even more destructive.

Such lessons, repeated a thousand-fold across the sites, do not show that earlier generations of restorers were ignorant or irresponsible, but highlight the harsh reality that conservation is an experimental science. There is no rule-book telling us "how to preserve an ancient city." We have to write it and rewrite it as we go. This in turn has significant implications for management.

First, the sites require a multidisciplinary team—of conservator-restorers, archaeologists, structural engineers, experimental scientists, and surveyors—to analyze the problems, learn from past mistakes and successes, try out and subsequently monitor new solutions. Such a team is beyond the resources and capacity of the heritage agency as presently constituted. Secondly, the rulebook as derived from their work has to be translated into intelligent bureaucratic practice, so that limited resources are not squandered on ill-conceived and expensive projects.

Since his appointment as superintendent in 1995, Pier Giovanni Guzzo has proved remarkably open in inviting international debate and collaboration to help his agency confront the crisis. The World



JENNIFER STEVENS

Monuments Fund led the way, having placed Pompeii on its inaugural Watch List in 1996, by working with Guzzo to produce a detailed mapping and conditions assessment of Pompeii, entitled *Un Piano per Pompei*. The first step in saving a site is detailed documentation of its condition. Only then can a strategic approach be evolved, and the challenges prioritized, instead of intervening desperately after the event when roofs have already collapsed. There are now, with the encouragement of Guzzo and his superintendency, a number of experimental conservation projects afoot, including one by the University of Bologna in the House of the Centenary in Pompeii, another by the University of Maryland and the Restoring Ancient Stabiae foundation at the villas of Stabiae, and the project at Herculaneum financed by the Packard Humanities Institute, and managed by the British School at Rome, which I myself direct. What have we learned in five years of operation on-site?

The first lesson is the fundamental importance of recording and documentation. Apart from anything else, there is the not-so-remote risk that these sites might be catastrophically effected by a second volcanic eruption or by earthquakes. The least we owe to the future is the most thorough documentation possible. Documentation is also fundamental for conservation and future maintenance. It is essential to be able to recover the details of how a house was excavated and restored, and a complete history of

THESE BUILDINGS ALONG THE SOUTH SIDE OF THE VIA DELL'ABBONDANZA IN REGIO I (INSULAE 11 AND 12) WERE EXCAVATED BY VITTORIO SPINAZZOLA IN 1912-1913 AND LATER BY AMEDEO MAIURI IN 1952-1955 AND 1958. THE STREET IN BETWEEN IS THE VICOLO DELLA NAVE EUROPA.

RESTORING ANCIENT STABIAE



A ROOF WITH ENVIRONMENTAL CONTROL LOUVERS—DESIGNED BY L'ENTE PER LE NUOVE TECNOLOGIE L'ENERGIA E L'AMBIENTE—IS BEING TESTED IN THE VILLA ARIANNA FOR USE AT THE SITE.

Ancient Roman Stabiae has the largest concentration of well-preserved large seaside villas in the Mediterranean world. As yet fully excavated, the site has remained relatively unknown to the public. In 1998, the Restoring Ancient Stabiae (RAS) project was launched—a collaborative effort of the University of Maryland, the Soprintendenza Archeologica di Pompei, and the Comitato di Stabiae Renatae, a local group of educators and donors. Their goal has been to develop a masterplan to selectively excavate and conserve six of the villas and a portion of the town, and in time presenting them within an innovative archaeological park dedicated to the villa life of the ancient Roman elite.

Since then, the RAS has conducted a series of geophysical survey, using ground-penetrating radar, magnetometry, and resistivity to determine the extent of unexcavated remains and develop plans for selective excavation and presentation. As part of its outreach effort, RAS was instrumental in creating a travelling exhibition, *In Stabiano, Exploring the Ancient Seaside Villas of the Roman Elite*, which opened at the Smithsonian in 2004 and is currently on view at the Elvehjem Museum of Art in Wisconsin through June 3, after which it will travel to Jacksonville, Florida.

subsequent interventions. A remarkable amount of information still survives in the archives. That needs to be recovered and collated, and made readily accessible in electronic format; and standards and routines of recording need to be established to ensure that knowledge of present and future interventions is not lost again. The recording of interventions must be placed in the context of full and accurate mapping of the sites: existing plans are dismally approximate, and regularly fail to provide basic information such as elevation (critical for the movement of water). Good surveying, both by traditional means and by new technologies like 3D laser-scanning, is required in all Vesuvian sites. This must be allied to a careful mapping of points of risk and damage to structures and decorative features, such as that pioneered by WMF in *Un Piano per Pompei*. Such a database would become both a major asset to research and a basic management tool for the heritage agency.

A second lesson is the importance of attention to infrastructure. The minute and labor-intensive work of a group of conservator-restorers on a crumbling fresco is pointless if the underlying problems that led to the damage in the first place are not addressed. The remains are exposed to numerous environmental risks—including sunlight, fluctuation between extreme heat and cold, and the uncontrolled growth of vegetation—but no element is so damaging as water. One may dream of hi-tech solutions, like a biospheric dome, but these are likely to lead to as many new problems as they solve, above all intolerable heat. What has emerged at Herculaneum as the simplest and most effective solution is to study the entire capillary water management system of the ancient town, to reactivate it where possible, and to adapt and supplement it where needed. From the impressive system of public drains and sewers, to the detailed use of drains, channels, cisterns and soakaways in individual houses, the movement of each drop of water across the site must be understood from its arrival to its final exit. Only by looking at the site as a whole can this work. It is frightening to discover that even recently, new roofing has been installed, which discharges water onto neighboring structures.

The third lesson is the importance of an ongoing program of ordinary maintenance. Under Maiuri, the superintendency still disposed of a significant force of up to a hundred maintenance staff, large enough to operate across all sites. Maiuri consciously built up a reservoir of craft skills specific to the site; the long-term stability of the workforce ensured that knowledge was transmitted across generations. More recently, this

HERCULANEUM CONSERVATION PROJECT



DAVE VOEBER

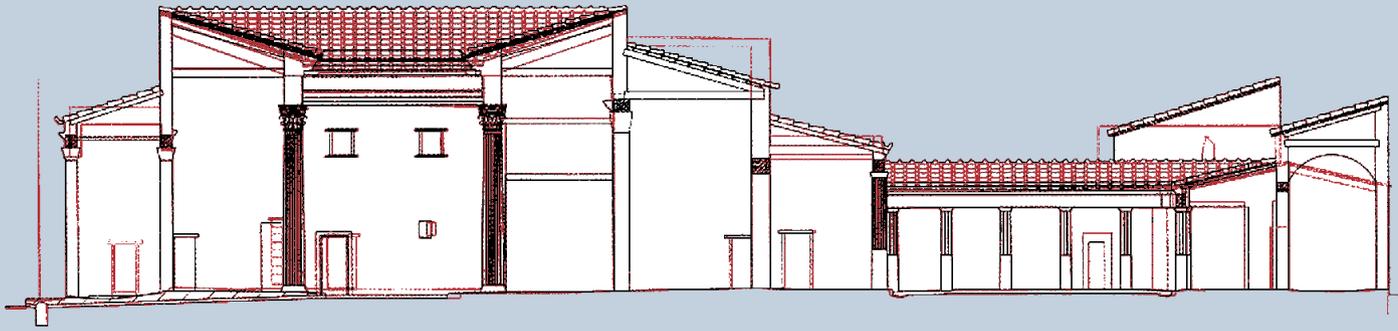
CONSERVATOR FIORENZA PICCOLO CARRIES OUT PRELIMINARY CONSERVATION WORK IN THE COLLEGIO DEGLI AUGUSTALI.

A collaborative effort of the Packard Humanities Institute, the Soprintendenza Archeologica di Pompei (SAP), and the British School at Rome, the Herculaneum Conservation Project was launched in 2001 not only to safeguard and conserve the ancient site but to enhance and advance the knowledge, understanding, and public appreciation of Herculaneum and its artifacts.

The project has two main areas of operation. The first is a site-wide campaign to address the most pressing conservation problems—collapsing roofs, vegetation growing atop walls, plaster falling from walls, disintegrating mosaics, and pigeon infestation—and devise ways to improve site infrastructure, especially water management. To complement these efforts, the project is promoting research into the chemistry of decay—including the composition of destructive salts, and the preservation of carbonized wood—and creating a database of knowledge, through surveying and recording, mapping of problems, co-ordinating archives of past interventions, and establishing procedures for “best practices” in conservation and

maintenance. A second area of operation is a case-study of the *Insula Orientalis I*, a block of houses on the southeast corner of the site, which is being used to establish procedures for the site-wide campaign. Most recently, the project has carried out a series of experiments in roofing solutions for the most exposed elements, particularly the atrium of the House of the Gem, and the marble-floored salon of the House of the Telephus Relief, while also testing the impact of new low-cost types of roofing.

The project has recently played a key role in setting up a new Study Centre, under the auspices of the Associazione Herculaneum, a collaboration between the civic authority of Ercolano, the SAP, and the British School at Rome. Working closely with ICCROM, an international organization for the preservation of cultural heritage based in Rome, it aims to develop the site as a laboratory for understanding conservation problems, to sensitize archaeologists to these problems, and to promote a closer relationship between the site and the local community. For information see www.herculaneum.org



HOUSE OF THE SILVER WEDDING ANNIVERSARY

The House of the Silver Wedding Anniversary (Casa delle Nozze d'Argento) is a significant example of an extended atrium house, or urbanized villa, from Pompeii's pre-Roman period. The house was first excavated in 1883–1884 and restored immediately thereafter, with the first roof erected between 1906 and 1909. The house was maintained with periodic cleaning and conservation through the 1960s; its current roof was installed in 1979, after which maintenance of the site ceased. Being made of cementacious material, the 1979 roof has caused structural degradation of the site.

In May 1998, the Kress Pompeii Conservation Project was launched by WMF to establish new standards in site conservation and presentation. Several buildings within Insula V2—an area the Soprintendenza Archeologica di Pompei had hoped to one day open to the public—were chosen for demonstration projects, among them the House of the Silver Wedding Anniversary. Methods developed in the course of these projects would be used to formulate a conservation strategy for the whole of the insula. For its part, WMF agreed to provide funding and technical assistance to carry out feasibility studies for the house restoration, enlisting the help of ace conservators Paolo Marconi and Antonio Pugliano. They would develop a structural stabilization plan for the House of the Silver Wedding Anniversary that included among other things a plan to replace the roof—the current one some five times heavier than the original. The result was the development of a laminated wood structure that was in keeping, both visually and architecturally, with the original building construction.

While all of the conservation research to restore the house has been carried out, plans to construct the new roof have been drafted, and an imaginative method for presenting the site to the public has been developed, the project is currently on hold due to internal management issues within the SAP. It is hoped that once these are resolved, the WMF Kress project will be able to move forward as planned, establishing new standards in conservation and presentation at one of the world's most treasured sites.



A ELEVATION OF THE HOUSE OF THE SILVER WEDDING ANNIVERSARY, TOP, IS BEING USED TO DESIGN APPROPRIATE ROOFING FOR THE ANCIENT VILLA, ABOVE.

essential workforce has been gradually scaled back, and increasing use made of external contractors, a policy that reached a peak in the major restoration project of the 1980s and early 1990s in Region I of Pompeii. But while the state may have rid itself of some headaches—like the financial burden of a permanent workforce—it has substantially lost its reservoir of know-how and exposed itself to the mercies of sometimes unscrupulous contractors. The system imposed by public law considers only the lowest bidder, not quality and experience, and though it is designed to avoid corruption and criminal interference, it has little chance of effectiveness when the local construction industry is under the stranglehold of organized crime. No building, however well constructed, let alone this delicate and compromised composite of ancient remains partially reconstructed, can survive without a regular and detailed maintenance program. Until the way is found to put this back in place, the future prospects of the sites will remain bleak.

Though the challenges are daunting, there is good news to celebrate. The mere fact that the conservation problems of the Pompeii area have become a focus of international debate is due to the openness of the superintendency and its own desire for reform. The international community has responded in many ways. What is needed above all is support at the highest government level, which must recognize that the Vesuvian sites constitute an asset as delicate as it is valuable. If they are to continue to act as the motor for the tourism on which the region depends, they merit sustained investment and sympathetic management. Only then can we save these sites, which for centuries have excited international admiration, from becoming objects of international outrage. ■