



FORENSICS

POMPEII

POOP

EVERYBODY DOES IT, BUT NO ONE WANTS TO TALK ABOUT IT. POOP, THAT IS. BUT THANKS TO SOME SCIENTIFIC DETECTIVE WORK, ARCHAEOLOGISTS DIGGING IN POMPEII'S LATRINES ARE REVEALING NEW SECRETS ABOUT THE CITY'S LIFESTYLE. BY RACHEL SULLIVAN

PHOTO: COBBIS



A RARE GLIMPSE INTO THE DAILY LIFE OF A LONG-DEAD CIVILISATION

When most people step in poop, they just scrape it off their shoes and move on. But to archaeologist Dr Andy Fairbairn with the University of Queensland (UQ), Australia, poop is good news, especially when it comes from the latrines of the most famous ruins in the world.

“Say ‘Pompeii’ and everyone thinks of the eruption of Vesuvius that buried the city in AD 79,” says Fairbairn. But the eruption didn’t just bury exciting things such as sumptuous villas and richly jewelled female visitors to gladiators’ quarters, it also preserved the more mundane artifacts, like offerings to Roman household gods. And cess-pits, or latrines.

In 2005, excavations in the Porta Stabia (Stabian Gate) area uncovered latrines - and their perfectly preserved contents. The dig team, led by Dr Steven Ellis, Assistant Professor of Classics at the University of Cincinnati in the United States and director of the Pompeii Archaeological Research Project: Porta Stabia, knew the material in the latrines was important, but needed someone who could help determine what long-



Professor Andy Fairbairn, who specialises in the archaeology of human waste - literally in this case - takes a break at Porta Stabia, in Pompeii (above).

buried poop might reveal. Fairbairn, who studied ancient agriculture and plant use at University College London in England before joining UQ as a senior lecturer in archaeology, had previous experience teasing out nuggets of information from prehistoric human rubbish such as middens and old cooking pots. He fitted the bill perfectly.

“The dig site is adjacent to the main entrance to the theatre district and gladiators’ quarters,” explains Fair-

bairn. “This was a much less salubrious part of Pompeii than that usually described with images of grand villas and the like. It was full of food joints selling staples like flat loaves and pies,” says Fairbairn, who has now spent four years excavating and analysing dozens of Pompeii latrines.

“We hear a lot about Roman standards of plumbing, but in this part of Pompeii the arrangements were fairly basic,” he points out. Few houses had



The unexpected, massive eruption of Vesuvius buried Pompeii and other nearby cities, leaving a trove of buried treasure to be unearthed by historians and archaeologists over a thousand years later.

kitchens so most Pompeiians ate out. Latrines were few and far between, and in many houses and eateries were located right next to the kitchens so that all of the kitchen refuse could be thrown in the pit together with human waste.

“They must have been pretty stinky at the time, but today they are just dry pits,” Fairbairn says with a laugh. He is quick to admit that while they still have an earthy aroma, any poop smells are long gone. But the archaeological

evidence is still there, rich and fertile. It’s these unsavoury morsels that have Pompeii’s archaeologists so excited. “In the past 30 years, archaeology in Pompeii has moved away from the big ticket items of temple excavations and the like to the minutiae of what life was like for ordinary people,” says Fairbairn.

CHANGING TASTES

There was a revolution in archaeologists’ techniques in the early 1970s

PICKING UP THE PIECES

Separating the contents of the average Pompeii latrine takes patience and a keen eye. Hundreds of bags of material are collected and taken back to the lab where they are initially mixed with water. The fossilised seeds, fish scales and charcoal are buoyant and are easily skimmed off for further analysis. Then the rest of the material is passed through fine-meshed sieves that get rid of the smallest particles and retains fragments 0.5 to four millimetres in diameter. These are then examined under a low-powered dissecting microscope.

“After a trip through the gut, often only partial fossilisation and 2,000 years in a latrine, the fragments can look quite transformed,” Dr Andy Fairbairn, scatological archaeologist, says. “Putting them back together is a bit of a detective job, sometimes requiring forensic techniques and chemical analysis such as testing for coprostanol, a cholesterol by-product that is used as a bio-marker for human faeces.”



Excavated soil is carefully sifted to identify small shards of pottery and bones - a painstaking and time-consuming process.

Ancient Pompeii was a normal city of its time, with residents that went about their daily business – just as we do today. The findings in Pompeii reflect that; among the discoveries are petrified bodies on the streets of the city and household items such as bowls of olives.



THE ERUPTION DIDN'T JUST BURY EXCITING THINGS ... IT ALSO PRESERVED MORE MUNDANE ARTIFACTS



● 150 grams: Amount of poop produced by a child each day.

● approx. 200 grams: Amount of poop produced by an adult each day.



when some archaeologists realised that there were many preserved items that hadn't been systematically studied. "Field techniques changed, and now rubbish, previously ignored, is collected," notes Fairbairn. The development of new methods of chemical analysis in addition to the growth of biomolecular archaeology (an interdisciplinary field involving chemistry, bioinformatics, biomechanics, immunological assaying and mass spectrometry, among others) has provided fresh insights into the history of human civilisations, diseases and agriculture.

The archaeology of food and drink is also expanding, driven by advances in forensic and other analytical technologies in the '90s. Fairbairn says this type of archaeology was originally developed for studies of prehistory that lacked written records, and has led to some very interesting finds that illuminate life in ancient settlements.

Sera Baker, an organiser at the University of Nottingham's annual Food and Drink in Archaeology conference, agrees. She is currently studying materials from more than 100 shops in the ancient city of Pompeii.

"The archaeology [of food and drink] has risen to prominence in recent years towards exploring areas traditionally unexamined by classicists and archaeologists of the 19th and 20th centuries," she says. The early diggers understandably preferred the magnificence of monumental and imperial archaeology, like temples and palaces, but lacked diligence towards the understanding of everyday ancient lives.

PHOTOS: CORBIS; LEIGH LIEBERMAN; COURTESY ANDY FAIRBAIRN



The material from Pompeii's latrines are run through a flotation machine to separate seeds, bones and other small items from the soil.

"In the 250 or so years that archaeology has been developing as a science, understanding has progressed by leaps and bounds," adds Baker. Today's archaeologists can explore sites non-invasively and unlock secrets of diet through microanalysis of organic materials coming from excavation.

Some ancient cities give up their secrets readily. Herculaneum, which was also buried in the Vesuvian eruption, had beautifully preserved food stores, including ash-encrusted loaves of bread and bowls filled with peas. Meanwhile, Pompeii's food clues were preserved in a more primitive way - down the loo.

LOADS OF RUBBISH

According to Fairbairn, the excavated latrines were originally filled with or-

ROMAN REMAINS

The Romans are renowned for their sanitation systems, created to help combat diseases associated with contaminated water. Aqueducts carried fresh water into crowded cities, providing clean water for drinking, for the famous Roman baths and for their public toilets. Toilets could be both single (*latrinae*) and multi-seater (*foricae*) and waste was carried away through a system of pipes then dumped in the river. Although it did have a sophisticated water supply system, unlike many other Roman cities Pompeii did not have a sewer system. Instead most properties had latrines that would be cleaned out from time to time. Elite houses usually used chamber pots that slaves emptied into the toilets in the working areas and kitchen. However, 15 upstairs toilets have been identified by archaeologists, with samples of mineralised material taken from the downpipes confirming that human waste had passed through.

ganic material mixed with water. "That water contained a lot of minerals in solution that helped to fossilise and preserve leaves, fruit, seeds, fish scales, bone ends, frogs and even dormice - a Roman cuisine speciality," he explains.

The archaeolo-

This fossilised grape seed, which was found in a latrine in Pompeii, was likely from a grape eaten by a resident of the city just before the volcanic eruption.



● circa 2,600–1,900 BCE: The world's first flush toilets were invented by people living in Pakistan's Indus Valley.

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A picture of what life in Pompeii was like in ancient times can be pieced together from items – or fragments of them – recovered from the ground.



Bread was a staple back in Roman times. Although bread was primarily the food of plebians, the average working citizens of Rome, it was also eaten by the rich.

gists have also found a good cross-section of different rubbish that has given an interesting picture of what was going on in Pompeii's economy prior to the eruption.

"In earlier periods, such as the 4th century BC, people were using everyday agricultural products - chaff and grains that you normally find in cities where people are engaged in local agricultural production and are using those things everyday," Fairbairn says. "But over time we find different products - cherries, grapes and dates, suggesting wide trade networks, and lumps of bread, but not the raw grains used to produce the bread."

Other things such as *garum* - a pungent fish sauce widely used in Roman cooking that was usually made in backyard pits - was still being consumed, but the evidence seems to indicate that it was no longer being locally manufactured. Researchers discovered the raw materials and equipment for producing it in the lower (older) layers but not in the upper, newer layers. This has been demonstrated by the disappearance of the big tanks full of fish scales and

bones that are found lower down in the archaeological record.

"Although we still have hundreds of samples and years of work ahead, this is solid evidence that the city was evolving and engaging in a wider range of activities; it was moving away from the production of goods in dispersed cottage industries to more specialised industrial production and trading," asserts Fairbairn.

Baker agrees, pointing out that many types of food were available in the Roman world, especially at Pompeii, due to the fertile volcanic soils. In fact, Baker adds, this variety of foods is discussed in the works of ancient Latin scholars such as Pliny the Elder. Baker says that it looks like the Pompeiians ate a balanced, omnivorous diet, probably biased towards vegetables and grains because of the higher cost of meat production. But there is still more poop analysis to come.

"Microscopic analysis of organic remains will reveal much more of what the ancient diet of Pompeii was," she says. Other surviving evidence such as loaves of bread, eggs, the remains of fish

sauce and olive oil containers will all be analysed and combined with structural data and pictorial evidence from wall paintings to provide a much more detailed overall picture of the lives of eruption-era Pompeiians.

"All this provides a wonderful understanding of what the Pompeiians were eating, how they were preparing their food and their manner of eating it," adds Baker.

As a ruin, Pompeii offers a rare glimpse into the daily life of a long-dead civilisation. Scatological archaeologists like Fairbairn believe they can use the data discovered to also get an insight into why great societies like the Romans and the Maya ultimately failed.

"This helps show that if the people don't understand the environment they inhabit, even the most well-tooled civilisation can go down the toilet," Fairbairn grins as he says. ■

Further reading:

- *The Pompeii Food and Drink Project* (www.pompeii-food-and-drink.org)
- *Latrinae et Foricae: Toilets in the Roman World* by Barry Hobson

PHOTOS: PHOTOLIBRARY; ALLISON EMMERSON