

City of Poseidon

A muddy dig in the Corinthian coastal plain yields the remains of an ancient Greek city swallowed by the sea.

◆
by TOM GIDWITZ

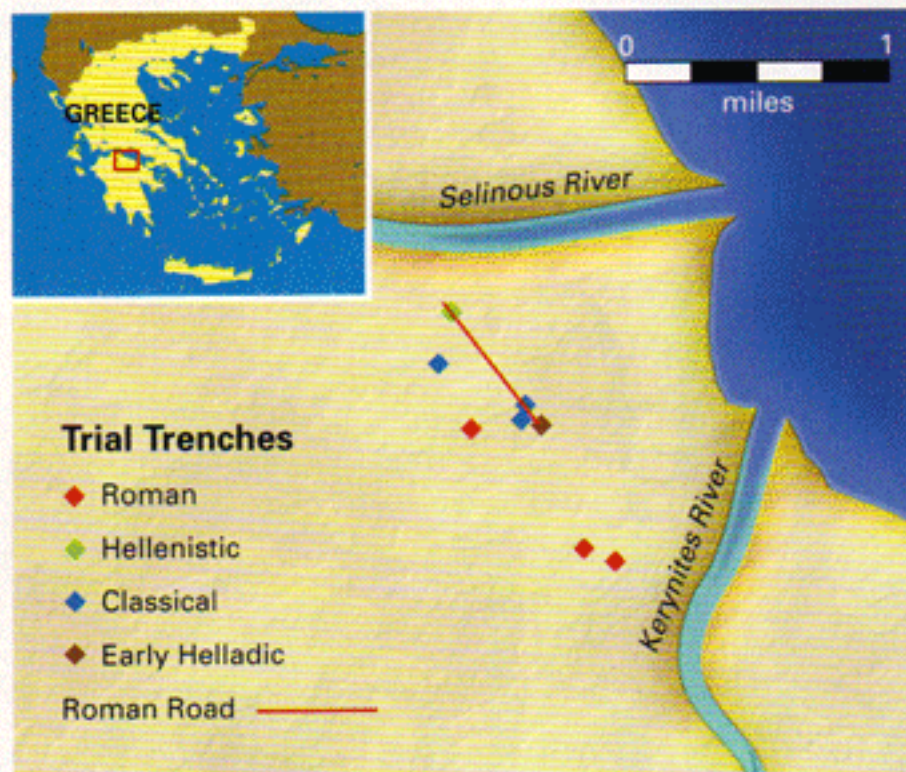
IT'S 8:30 IN THE MORNING at Dora Katsonopoulou's house in Nikolaiika, Greece. On a normal day, she would already be at the excavation site where the crew of her Helike Project is hard at work. But this morning she is on the phone, dealing with trouble.

A mile away, in a fifteen-foot-deep pit, project archaeologists have been uncovering a large Early Bronze Age house more than four thousand years old. The pit is below the water table, and every night it floods with a foot and a half of water. But this morning the pump that empties it is broken, and it couldn't have happened at a worse time. The project's six-week-long excavation permit expires in four days, and the team is poised to dig into a storeroom that, now underwater, is crowded with pots.

Katsonopoulou is a stylish woman with wavy red hair and the indomitable will of a general laying siege. In her twenty-year search for Helike, a lost Classical Greek city and cult center of Poseidon destroyed by an earthquake and tidal wave in 373 B.C., she has been both tactician and strategist, an archaeologist who digs in the dirt, lobbies for funds, and combs ancient texts for clues.

Katsonopoulou has been eager to find Helike since she was a child growing up nearby, and while others have looked in vain, she and her partner, Steven Soter, codirector of the small Helike Project, have been closing in on its remains. Yesterday, in what may be a complex of third-century B.C. workshops, they found more than a dozen coins scattered across the pebbled floor, as if spilled by someone running in panic—perhaps during the earthquake that brought down the building's roof.

Lost to both looters and archaeologists alike, Helike has been called an undisturbed "time capsule" of daily life from the Golden Age of Greece, a hoard of temples, statues, and sanctuaries preserved in a layer of marine



mud. Soter likens it to “a shipwreck the size of a city.”

Although Katsonopoulou and Soter have not yet found central Helike, they have unearthed Helike-era Classical ruins and much more. Beneath the ground where Katsonopoulou is standing are at least four thousand years of ancient settlements, each in turn destroyed by earthquakes.

It is easy to see why this Peloponnesian shoreline twenty-two miles east of the modern port city of Patras has been prime real estate for so long. It’s the largest river delta on the Gulf of Corinth, a flat, well-watered alluvial plain sheltered to the south by a wall of mountains and bordered to the north by the turquoise gulf and its white, pebbled beach. Three nearby villages—Eliki, Nikolaiika, and Rizomylos—harbor vineyards, olive groves, citrus orchards, and the thousands of Greeks who come to summer at the shore.

BY THE TIME Katsonopoulou arrives at the pit, the pump is working again, and most of the water that seeped overnight into the trench is gone. Nonetheless, the battle against the ground water’s constant trickle never ends. The eight-person crew slogs about in knee-high boots, scooping up the remaining water with their safety helmets and hauling it up to the surface. In the midst of the receding water are thick stone walls, the remains of the 2400 B.C. Early Bronze Age town that no one had suspected was here.

The pit is about thirty feet long and half as wide, cleanly carved out alongside a vineyard by the huge orange backhoe that stands sentinel nearby. The crew must climb down a shaking ladder to reach the bottom, where the fine-grained mud is gray, thick, and sticky as cement. Stand still for too long and it grabs your feet in a grip strong enough to

Archaeologist Dora Katsonopoulou, director of the Helike Project, and a local worker examine a narrow-necked jar just retrieved from the excavation of an Early Bronze Age building at Helike.

pull your boots off. The trick is to keep moving, to keep working, and to never, ever fall.

In one corner, a hollow contains a cache of ancient pots, a kitchen storeroom open to the air for the first time in four millennia. A huge jar lies on its side among a crowd of smaller vessels like a mama sea turtle in a nest of babies. The project’s assistant excavation director, Maria Stephanopoulou, is crouched down in front of them. Hatless, sharp-featured, and natty in her T-shirt and lavender stretch pants, she is meticulously whittling away the mud from a pot the size and shape of a medicine ball. While she digs she talks on her cell phone, smokes, and directs the rest of the crew, putting her tools down only long enough to daub some white preservative on the jar. Beside her, an artist and an assistant carefully measure the walls and draw them stone by stone, the workers shovel and scoop, and, from time to time, Soter descends the ladder to keep an eye on things.

A stone’s throw away is another trench, where Dimitris Palaiologos oversees the excavation of a swath of the coastal Roman road that Katsonopoulou and Soter have traced for more than half a mile. An energetic man with a playful sense of humor, Palaiologos guides a handful of paid laborers and a group of volunteers—local residents and undergraduate students—who have come to lend a hand. About a dozen volunteers from the United States and Europe rotate through each summer; this week the talk in the trenches is a polyglot buzz of Greek, English, Portuguese, Italian, Albanian, and French.

By 9:30, the sun is murderously hot, and Katsonopoulou





Alexander Chrsanthakopoulos, a member of the Greek Parliament, and Dora Katsonopoulou examine Bronze Age walls possibly offset by a fault. Right, the team works through mud covering another Bronze Age house.

has taken up her position on a camp chair at the deep pit's edge, watching, calling down commands and questions. Through the day a steady stream of visitors drops by: townspeople, farmers, visiting archaeologists, and workers from the project's conservation lab come to stare down into the pit like bettors at a sporting match.

HELIKE WAS AN ECONOMIC POWERHOUSE that flourished for centuries. It was the seat of the Dodekapolis, the original twelve cities of the Achaean League, and, in the *Iliad*, Homer included it among the contingent under Agamemnon's command at the siege of Troy. Its citizens built colonies at Sybaris in southern Italy and Priene on the Asia Minor coast, spreading the city's distinctive cult of Poseidon, god of earthquakes and the sea, to the frontiers of the Greek world.

It was only natural that Helike would be the center of a Poseidon cult, for this region is one of the most active earthquake zones in Europe. The Gulf of Corinth fills a million-year-old rift in the earth's crust, an east-west valley that grows wider by about half an inch a year. The rift's southern margin tilts and fractures into blocks that are



Helike Project (2)



This trench exposed the hard-packed surface of a Roman road. Its eighteen-foot width would have allowed two chariots to pass. Below the Roman road are Hellenistic walls (third to second century B.C.).

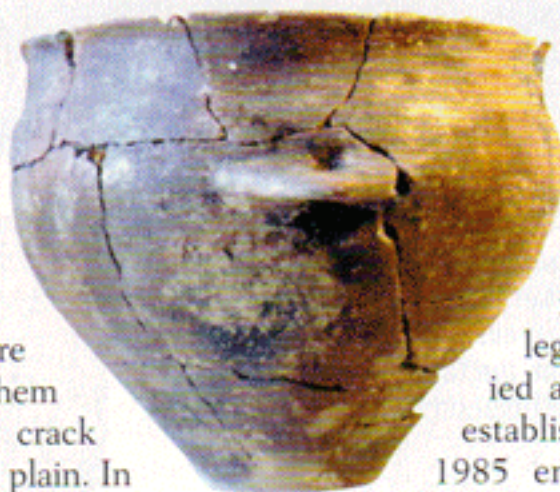
rhetorician Aelian, Helike citizens watched in amazement as beetles, snakes, mice, and "every other creature of that kind" fled the coastal city for higher ground. On the fifth night, the earthquake struck, the coastal plain sank, and as the city crumbled the sea rushed in. A towering tidal wave struck, killing everyone. At dawn the next day two thousand men from neighboring cities rushed to the rescue but found only the tips of the trees in Poseidon's sacred grove poking above the waves.

Over the following centuries, chroniclers and poets including Pausanias and Ovid described the awful night and the haunting ruins still visible beneath the sea. Helike's fate is said to have inspired Plato's legend of Atlantis. And the Greek geographer Strabo described the scholar Eratosthenes' reports of local ferrymen, who said the sacred bronze statue of Poseidon still stood erect on the sea floor, holding in one hand a hippocamp—a beast half horse, half fish—that snared the nets of fishermen who worked in the strait.

pushed up and southward to build the mountains of Achaia. The range forms a near-continuous wall on the gulf's southern shore, save where it is slashed by the Selinous, Kerynites, and Vouraikos rivers. The rivers carry silt and mountain rubble down to the gulf and dump it at the mountains' feet, building the fertile coastal plain on which the ancient city once stood. There are earthquake faults galore, chief among them the Helike Fault, which forms a visible crack between the mountain wall and the coastal plain. In 1993, Soter was out in the field when earthquakes set the trees swaying, and in 1995, in the middle of the digging season, a quake killed ten in the nearby town of Aigion and leveled an Elike hotel, killing sixteen. In 1861, eight miles of coastline dropped about six feet, and a two-hundred-yard-wide coastal strip sank beneath the sea. The rivers' supply of stones and silt renews the vanishing delta: A house built on the beach in the 1890s is now a thousand feet inland.

For five days, during the winter of 373 B.C., wrote third-century A.D. Roman

Early Bronze Age artifacts recovered from Helike include a wide-mouthed bowl and a small gold ornament that would have been fastened to a fine garment. Prehistoric Helike was likely wealthy.



In time, the ruined city disappeared completely into the murk, but its legend endured. "It's something that goes with the area," says Katsonopoulou, who grew up in Aigion, a small town five miles to the west, where her parents tended olive groves and vineyards. Inspired by her father's intense interest in local history and entranced with the legend of the lost city, Katsonopoulou studied archaeology at the University of Athens, established the Helike Society in 1982, and in 1985 enrolled in the classics department at Cornell University to pursue her doctorate.

Katsonopoulou's fluency in ancient Greek and her encyclopedic knowledge of the classics astounded her professors, and her reputation reached the ear of Steven Soter, then a solar system researcher in Cornell's department of astronomy. Soter was already a devout Helike-phile: While investigating the link between earthquakes and the venting of subterranean gas, he had come across Aelian's report of the animal exodus from the city. He read more about Helike and was hooked.

"It was an improbable meeting of the two people in the world most obsessed by Helike," says the sixty-year-old Soter, now a planetary astronomer at the American Museum of Natural History. "It was too good to be true." Soter is a tall, gentle, gray-haired man with a soft voice

and a deliberate manner. He had partnered with Carl Sagan as a cowriter and research chief of the landmark PBS series *Cosmos*, and when studying the planets and stars had gained a knowledge of physics and geology that Katsonopoulou needed. "We took our meeting as a good omen. She said, 'This means it's ready to be found.'"

They weren't the first to look for Helike. Famed Greek archaeologist Spyridon Marinatos, who discovered the town of Akrotiri buried in volcanic ash on the Greek island of Santorini, spent more than twenty years searching the Gulf of Corinth, enlisting the aid first of Jacques Cousteau in the 1950s and then MIT's Harold Edgerton, the inventor of the strobe light, ultra-high-speed cameras, and seafloor-penetrating sonar.

In 1988, with Edgerton's guidance, Katsonopoulou,



Helike Project (4)

An Archaic terra-cotta idol, probably an heirloom, was found in the ruins of a building destroyed by the earthquake of 373 B.C. Below, a silver coin showing the head of Apollo and a flying dove on the reverse, found at the Helike Classical site.



forty stadia (about four miles) from the town of Aigion, and thirty stadia, (about three miles), from the Cave of the Oracle of Heracles, which looks out from a cliff face over the coastal plain. Strabo said the city was twelve stadia (a little over a mile) from the sea, which suggests that the city may now be buried deep under dry land.

In 1991, the team began drilling bore holes on the coastal plain and examined the extracted four-inch diameter cores. Among the coastal strata, fully half of their cores yielded bits of pottery, glass, chunks of tile, charcoal, and mortar-encrusted cobbles from ancient walls.

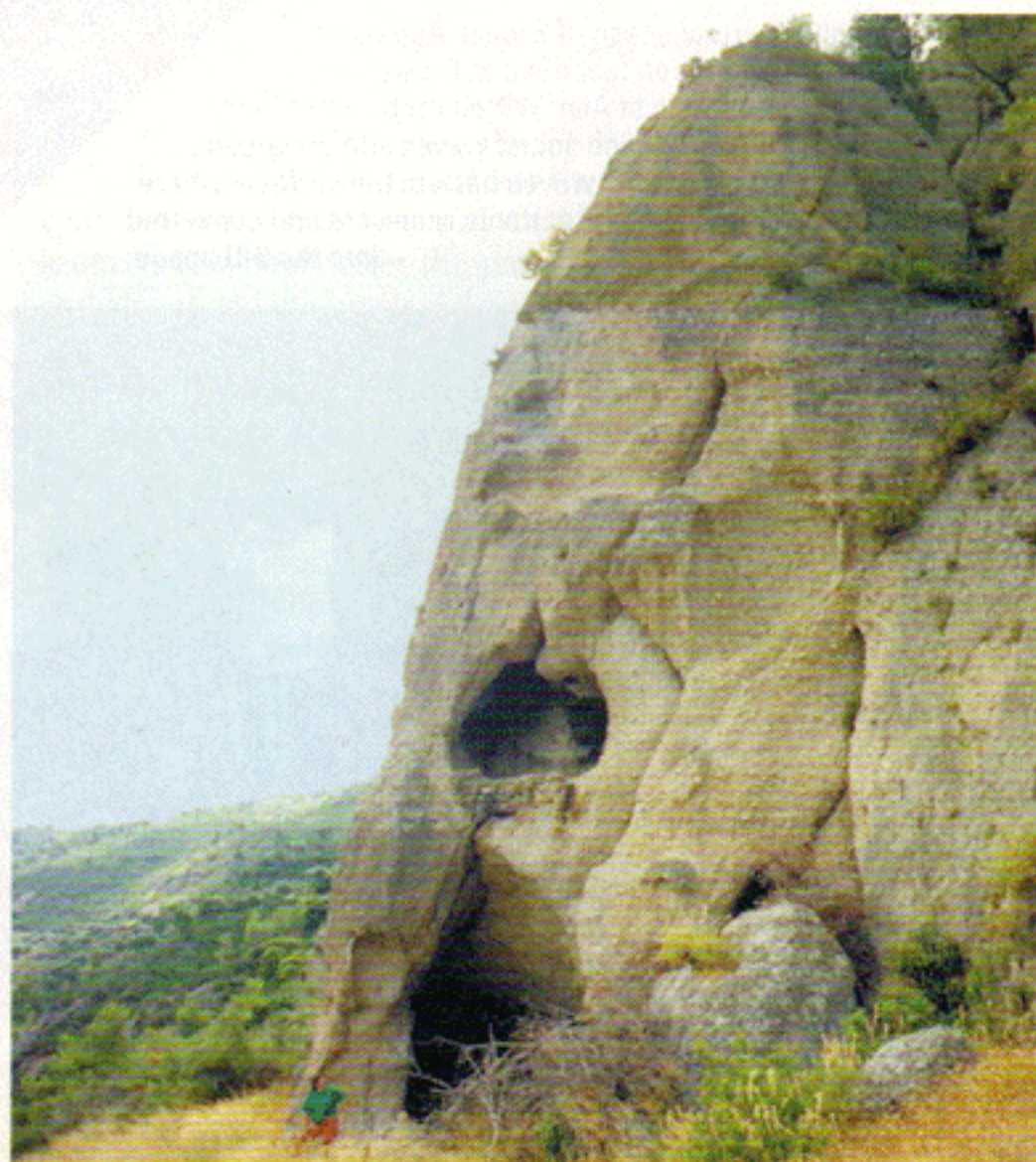
These were levels of Byzantine, Roman, Hellenistic, Classical, Bronze Age, and Neolithic settlements. Over the next ten years they bored nearly a hundred holes in a square mile between the rivers. Soter raided his own savings to pay for the work.

In 1994, the Helike Project and geophysicists from the University of Patras made a magnetic survey near the present-day village of Eliki. Buried objects disturb the earth's magnetic field, and in an olive grove their instruments detected a rectilinear outline beneath the

Soter, and oceanographer Paul Kronfield spent two weeks using sonar to probe the gulf's mud. "We decided to try once and for all to determine whether it was in the sea or not by doing a thorough survey," says Soter. They examined three square miles of the ocean bottom. They discovered an earthquake fault, signs of an ancient harbor breakwater, and what may be the hulks of ten Spartan ships that foundered off Helike that fateful night. But they found no sign of the ancient city.

Soter and Katsonopoulou returned to the ancient texts for clues. "It's one thing to read the ancient sources in translation and another to be able to interpret them," says Katsonopoulou. "If you cannot read ancient sources, you can't be a good archaeologist." Pausanias, the second-century Greek traveler, described the submerged Helike as

The Cave of Herakles, which housed an oracle of the god. In the second century A.D., the Greek traveler Pausanias wrote that the cave was about three and a half miles east of the submerged ruins of Helike. Identification of the cave helped the Helike Project decide where to search for the buried city.



They found evidence of Classical Helike at last—a stone building, its walls collapsed as if leveled by a giant wave.

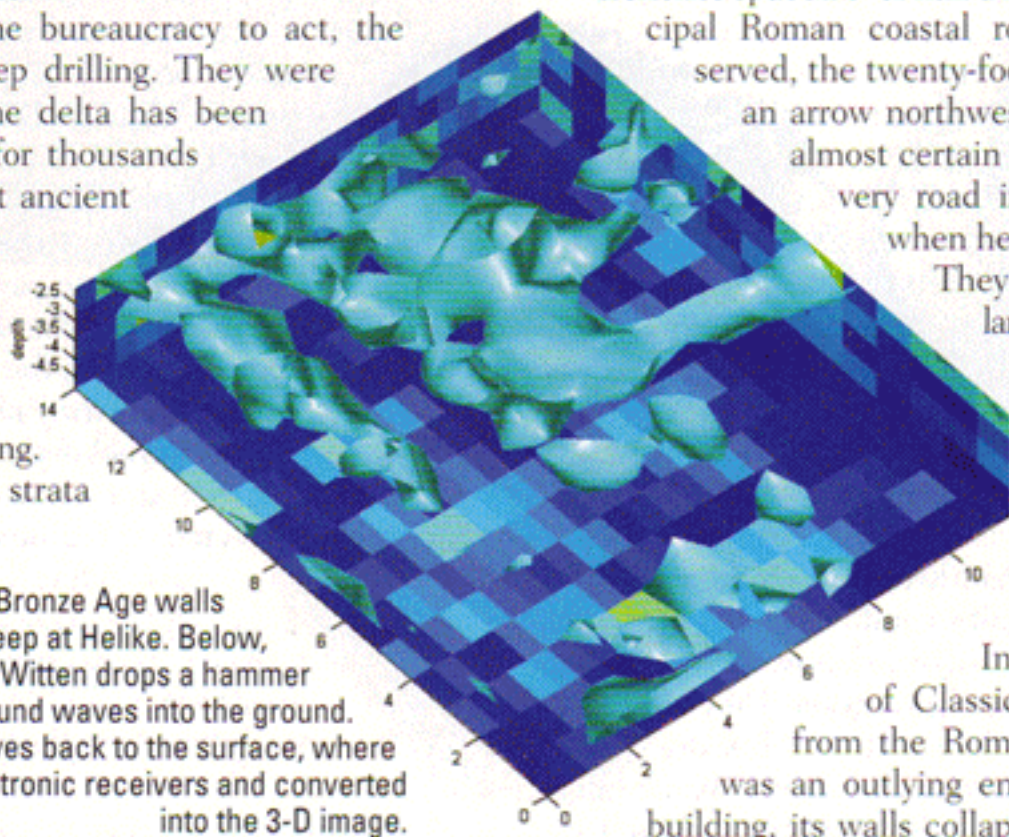
ground. Shallow auger holes revealed Roman potsherds covering the tops of walls, four and a half feet down.

They dug the following summer and found a large Roman building. Within its six-foot-high walls they found five distinct layers containing bones and olive pits, pottery, flooring, and eight bronze coins dating from the third to the early fifth century A.D. Atop them was a layer of fallen stones, chunks of plaster, roof tiles, and bricks: potentially, earthquake debris. Above that, the occupation levels end.

This was the first ancient structure ever unearthed in the Helike Delta, but surprisingly, the Greek Archaeological Service would not give the Helike Project a permit to dig again for another five years.

As they waited for the bureaucracy to act, the team was allowed to keep drilling. They were surprised to find that the delta has been intermittently occupied for thousands of years; all but the most ancient settlements were above the present sea level. Soter discovered that despite episodes of catastrophic subsidence, overall the delta is slowly rising. The Classical level, the strata

Right, a virtual image of Bronze Age walls buried ten to thirteen feet deep at Helike. Below, project geophysicist Alan Witten drops a hammer on a metal plate to send sound waves into the ground. The walls reflect the waves back to the surface, where they are recorded by electronic receivers and converted into the 3-D image.



of their long-sought city, was only six to twelve feet down.

Meanwhile, Katsonopoulou had made another advance. She realized that Strabo's description of the location of the Poseidon statue had been misinterpreted. The ferrymen who reported the statue must not have been transporting passengers between opposite shorelines on the gulf but instead crossing a large lagoon on the earthquake-ravaged delta. The sanctuary may have succumbed to the sea, but when found, Katsonopoulou predicted, it would lie under the mud of a vanished lagoon.

In 2000, their permit finally in hand, they launched three successive seasons of discovery. With a series of trenches spaced over half a mile, they unveiled the principal Roman coastal road. Remarkably well-preserved, the twenty-foot-wide way runs straight as an arrow northwest to southeast; the team is almost certain that Pausanias traveled this very road in the second century A.D. when he viewed the submerged city.

They also excavated part of a large fourth-century A.D. Roman compound. This, too, was an earthquake ruin, its walls collapsed, its roof fallen, its rubble burying a crushed human skeleton atop the skull of a large horned animal.

In 2001, they found evidence of Classical Helike at last. Not far from the Roman road, twelve feet deep, was an outlying enclave of the city—a stone building, its walls collapsed as if leveled by a giant wave. The trench yielded black-glazed cups, a small painted terracotta head, and a mint silver coin from Sikyon, a neighboring town, cast in the fourth century B.C. The ruins were smothered in a thick layer of fine dark clay; analyses of the microscopic organisms preserved in the layer proved it was indeed deposited in brackish water—the ruins had been drowned in a lagoon, just as Katsonopoulou had predicted.

In 1998, a boring in a vineyard in the town of Rizomylos had brought up a core with a layer from ten to twenty feet below ground



Helike Project. Seismic image by Jamie Rich for the Helike Project

Archaeologist Maria Stephanopoulou removes one of many complete pots from the storeroom of a large Early Bronze Age house at Helike.



stuffed with pottery fragments and bones, some charred by fire. Two years later, they dug a trench nearby and found massive, collapsed walls and more scorched sherds. Based on the walls' depth and appearance, they suspected it was an Archaic Greek settlement, dating from before 500 B.C. But without complete pots, the team could not be sure. "We didn't know what it was," says Soter. "We only had plain fragments, and we couldn't identify them."

In 2001, they sank more trenches and discovered structures flanking a cobbled street. Inside, intact, were clay storage jars, footed cups, and kraters, wide two-handled bowls used for mixing wine and water. "I walked over to the trench and looked down at Dora, and she looked up at me and said, 'Steven, these pots are prehistoric.' She was completely amazed. We were all amazed."

The ceramics dated the findings to about 2600 to 2300 B.C.—within the Early Bronze Age. Undisturbed by subsequent building or excavations, it is one of the most important prehistoric sites in the Peloponnese.

Katsonopoulou is convinced it was a regional center, for it was home to wealthy, if not royal, owners. The team found gold and silver clothing ornaments, as well as a distinctive two-handled "depas" cup, the very first of its kind found on the Peloponnese. It's of a type that Heinrich Schliemann first unearthed at Troy and is associated with Trojan nobility. And, as befits the Helike Delta, catastrophe is evident: The long walls of one building dip toward the sea and then take a sudden jog, as if they slid out of line atop an earthquake fault.

The project, however, quickly became a victim of its own success. The landowner, seeing the rich haul, refused the team permission to dig in 2002. In response, Soter and some friends organized the Helike Foundation, based in New York, and raised funds from private individuals to buy the narrow third-of-an-acre strip where work is now taking place. The Greek bottling company Tria Epsilon and the U.S.-based Institute for Aegean Prehistory also contributed funds for the 2003 excavation season.

IN MIDAFTERNOON, Stephanopoulou puts down her knife—the ancient pot is free. Still filled with heavy mud, it is hustled to the backhoe's scoop, hoisted to the surface, and then sits in the sun as Katsonopoulou examines it, beaming. For a few minutes, work in both trenches comes to a stop as the elated crews drop their tools and gather to inspect the trophy. Then Katsonopoulou slips it into protective plastic and chauffeurs it to the conservation laboratory in her Jeep.

In the last three years, the Helike Project has excavated nearly seventy trenches and has made several astonishing

discoveries. Still, the project faces intense challenges.

The Greek Railways Organization intends to lay new track right through the excavation area, and as more and more Athenians buy homes along the coast, development encroaches on the open fields where the project hopes to dig. Katsonopoulou has petitioned the Greek Ministry of Culture to declare the area an archaeological zone off-limits to new construction, but such a move, if it comes at all, may be far in the future. Meanwhile, the World Monuments Fund has included Helike in its 2004 Watch List of 100 Most Endangered Sites.

Katsonopoulou and Soter are energetic advocates for their cause. In the off-season, they spread the word at conferences and lectures. In Greece, Katsonopoulou's work in the coastal towns has made her a local celebrity. She also works hard to win the backing of the political establishment. The Eliki village president, Yiannis Asimakopoulos, is an enthusiastic supporter, and he lets the project use the village community center as a conservation laboratory and minimuseum. A few hours after the pot is removed, a member of parliament and the provincial governor pay a visit, each with an entourage of aides. Katsonopoulou passionately describes to them Helike's important place in the local heritage.

The new trophy is sitting unnoticed in a bucket under a table, but there are plenty of other finds on display: coins, jewelry, pottery, and skulls. As the sun sets, the group caravans to the excavation sites, then moves to the Eliki village central square where Katsonopoulou, Soter, and their crew schmooze the pots over ouzo and souvlaki. As the moon rises and the clock ticks toward midnight, most of the crew and politicians take their leave. Palaiologos and Stephanopoulou struggle to stay awake. But Soter and Katsonopoulou soldier on with the village president talking about the present, the future, and the past. ■

TOM GIDWITZ is a contributing editor of ARCHAEOLOGY. For further reading, visit www.archaeology.org.