Teotihuacan (left) was once a bustling, cosmopolitan metropolis. Its empire may have included Tikal, an important Maya city 1000 kilometers away (right).

PHOTOS: (LEFT TO RIGHT) MAX SHEN/GETTY IMAGES; W. E. GARRETT/NATIONAL GEOGRAPHIC IMAGE COLLECTION

THE ARRIVAL OF STRANGERS

New evidence points to a clash between two ancient Mesoamerican cultures, Teotihuacan and the Maya

By **Lizzie Wade**, *in San Juan Teotihuacan, Mexico*

On 16 January 378 C.E., a stranger arrived in Tikal, a large Maya city in what is now northern Guatemala. His name was Sihyaj K'ahk' (SEE-yah Kak), or Fire is Born, and he was likely a mighty warrior from a distant land. Many archaeologists think he hailed from Teotihuacan, a metropolis of 100,000 people about 1000 kilometers northwest of Tikal, near today's Mexico City. And he may have come with an army.

The stone Maya monuments that record Sihyaj K'ahk's arrival don't say why he came or how he was received by Chak Tok Ich'aak, or Jaguar Paw, the long-reigning king of Tikal. But the day Sihyaj K'ahk' marched into the city was the day Jaguar Paw died.

The engravings suggest Sihyaj K'ahk' had been sent by a powerful foreign ruler called Spearthrower Owl. Within 2 years, Spearthrower Owl's young son was crowned the new king of Tikal. In portraits carved on stone monuments there, the new king, named Yax Nuun Ayiin, holds an atlatl, a spearthrower used by Teotihuacan warriors, and wears a Teotihuacan-style headdress adorned with tassels. Some images of him and his father on monuments at Tikal are even carved in the flat, geometric style of Teotihuacan art, distinct from the intricate, naturalistic portraits of the Maya. Under the exotic new king and his descendants, Tikal became one of the most powerful cities in the Maya region.

Archaeologists have known the outline of those events for decades, but have long debated their meaning. Now, new evidence from both Teotihuacan and the Maya region has brought the relationship between those two great cultures back into the spotlight—and hints it may have been more contentious than most researchers had thought.

Evidence from Maya writing and art suggests Teotihuacan conquered Tikal outright, adding it to what some archaeologists see as a sweeping empire that may have included several Maya cities. Defaced art in Teotihuacan suggests that about the time Tikal fell under its sway, Teotihuacan may have turned against Maya expatriates who had lived there peacefully for decades.

But doubts about that narrative persist, underlining the challenge of interpreting the archaeological traces of empires that fell short of complete domination. Some researchers say the events of 378 may

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have been a more limited case of palace intrigue, with the nobles of one powerful region elbowing their way into the politics of another. Archaeologists might even be falling for ancient propaganda: Sihyaj K'ahk' and his army may have been local Maya usurpers who appropriated the symbolism of faraway Teotihuacan. Either way, archaeologists say they are glimpsing a political and cultural collision that helped spark the flourishing of Tikal in the centuries to come.

"It's a thrilling time to be working in this area," says Stephen Houston, an archaeologist at Brown University. "We're getting astounding new finds that amplify what had just been a sketched story before."

MAYA TRAVELERS visiting Teotihuacan during the fourth century would have encountered a city like no other they had ever seen. Three enormous pyramids loomed over the main street, now known as the Avenue of the Dead, their shapes reflecting snow-capped volcanoes visible in the distance. An orderly grid of roads extended from the avenue, and the city's 100,000 residents—far more than in even the largest Maya cities of the time—lived in comfortable, standardized apartment complexes. Economic inequality was strikingly low. Depictions of warriors in Teotihuacan's art, as well as human sacrifices entombed in military regalia, spoke of the city's military might. Merchants from far-flung places such as Oaxaca to the southeast and the Gulf Coast brought goods for Teotihuacan's markets, and pilgrims flocked to the city for religious ceremonies.

Some of those foreigners settled here and set up ethnic enclaves that archaeologists can identify from their foreign household goods and burial practices. "Teotihuacan was a great urban center, almost like Los Angeles or New York City. People from all over Mesoamerica were there," says Karl Taube, an archaeologist at the University of California (UC), Riverside.

Teotihuacanos were likely just as fascinated by the Maya area, about 1000 kilometers away in what is now southern Mexico, Guatemala, Belize, and Honduras. It lay as far to the east as one could get in Mesoamerica, linking it to the mythologically potent rising Sun. Although the cultures shared staples such as maize, the luxury goods prized in Teotihuacan, such as jade, cacao, and brightly colored quetzal feathers, all came from the tropical jungles of the Maya lowlands. "It was a source of wealth and abundance," Taube says. When seen from the chilly, high-altitude plain of Teotihuacan, the lush Maya area would have looked like a paradise replete with elegance and luxury.

Ceramics decorated with naturalistic Maya art (top) were used in a feast at Teotihuacan. In Tikal, a portrait of Spearthrower Owl (bottom), a possible leader of Teotihuacan, was carved on a monument, in Teotihuacan's geometric style.

Diplomacy and trade with the Maya could be tricky, however, because the Maya area was politically fragmented. It was dotted with largely independent city-states knitted together by shared religion and culture, similar to ancient Greece. The most powerful, such as Tikal and its nearby rival Calakmul, commanded the loyalty of smaller cities. But alliances shifted constantly, and no Maya king ever managed to politically unite the entire 390,000-square-kilometer region. Teotihuacan likely had distinct and ever-changing relationships with different Maya cities.

Their interactions left plenty of traces, in exchanges of art, ceramics, and cultural influences. Radiocarbon dating, as well as the exact dates the Maya recorded on their monuments, show definitively that the cultures existed at the same time. Their interactions were most intense in the fourth and fifth centuries C.E. (see timeline, p. 971), the time of the late Roman Empire and part of what archaeologists in Mesoamerica call the Early Classic period. What archaeologists disagree on, often vehemently, is whether that relationship was peaceful and reciprocal or was based on violence and domination.

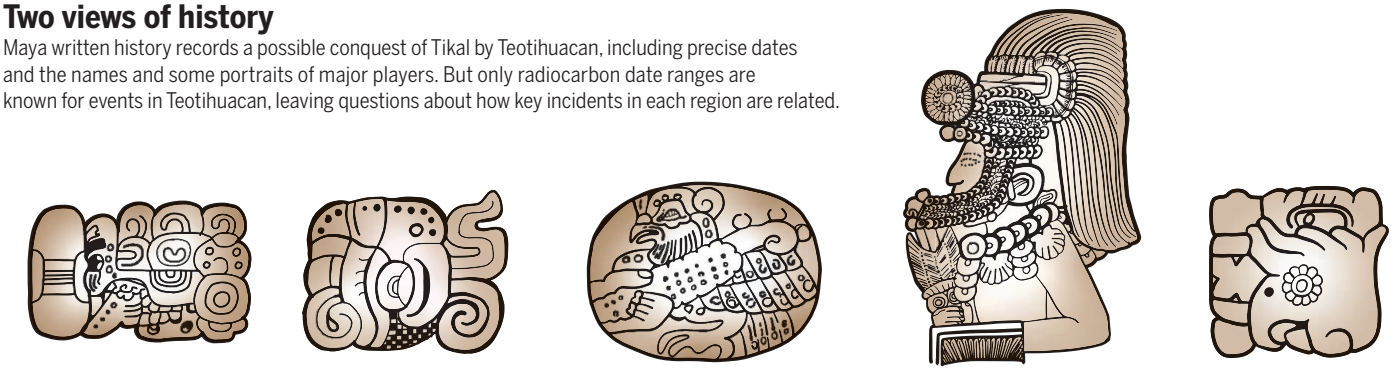
ON A SUNNY SUMMER morning here, Nawa Sugiyama, an archaeologist at UC Riverside, ducks into a tunnel her team has dug under what was once an impressive pyramid. Just off the Avenue of the Dead and between the imposing Sun and Moon pyramids, the structure sits in what is now called the Plaza of the Columns. (Confusingly, it has no columns and consists of several interconnected plazas and large pyramids.) Crouching under the tunnel's low ceiling, Sugiyama inspects dozens of pieces of broken ceramics painstakingly excavated by her students and the project's workers.

A mix of Maya and Teotihuacan styles, the shards testify not to violence, but to celebration: After the ceramics were broken, they were ceremonially sprinkled into a pit in a type of offering commonly made at the end of a feast in ancient Mesoamerica. The students and workers have excavated more than 10,000 ceramic pieces from this single spot, and this season they uncovered an average of 250 a day. "I've never seen anything like it," Sugiyama says. "We're a little worried that it will never end."

PHOTOS: (TOP TO BOTTOM) CORTESÍA/NOTIMEX/NEWSCOM; KENNETH GARRETT

Two views of history

Maya written history records a possible conquest of Tikal by Teotihuacan, including precise dates and the names and some portraits of major players. But only radiocarbon date ranges are known for events in Teotihuacan, leaving questions about how key incidents in each region are related.



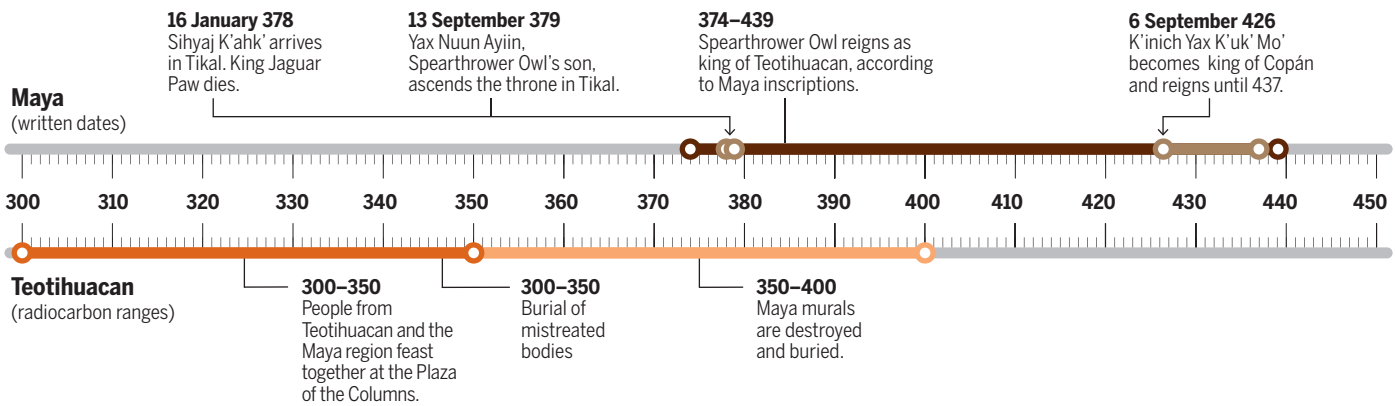
Jaguar Paw (name glyph)

Sihyaj K'ahk' (name glyph)

Spearthrower Owl (name glyph)

Yax Nuun Ayiin (portrait)

K'inich Yax K'uk' Mo' (name glyph)



Sugiyama and her team think Teotihuacanos and Maya guests mingled at that ancient feast, perhaps to commemorate completing the pyramid. Most of the ceramic pieces represent fancy servingware, like the fine china people today might bring out for guests. According to radiocarbon dating of burned food scraps, including rabbit bones, maize, and yucca from the tropical Maya region, the feast took place between 300 and 350 C.E.

Across the plaza from the pyramid, Sugiyama and her collaborators have uncovered a plush compound of buildings once decorated with elaborate Maya murals painted in vivid hues, such as blues and greens, not often seen in Teotihuacan art. Perhaps the Maya people who lived in the Plaza of the Columns were high-status diplomats or members of noble families sent to the capital, like the European nobles who lived or grew up in foreign courts to strengthen alliances and facilitate royal marriages, says David Carballo, an archaeologist at Boston University.

"They're practicing their own customs, which speaks to a peaceful coexistence with the rest of Teotihuacan society," says Verónica Ortega, an archaeologist at Mexico's National Institute of Anthropology and History and a co-director with Sugiyama of the Plaza of the Columns project.

But several decades after the feast, something changed. When the team found the elegant murals, they were no longer attached to the compound's walls, as much of Teotihuacan's art still is. The murals had been smashed to pieces and deeply buried—"absolutely obliterated," Sugiyama says. Faces were cut and scratched off until they were unidentifiable. "It was an act of intentional destruction," Sugiyama says. According to radiocarbon dating of organic matter covering the remains of the murals, the destruction took place between 350 and 400 C.E.

Although Sugiyama and Ortega work together, they interpret the mural destruction differently. Ortega sees it as a ritual that Teotihuacanos and Maya people both participated in—similar to the offering of broken ceramics made at the end of the feast. But Sugiyama points out that scratching out individual faces is an unusual act of targeted erasure that the Maya residents would have been unlikely to embrace.

Sugiyama and Ortega's team also found a nearby pit filled with human skeletons that raises darker questions. The bodies lie in pieces, which is not typical of other burials or sacrifices here. The bone pit could have been simply a workshop for making bone tools—or the remains of a massacre, Sugiyama says. Some skulls have flat backs and slightly pointed tops, and some teeth have holes for jewelry—signs of cranial shaping and adornment styles practiced by the Maya but uncommon in Teotihuacan. Archaeologists will need to study the dietary isotopes and perhaps DNA from the bones to be sure they belonged to Maya people. Researchers would also like to resolve another mystery: Preliminary dating suggests the bones were dumped in the pit about the time of the feast, when relations with the Maya were apparently peaceful.

The radiocarbon dates for the mural destruction tell a clearer story, however. They place it between 350 and 400—within about 25 years of the arrival of Sihyaj K'ahk' in Tikal in 378. "The fact that [the Teotihuacanos] absolutely destroy the murals and then soon after go attack places in the Maya lowlands suggests to me that diplomatic relations had turned sour for some reason," Carballo says. "Turbulent times are coming," Sugiyama agrees.

WHEN SIHYAJ K'AHK' arrived in Tikal, he would have found a smaller, less centralized city than Teotihuacan. Royal palaces and temples perched on hilltops still surrounded by jungle below. Roads cut through the trees, connecting clusters of buildings used by the elite and serving as routes for commoners to follow from their

CREDITS: (GRAPHIC) N. DESAI/*SCIENCE*; (ILLUSTRATIONS, LEFT TO RIGHT) MESOWEB.COM VIA S. MARTIN *ET AL.*, *CHRONICLE OF THE MAYA KINGS AND QUEENS: DECIPHERING THE DYNASTIES OF THE ANCIENT MAYA*. THAMES AND HUDSON, 2000 (2); JUAN PEDRO LAPORTE VIA H. G. CAPISTRÁN, "BÚHOS, LANZADARDOS Y ANTEOJERAS. ELEMENTOS TEOTIHUACANOS EN TIKAL, ¿PRESENCIA O INFLUENCIA?," THESIS, NATIONAL AUTONOMOUS UNIVERSITY OF MEXICO, 2007; JOHN MONTGOMERY VIA THE FOUNDATION FOR THE ADVANCEMENT OF MESOAMERICAN STUDIES, 2000; DAVID STUART

scattered farms to markets and ceremonies in the city center. Tall stone monuments covered in dense writing documented key events in Tikal's history, such as the reigns of kings. Only the city's richest and most powerful people could have read those texts, however: Maya history was written by elites, for elites. (Teotihuacan's script remains undeciphered, partly because researchers don't know its language, whereas ancient Mayan writing is related to a few Mayan languages spoken today.)

In the early 1970s, epigrapher Tatiana Proskouriakoff became the first person in centuries to begin to piece together what happened in Tikal in 378. On the basis of an incomplete reading of the monuments recording the arrival of Sihyaj K'ahk', she spoke of "the arrival of strangers" and proposed they were from central Mexico.

In 2000, David Stuart, an archaeologist and epigrapher at the University of Texas, Austin, offered a more complete understanding of those texts, and he is reanalyzing them now. Thanks to advances in deciphering Mayan script, he can read the glyphs carved into the monuments, including the names and relationships of Sihyaj K'ahk', Jaguar Paw, and Spearthrower Owl. But the historical records raise more questions than they answer.

One especially hot question is whom, exactly, Sihyaj K'ahk' was working for. He apparently was following the orders of Spearthrower Owl, described on the monuments as a foreign king who ruled a faraway land from 374 to 439 C.E. Spearthrower Owl's name is written in a style that echoes Teotihuacan art, and a portrait of him at Tikal was carved in Teotihuacan's unmistakable geometric style, Stuart says. Stuart thinks Spearthrower Owl was the king of Teotihuacan, possibly when the murals at the Plaza of the Columns were destroyed.

But many archaeologists think Teotihuacan had no king. No royal tomb or any depiction of a monarch has ever been found there. Although some researchers argue that only a strong monarch could have ruled such a grand and regimented city, others assert that the city was governed by a council or in some other cooperative way. Carballo points out that most Teotihuacan art focuses on people's clothing and other accoutrements rather than individual features, a sign that the offices they held were more important than their individual identities. Images of birds of prey with atlatls—the key elements of the glyph the Maya used to write Spearthrower Owl's name—show up around Teotihuacan for centuries, far longer than any single person could have ruled. "I think [the glyph] stands for an office, perhaps a military role of some sort in Teotihuacan" that many people could hold over time, Carballo says, rather than an individual monarch.

He and many other archaeologists working in Teotihuacan resist the notion that Maya written history should trump evidence from Teotihuacan itself. Maya cities were ruled by kings, and the Maya expectation of monarchy may have led them to misunderstand Spearthrower Owl's role, Carballo says. Perhaps Sihyaj K'ahk' and the other invaders even promoted that misconception, says Michael Smith, an archaeologist at Arizona State University, Tempe. "Say you're the spin doctor for Sihyaj K'ahk', and you're trying to convince these Maya kings that this guy is really something. What are you going to say? Are you going to say he's from Teotihuacan, where people sort of ruled themselves? Or are you going to say, 'This guy is sent by the king of the biggest city that anyone's ever heard of'?"

Whoever sent Sihyaj K'ahk', Francisco Estrada-Belli, an archaeologist at Tulane University, thinks he didn't stop with Tikal. Estrada-Belli found murals at the city of Holmul, 35 kilometers east of Tikal, showing Teotihuacan warriors accompanying a new king during his ascension to the throne. The building they decorated was constructed to commemorate the first anniversary of Sihyaj K'ahk's arrival in Tikal. Maya records imply that "within a few years, Sihyaj K'ahk' had installed friendly kings at a number of important Maya cities," Estrada-Belli says. "For many of them, this is the beginning of a new dynasty. It's a major turning point."

THE POSSIBILITY REMAINS, however, that Sihyaj K'ahk' and Spearthrower Owl weren't from Teotihuacan at all and were simply invoking that great city to impress a Maya audience. Maya mythology and religion held foreign goods in high esteem, and Teotihuacan was the most prestigious faraway place in Mesoamerica. Little evidence exists of Teotihuacanos living at Tikal, notes Joyce Marcus, an archaeologist at the University of Michigan, Ann Arbor. "The simplest explanation is Tikal's new king"—Spearthrower Owl's son, Yax Nuun Ayiin—"was a Maya usurper who cloaked himself in prestigious foreign attire," she says. "Wearing the trappings of highland Mexican warriors could communicate that the Maya leader had military prowess."

"Conquest is exciting and easy to understand," says Geoffrey Braswell, an archaeologist at UC San Diego. But he, too, thinks the events at Tikal reflect a conflict between Maya groups, one of which adopted the symbols of a foreign power to strengthen their rebellion. Elite groups have practiced similar cultural emulation throughout history, he says. Chinese porcelain became a status symbol in 17th and 18th century Europe, and upper-class Russians spoke French to each other in the 19th century, for example. "It's really quite common," Braswell says.

Isotopic evidence published in 2005 and 2010 seems to be on Marcus and Braswell's side. Archaeologists excavated the tombs of Yax Nuun Ayiin at Tikal and K'inich Yax K'uk' Mo', the founder of a new dy-

Spheres of influence

In the fourth century C.E., Teotihuacan controlled a small empire in central Mexico, perhaps with outposts farther south. It traded with the independent city-states of the Maya region, and may have conquered several.

MAP: X. LIU/SCIENCE

nasty at Copán, a Maya city in Honduras. That Copán monarch is depicted wearing Teotihuacan-style dress, including unmistakable "goggles" over his eyes that evoke the rain god of central Mexico. Inscriptions say he was a foreign king and came to Teotihuacan for a ceremony that invested him with the right to rule before assuming Copán's throne. If any Maya kings came from Teotihuacan, it would be those two, Braswell says.

But analysis of the strontium isotopes preserved in his teeth showed that Yax Nuun Ayiin—whom inscriptions clearly name as Spearthrower Owl's son—grew up around Tikal. Researchers couldn't pinpoint the origins of K'inich Yax K'uk' Mo', but in his case, too, the isotopes ruled out central Mexico. "Find us a body [in the Maya lowlands] that's isotopically from Teotihuacan, with a spear in their hand," Braswell says, and he'd be more inclined to think that Teotihuacan conquered Tikal.

Edwin Román Ramírez is looking. An archaeologist at the Foundation for Maya Cultural and Natural Heritage (PACUNAM), he's leading new excavations at Tikal and searching for an ethnic enclave of Teotihuacanos. He expects to announce his first results at a symposium in Guatemala City this summer. He thinks Teotihuacan did conquer Tikal and that soldiers or others from Teotihuacan may have lived there. But, he says, "Their intention, I think, was never to turn [the Maya] into Teotihuacanos." Rather, Tikal likely represented a strategic economic outpost in the Maya region for Teotihuacan.

In fact, any Teotihuacan empire may have relied more on soft power than on overt colonization. The lives of Maya commoners in and around Tikal don't seem to change much after Sihyaj K'ahk's arrival, says Bárbara Arroyo, an archaeologist at Francisco Marroquín University, leading her to question the conquest scenario. Compare that situation with that of the Roman Empire from 27 B.C.E. to 476 C.E. Its imperial footprint is unmistakable, as it posted armies all over Europe, encouraged the adoption of a state religion, remodeled cities, and installed governors who answered directly to Rome.

"Empire is a spectrum," says Sue Alcock, a University of Michigan archaeologist who studies the Greek provinces of the Roman Empire. "It can be very hostile—I come in, I burn your temples, I take your women, I erase you from the earth." Or it can be gentler—"the elites [of both cultures] getting together and reconfiguring the social system."

Teotihuacan definitely controlled a small empire in central Mexico, Smith says. In the Mexican state of Morelos, 85 kilometers south of the city, for example, he found towns full of Teotihuacan-style ceramics and obsidian from the city's heyday. But farther afield, Teotihuacan's empire is a patchwork. It is "strategic about the places it's controlling," says Claudia García-Des Lauriers, an archaeologist at California State Polytechnic University, Pomona. She has mapped and excavated the site of Los Horcones on the coast of the Mexican state of Chiapas, where she says the main pyramid and plaza, used from about 400 to 600 C.E., resemble smaller versions of Teotihuacan's famous Pyramid of the Moon. Located in a narrow mountain pass through which trade passed, Los Horcones would have given Teotihuacan control of the flow of cacao and quetzal feathers from the lush Chiapas coast.

A monument from Tikal known as El Marcador includes the name glyph of Spearthrower Owl in a rosette at the top.

PHOTO: KENNETH GARRETT

Teotihuacan's influence extended as far as the Pacific coast of Guatemala, more than 1000 kilometers from the city. At sites there, archaeologists uncovered Teotihuacan-style household goods, including hundreds of incense burners used for domestic religious rituals, says Oswaldo Chinchilla, an archaeologist at Yale University. He and many other archaeologists think a colony of Teotihuacanos lived in Escuintla, perhaps commanding important land and sea trade routes. With their arrival, "The whole outlook of the sites and their culture changed," he says.

New clues about Teotihuacan's reach might come from PACUNAM's 2016 aerial survey of more than 2000 square kilometers in northern Guatemala, including the area around Tikal (*Science*, 28 September 2018, p. 1355). LIDAR, a laser-based remote sensing technique, revealed tens of thousands of unknown archaeological features, including possible fortifications such as flattened hilltops with watchtowers. "It's this feeling of an intensely guarded landscape," Houston says. Excavations of some sites will begin in May, and he is hoping for clues about whether the fortifications were built by the Maya in response to a Teotihuacan threat, or by Teotihuacanos and their allies once they had taken over Tikal.

One thing is clear: Sihyaj K'ahk's arrival changed the course of Tikal's history. "Following that invasion, Tikal ascends to a new level of greatness," says Thomas Garrison, an archaeologist at Ithaca College. As Tikal's influence spreads, it leads to "the foundation of much of what we know as Classic Maya culture," including a homogenization of written language, Román Ramírez says. "Even though they may have lost to Teotihuacan, Tikal is ultimately the big winner."

In about 550 C.E., Teotihuacan collapsed, its downtown burned in what was perhaps a rebellion by its own citizens. But centuries later, Tikal's kings still celebrated military victories by dressing as Teotihuacan warriors, Stuart says. Whatever happened in 378, its memory lingered far longer than Teotihuacan itself. ■

The arrival of strangers

Lizzie Wade

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