

## ARCHEOLOGY

# How the Akkadian Empire Was Hung Out to Dry

More than 4 millennia ago, the first empire rose along the banks of the Euphrates River in Southern Mesopotamia, in what is now Iraq. There, under the rule of Sargon of Akkad and his descendants, the Akkadians took control of a region spanning 800 miles from the Persian Gulf to the headwaters of the Euphrates River in present-day Turkey. They developed long-distance trade networks and installed governors in far-flung cities to the north.

This prosperity was at its peak for 100 years—from 2300 to 2200 B.C. But at the end of that period, all this activity came to a screeching halt. The complex state collapsed, leaving potsherds, remnants, and one vexing question for archeologists: What in the world happened in 2200 B.C.? Various answers have been proposed, including nomadic incursions and restless provincial governors. Now, on page 995 of this issue, Yale University archeologist Harvey Weiss and his colleagues from France and the United States propose a novel answer: The Akkadian empire, they suggest, literally dried up and withered away.

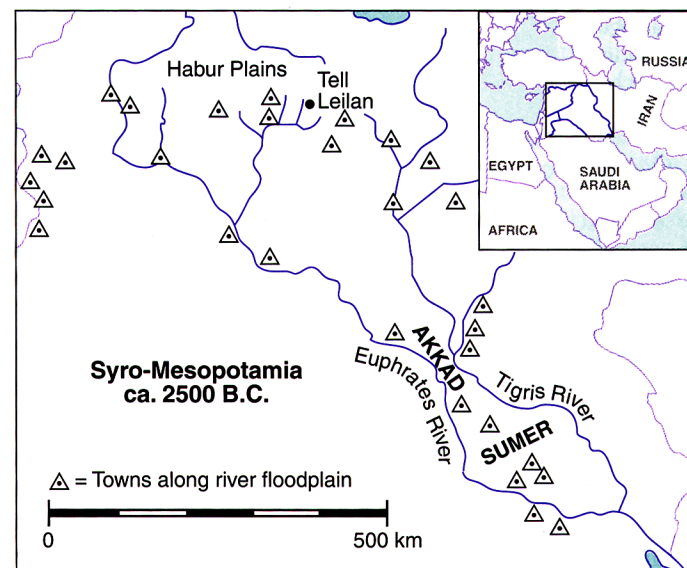
The empire's fall, they say, was triggered by an abrupt climate shift. Weiss and his team have brought together data from excavations of Akkadian sites in northern Mesopotamia, historical records of population movements and—most important—a new analysis of soil moisture to tell a tale of a land suddenly left high and dry. As crops withered in the north, the team contends, the Akkadians lost their source of wealth—the wheat, barley, and sheep that were the economic base for the empire. Tens of thousands of northern settlers streamed south, overtaking southern water and food supplies, and producing sudden urban chaos. "For the first time, we've identified abrupt climate change directly linked to the collapse of a thriving civilization," Weiss says.

The Akkadian collapse first attracted archeological attention in the 1940s, when researchers uncovered signs of a mysterious gap in the occupation of sites on the Habur Plains, in northern Mesopotamia, between 2200 and 1900 B.C. Until 2200 B.C., the record at these sites holds remnants of temples and workers' quarters and other signs of urban settlements. Then—nothing, at least for the next 300 years.

That gap coincided with evidence of massive immigration in the south, uncovered by Assyriologists (researchers who decipher cuneiform texts) and archeologists. Scribes in

the royal courts of the Third Dynasty of Ur, which succeeded the descendants of Sargon, described on clay tablets an influx of northern "barbarians"—and the construction of a wall to hold them back. Walls or no, records on other tablets show an increase in northern tribal names in southern cities—indicating a massive influx of people. The new arrivals strained food and water supplies in the south to the point of civic collapse.

Although researchers had a pretty good idea of what happened, they still had no idea why. "Archeologists couldn't explain the abandonment of certain regions, and historians couldn't explain the movements of people into the south at this time," Weiss says. But one clue kept nagging at him: The southern cities had a relatively stable source of water, the Euphrates River, but the abandoned northern sites must have relied on rain-fed agriculture, since no irrigation works have been uncovered there. Drought, Weiss suspected, would have spelled serious trouble.



**The empire dries out.** When drought hit northern towns such as Tell Leilan, people headed for southern towns near the Euphrates River.

One of Weiss' colleagues found signs of just such serious trouble buried in the soils of Tell Leilan—a site in northern Mesopotamia Weiss has been excavating for the past 14 years—and other sites within a 50-kilometer radius. Marie-Agnes Courty, an archeologist at the Centre National de Recherche Scientifique in Paris, analyzed layers of soil from Tell Leilan and found that the climate suddenly became much more arid at 2200 B.C. and stayed dry for about 300 years—

neatly matching the gap in the occupation record in the region. Under the microscope, Courty, a pioneer in the field of soil micro-morphology, saw tell-tale signs of aridity—fewer earthworm holes and wind-blown pellets and dust. Such a dry spell would have ruined the rain-fed northern crops that sustained the empire, Weiss says.

But what caused the dry spell? Courty's soil examination revealed a layer of volcanic ash at Tell Leilan and other sites in the region immediately before the climate dried out, indicating a volcanic eruption. But, Weiss explains, "it's unclear if the volcano was a coincidence or a cause [of the dry spell]. The relationship between volcanoes and climate change is still a research frontier." Other scientists agree. Paleoclimatologist Raymond Bradley of the University of Massachusetts at Amherst, who has read the paper, doubts that a volcano could perturb the climate over such a large area for 300 years. Known volcanoes in recent years show only brief periods of climate change lasting for only 5 to 10 years, says Bradley. Since volcanoes now seem unlikely suspects, Courty and Weiss plan to investigate other possible culprits, such as a massive warming of the ocean currents that could disrupt local weather patterns.

Other archeologists point out that Weiss hasn't absolutely nailed down the link between climate and the fall of the empire. Smithsonian Institution Secretary Robert McC. Adams, an archeologist who is an expert in Mesopotamian civilization, says that claims for the regional climate change based on local soil data from Tell Leilan may be overly broad. "The real problem," says Adams, "is you can have tremendous local variability" in climate in the region. He contends that data is needed from the soil at northern sites further away from Tell Leilan to show whether they too suddenly dried up.

On the other hand, Adams welcomes the theory as a stimulant to the field of Near Eastern archeology, where—he says—few researchers risk bold attempts to answer major, long-standing questions such as this one. "It will demand of other people in the field to either refute it or replicate it with their own work," Adams says. "And the only way to get people to pick up that challenge is for Weiss to stick his neck out. I applaud it."

—Ann Gibbons