

Oldest Civilization in the Americas Revealed

Almost 5000 years ago, ancient Peruvians built monumental temples and pyramids in dry valleys near the coast, showing that urban society in the Americas is as old as the most ancient civilizations of the Old World

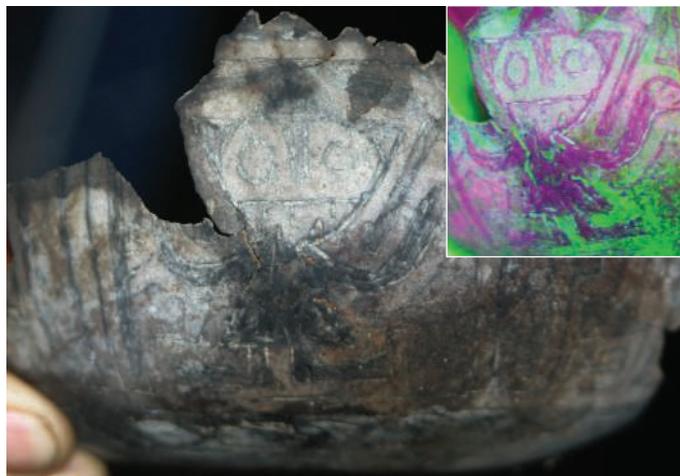
BARRANCA, PERU—A few miles northeast of this small fishing town, the Pan-American Highway cuts through a set of low, nondescript hummocks in the narrow Pativilca River valley. If they were so inclined, the truckers thundering along the road could spot on the hillocks the telltale signs of archaeological activity—vertical-sided cuts into the earth surrounded by graduate students with trowels, brushes, tweezers, plastic bags, and digital cameras.

The Pativilca, about 130 miles north of Lima, is one of four adjacent river valleys in the central Peruvian seacoast known collectively as the Norte Chico, or Little North (see map, p. 35). Pinched between rain shadows caused by the high Andes and the frigid Humboldt Current offshore, this is one of the driest places on earth; rainfall averages 5 cm a year or less. Because of the exceptional aridity, ancient remains are preserved with startling perfection. Yet the same aridity long caused archaeologists to ignore the Norte Chico, because the region lacks the potential for the full-scale agriculture thought to be necessary for the development of complex societies.

Then in the 1990s, groundbreaking research directed by archaeologist Ruth Shady Solis of the Universidad Nacional Mayor de San Marcos established that such societies had existed in the Norte Chico in the third millennium B.C.E., the same time that the Pharaohs were building their pyramids (*Science*, 27 April 2001, p. 723). And in the 23 December issue of *Nature*—in what archaeologist Daniel H. Sandweiss of the University of Maine at Orono describes as “truly significant” work—archaeologists Jonathan Haas of the Field Museum in Chicago and Winifred Creamer and graduate student Alvaro Ruiz of Northern Illinois University in DeKalb reported the startling scope of the Norte Chico ruins, which include “more than 20 separate residential centers with monumental architecture,” and are one of the world’s biggest early urban complexes. The ruins are dominated by large, pyramid-like structures, presumably temples, which

faced sunken, semicircular plazas—an architectural pattern common in later Andean societies. The new work includes 95 radiocarbon dates that confirm the great antiquity of this culture, which emerged about 2900 B.C.E. and survived until about 1800 B.C.E.

The concentration of cities in the Norte Chico is so early and so extensive, the archaeologists believe, that coastal Peru must be



Gourd lord. This piece of gourd reveals a figure (shown in false color, inset) carved about 2250 B.C.E. in the Norte Chico region.

added to the short list of humankind’s cradles of civilization, which includes Mesopotamia, Egypt, China, and India. Yet the Peruvian coast, as Shady has argued, is in some ways strikingly unlike the others. She points out that most of the Eurasian centers “interchanged goods and adaptive experiences,” whereas the Norte Chico “not only developed in isolation from those [societies], but also from Mesoamerica, the other center of civilization in the Americas, which developed at least 1500 years later.” The result, according to Haas, is that the Norte Chico provides a laboratory in which to observe “that most puzzling phenomenon, the invention of the state.” The people of this ancient, isolated society, says Haas, “had no models, no influences, nobody to copy. The state evolved here purely for intrinsic reasons.”

Cities without farms

Although the Norte Chico mounds were flagged as possible ruins as far back as 1905,

researchers never excavated them because, according to Ruiz, “they didn’t have any valuable gold or ceramic objects, which is what people used to look for.” The first full-scale excavation took place in 1941, when Gordon Willey and John M. Corbett of Harvard discovered a single multiroomed building at Aspero, a salt marsh at the mouth of the Supe River. Puzzled by what seemed to be an isolated structure, the team took 13 years to publish their data.

Willey and Corbett also noted a half-dozen odd “knolls, or hillocks,” which the two men described as “natural eminences of sand.” Thirty years later, in the 1970s, Willey returned to Aspero with archaeologist Michael E. Moseley, now at the University of Florida at Gainesville. They quickly established that the site actually covered 15 ha and that the natural knolls were, in truth, “temple-type platform mounds.” It was “an excellent, if embarrassing, example,” Willey later wrote, “of not being able to find what you are not looking for.” When carbon dating revealed that the site was very old, Moseley says, “it became obvious that Aspero was something big and important.”

It was also a conundrum. All complex Eurasian societies developed in association with large river valleys, which offered the abundant fertile land necessary for agriculture. And social scientists have long believed that the organization of labor necessary for agriculture was the well-spring of civilization. Aspero, on a little river that coursed through a desert, had almost no farmland. “We asked, ‘How could it sustain itself?’” Moseley says. “They weren’t growing anything there, or almost anything.”

The question prompted Moseley in 1975 to draw together earlier work by Peruvian and other researchers into what has been called the MFAC hypothesis: the maritime foundations of Andean civilization. He proposed that there was little agriculture around Aspero because it was a center of fishing, and that the later, highland Peruvian cultures, including the mighty Inca, all had their origins not in the mountains but in the great fishery of the Humboldt Current, still one of the world’s largest. Bone analyses show that late-Pleistocene coastal foragers “got 90% of their protein from the sea—anchovies, sardines, shellfish, and so on,” says archaeologist Susan deFrance of the University of Florida, Gainesville (*Science*, 18 September 1998, pp. 1830, 1834). “Later sites like Aspero are

just full of [marine] fish bones and show almost no evidence of food crops.” The MFAC hypothesis, she says, boils down to the belief “that these huge numbers of anchovy bones are telling you something.”

Despite its explanatory power, the hypothesis had to be modified when Shady began work at Caral, almost 23 kilometers upriver from Aspero. One of 18 sites with monumental and domestic architecture found by Shady’s team, Caral covered 60 ha and was, in Shady’s view, a true city—a central location that provided goods and services for the surrounding area and was socially differentiated, with lower-class barrios in the periphery and elite residences with painted masonry walls in the center. Dating to about 2800 B.C.E., Shady says, Caral was dominated by a pyramid bigger than a football field at the base and more than seven stories high, overlooking a plaza bordered by smaller monumental structures. The big

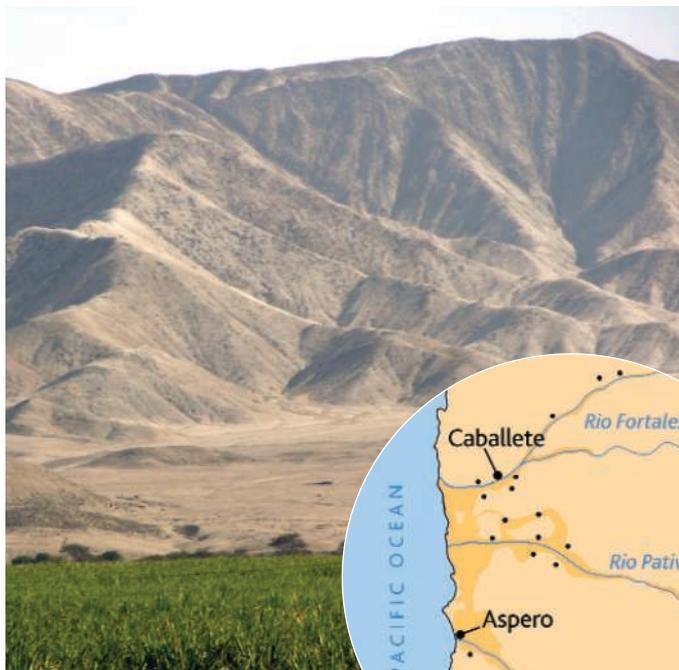
buildings suggested a large resident population, but again there were plenty of anchovy bones and little evidence of subsistence agriculture. The agricultural remains were mainly of cotton, used for fishnets, and the tropical tree fruits guayaba and pacaé. All were the products of irrigation. At the Norte Chico, the Andes foothills jut close to the coast, creating the sort of swiftly dropping rivers that are easiest to divert into fields.

To Moseley, the abundance of fish bones at Caral suggested that the ample protein on the coast allowed people to go inland and build irrigation networks to produce the cotton needed to expand fishing production. Caral thus lived in a symbiotic relationship with Aspero, exchanging food for cotton.

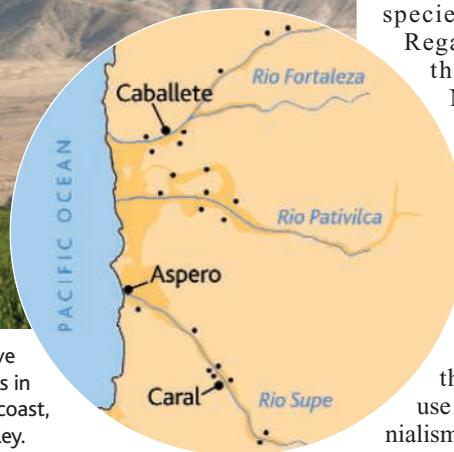
The making of a state

The central structures in Norte Chico cities were constructed in what Haas believes to have been sudden bursts of as few as two or three generations. The buildings were made largely by stacking, like so many bricks, mesh bags filled with stones. So perfect is the preservation that the Peruvian-American team can remove 4,000-year-old “bricks” from the pyramids almost intact, the cane mesh around them still in place. (Along with food remains, the mesh provided many of the samples used for carbon dating.) But the impressive size of the monuments is not matched by a rich material culture; the Norte Chico society existed before ceramics.

According to Creamer, Haas, and Ruiz,



Ancient cities. Archaeologists have uncovered surprisingly extensive sites in arid river valleys near the Peruvian coast, including mounds in the Fortaleza Valley.



the sheer scale of the inland sites raises a major challenge to the MFAC hypothesis. “The great bulk of the population lived inland in these cities,” Creamer says. “If there were 20 cities inland and one on the coast, and many of the inland cities are bigger than the coastal city, the center of the society was inland.”

But defenders of the MFAC hypothesis remain convinced that the coastal areas were of primary import. “What may be important,” says deFrance, is not the scope of the society “but where it emerged from and the food supply. You can’t eat cotton.”

Whether maritime or inland cities developed first, it seems clear that each depended on the other, and Haas says that this interdependency has major implications. “If I look beyond Aspero at this time, what I see is a bunch of fishing sites all up and down the Peruvian coast. All of them have cotton, but they are on the coast where they can’t really grow it. And then you have one big gorilla inland—a concentration of inland sites that are eating anchovies but can’t obtain them themselves. It’s a big puzzle until you put them together. ... I believe we are getting the first glimpses of what may be the growth of one of the world’s first large states, or something like it.”

In archaeological theory, societies are often depicted as moving from the kin-based hierarchy of the band to the more abstract authority of the state in order to organize the defense of some scarce resource. In the Norte Chico, the scarce resource was pre-

sumably arable land. Haas, Creamer, and Ruiz think that the land was more valuable than generally believed, and that agriculture was more important than allowed for in the MFAC hypothesis. Luis Huaman of the Universidad Peruana Cayetano Heredia in Lima is examining pollen from the Norte Chico sites and promises that “we will see when agriculture came in and what species were grown there.”

Regardless of the results, though, the cities of the Norte Chico were not sited strategically and did not have defensive walls; no evidence of warfare, such as burned buildings or mutilated corpses, has been found. Instead, Haas, Creamer, and Ruiz suggest, the basis of the rulers’ power was the use of ideology and ceremonialism.

“You have lots of feasting and drinking at these sites,” Haas says. “I have the beginning of evidence that there are the remains of feasts directly incorporated into the monuments, the food remains themselves and the hearths from cooking all built into it.” Building and maintaining the pyramids—so unlike anything else for thousands of miles—was the focus of communal spiritual exaltation, he suggests. A possible focus for the religion is the curious figure Creamer found incised on a gourd. Dated to 2250 B.C.E., it resembles in many ways later Peruvian deities, including the Inca god Wiraqocha, suggesting that the Norte Chico may have founded a religious tradition that existed for almost 4000 years.

Despite their excitement about the new work, MFAC backers see no reason yet to give up the belief that, as Sandweiss puts it, “the incredibly rich ocean off this incredibly impoverished coast was the critical factor.” Only the upper third of Aspero has been excavated, notes deFrance, and its emergence has never been properly dated. If coastal Aspero, though much smaller than the inland cities, is also much older, the MFAC hypothesis might be supported. With Moseley, Shady’s team is hoping to resolve the debate by digging to the bottom of Aspero next summer. Meanwhile, Haas, Creamer, and Ruiz have bought a house in Barranca for a laboratory and barracks. They plan to work in the area for years to come. “You’re going to be hearing a lot more about the Norte Chico,” Ruiz promises.

—CHARLES C. MANN