Next year geologists may decide the ice-free corridor was passable, after all. Or more hunting sites could turn up. What seems unlikely to be undone is the awareness that Native Americans may have been in the Americas for twenty thousand or even thirty thousand years. Given that the Ice Age made Europe north of the Loire Valley uninhabitable until some eighteen thousand years ago, the Western Hemisphere should perhaps no longer be described as the "New World." Britain, home of my ancestor Billington, was empty until about 12,500 B.C., because it was still covered by glaciers. If Monte Verde is correct, as most believe, people were thriving from Alaska to Chile while much of northern Europe was still empty of mankind and its works.

Cotton (or Anchovies) and Maize
(Tales of Two Civilizations, Part I)

“Would you like to hold a four-thousand-year-old textile?”

Without waiting for my assent, Jonathan Haas slid the fabric into my hand. It was about two inches on a side, little more than a scrap, and aged to the color of last season’s straw. To my eye, it seemed carefully made: a warp of fine cotton threads, ten or fifteen to the inch, crossed at half-inch intervals by paired weft threads in a basket-like pattern known as “weft-twining.” Haas, an archaeologist at the Field Museum of Natural History, in Chicago, had plucked the fabric from the earth minutes before, two graduate students immortalizing the operation with digital cameras. Thousands of years ago it had been handled or worn by other people; bits of their DNA might still adhere to the fibers. (If so, I was contaminating it.) To be the first person in two hundred generations to see or touch an object—to reach across time with eye and hand—is one of the reasons why people like Haas spend their days sifting through ancient soil.

Ordinarily, archaeologists label and store such artifacts immediately. But just as Haas removed the cloth from the ground, he was distracted by the excited shouts of a group of workers a hundred feet away. Haas clambered over the rough ground to take a look. Poking through the earth at the workers’ feet was something that resembled the edge of a dinner plate. Haas kneeled to inspect it. When he came
back to his feet, his eyebrows had shot up like a pair of circumflexes. “What’s this doing here?” Haas asked the air. “It looks like unfired ceramics.” The site was supposed to be very old—well before the local invention of pottery. “Better have a look at it.” Reaching for the trowel in his back pocket, he had realized that the textile was still in his hand, and asked if I would mind hanging on to it.

Haas was standing midway up a sixty-foot hummock in a valley along the central coast of Peru, about 130 miles north of Lima. The valley was desert, withered and yellow-gray except for the crooked band of green that marked the course of the Fortaleza River. In the late 1990s Haas and Winifred Creamer—his wife and co-teamleader, an archaeologist at Northern Illinois University—assisted a research team led by a Peruvian archaeologist, Ruth Shady Solís, that had spent years investigating an ancient ceremonial center fifteen miles to the south. By carbon-dating some of Shady’s material, they helped establish that the Peruvians had uncovered the oldest known city in the Americas.

Afterward, Haas, Creamer, and a Peruvian archaeologist, Álvaro Ruiz, drove a four-by-four through the back roads of the area between that excavation and the Fortaleza Valley. Called the Norte Chico, the region is studded with isolated knolls, twenty to fifty feet high and as much as two hundred feet long. These mounds had been flagged as possible ruins for nearly a century but never excavated because they seemed to have no valuable gold or ceramic objects. The Pan-American Highway had been laid right through them without causing an outcry. Haas, Creamer, and Ruiz had decided to drive through the area because they suspected that the mounds might be more interesting and numerous than had been realized. Ultimately, the three researchers determined that the Norte Chico held the remains of at least twenty-five cities, all of which they wanted to explore. On the day I visited, the team was unburrying a city they called Huarcacanga, after a nearby hamlet. Here the Pan-American Highway had, as it turned out, sliced through some of the oldest public architecture anywhere on earth.

“You mean to tell me there’s no dental picks at all?” Haas was saying. “All these people and not one has a dental pick? I’d really like a pick for this thing.”

“Nobody can find one,” Creamer said. She left to supervise the second part of the dig, two hundred yards away, on the other side of the highway.

Haas sighed, pushed back his wide-brimmed straw hat, and leaned into the dirt with jackknife and paintbrush. Despite the low clouds—an almost featureless carpet a thousand feet above our heads—perspiration stippled his temples. With Ruiz documenting the work with a digital camera, Haas silently plucked out dead insects, bits of leaf, and lengths of shica, a kind of thick twine made from reeds. When he had cleared enough, he sat back and stared at the now-exposed object. “I have no idea what this is,” he announced. “Got any tweezers?” Ruiz produced a caliper-sized pair from his backpack.

“Bravo,” Haas said. “We have tweezers.”

Although the Huarcacanga mound resembled an ancient sandhill, the soft, shifting, slightly gritty surface was not sand but the fine, windblown soil geologists call “loess.” Fertile stuff, if it can somehow be irrigated, the loess blanketed the underlying structure like a heavy tarpaulin tossed over a piece of machinery. Here and there the archaeologists had scooped it away to reveal granite walls that had once been smoothly plastered. Over time, weather and earthquakes and perhaps human malice had buckled most of the walls, but their overall layout had been preserved. Behind them the team had removed some of the fill: bags of stones, created by knotting shica into mesh sacks, filling the sacks with chunks of granite, and laying the results like fifty-pound bricks in the foundation.

Moving slowly, Haas tweezered out the pieces—they looked like the remnants of a serving platter—and passed them to Ruiz, who dropped them into a resealable plastic bag.

“Are all of those from a single object?” I asked.

“I’d guess so, but your guess is good as mine,” Haas said. With his wide face, gray goatee, and merry smile, he resembled, for the moment, an aging folk singer. “All I can say is, this is really strange.”
Almost twenty people were working on the Huacanca mound, shoveling away the obscuring loess. Half of them were local workers; Peru has so many ruins from so many cultures that in many small towns archaeological labor is a flourishing blue-collar trade. The others were graduate students from Peru and the United States. After two days of labor, workers and students were halfway through clearing off the top platform and the staircases leading to it; the layout of the structure was visible enough to map. The temple, for the mound was surely built for religious reasons, was laid out in a wide, shallow U about 150 feet long and 60 feet high, with a sunken plaza between the arms. In its day its grandeur would have overwhelmed the visitor. Little wonder: at the time of its construction, the Huacanca temple was among the world’s biggest buildings.

In college I read a one-volume history of the world by the distinguished historian William H. McNeill. Called, simply enough, A World History, and published in 1967, it began with what McNeill and most other historians then considered the four wellsprings of human civilization: the Tigris-Euphrates Valley, in modern Iraq, home of Sumer, oldest of all complex polities; the Nile Delta, in Egypt; the Indus Valley, in Pakistan; and, in east central China, the valley of the Huang He, more familiar to Westerners as the Yellow River. If McNeill were writing A World History today, discoveries like those at Huacanca would force him to add two more areas to the book. The first and better known is Mesoamerica, where half a dozen societies, the Olmec first among them, rose in the centuries before Christ. The second is the Peruvian littoral, home of a much older civilization that has come to light only in the twenty-first century.*

Mesoamerica would deserve its place in the human pantheon if its inhabitants had only created maize, in terms of harvest weight the world’s most important crop. But the inhabitants of Mexico and northern Central America also developed tomatoes, now basic to Italian cuisine; peppers, essential to Thai and Indian food; all the world’s squashes (except for a few domesticated in the United States); and many of the beans on dinner plates around the world. One writer has estimated that Indians developed three-fifths of the crops now in cultivation, most of them in Mesoamerica. Having secured their food supply, Mesoamerican societies turned to intellectual pursuits. In a millennium or less, a comparatively short time, they invented their own writing, astronomy, and mathematics, including the zero.

A few decades ago, many researchers would have included jump-starting Andean civilization on the honor roll of Mesoamerican accomplishments. The Olmec, it was proposed, visited Peru, and the locals, dutiful students, copied their example. Today we know that technologically sophisticated societies arose in Peru first—the starting date, to archaeologists’ surprise, keeps getting pushed back. Between 3200 and 2500 B.C., large-scale public buildings, the temple at Huacanca among them, rose up in at least seven settlements on the Peruvian coast—an extraordinary efflorescence for that time and place. When the people of the Norte Chico were building these cities, there was only one other urban complex on earth: Sumer.

In the last chapter, I described how archaeologists have spent the last century pushing back their estimates of when Indians were first present in the Americas. Now I turn to a parallel intellectual journey: the growth in understanding of the antiquity, diversity, complexity, and technological sophistication of Indian societies. Much as historians of early Eurasia focus on the Tigris-Euphrates, Nile, Indus, and Huang He Valleys, historians of the Americas focus on Mesoamerica and the Andes.

Like the Eurasian centers of civilization, Mesoamerica and the Andes were places where complex, long-lasting cultural traditions began. But there was a striking difference between the Eastern and Western Hemispheres: the degree of interaction between their great cultural centers. A constant traffic in goods and ideas among Eurasian societies allowed them to borrow or steal each other’s most interesting innovations: algebra from Islam, paper from China, the spinning wheel (probably) from India, the telescope from Europe. “In my lectures, I put this very baldly,” Alfred Crosby told me. “I say that nobody in Europe or Asia ever invented anything—they got it from somebody

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*I am not criticizing McNeill for failing to include the Americas on his list of civilizations; he was simply reflecting the beliefs of his time. I would criticize World History: Patterns of Change and Continuity, a high school text published two decades later, in time for my son to encounter it. Referring exclusively to the “four initial centers” of civilization, this “world history” allocated just nine pages to the pre-Columbian Americas. The thesis of the book in your hands is that Native American history merits more than nine pages.
else." He added, "When you think of the dozen most important things ever invented—the wheel, the alphabet, the stirrup, metallurgy—none of them were invented in Europe. But they all got used there."

By contrast, there was very little exchange of people, goods, or ideas between Mesoamerica and the Andes. Travelers on the Silk Road between China and the Mediterranean had to cross desert and the Hindu Kush, both formidable obstacles. But there was no road whatsoever across the two thousand miles of jagged mountains and thick rainforest between Mesoamerica and the Andes. In fact, there still isn't any road. The section of the Pan-American Highway that runs between them remains unfinished, because engineers can neither go around nor bulldoze through the swamps and mountains at the narrow Panama-Colombia border. Almost entirely by themselves for thousands of years, these two centers of civilization were so different that researchers today have difficulty finding a conceptual vocabulary that applies to both. Nonetheless, the tale of their mostly separate progress through time deserves prominent placement in any history of the world.

THE COTTON AGE

Peru is the cow-catcher on the train of continental drift. Leading South America's slow, grinding march toward Australia, its coastline hits the ocean floor and crumples up like a carpet shoved into a chair leg. Just offshore the impact pushes the plate on the bottom of the Pacific down and under the advancing coast, creating a trench almost five miles deep. Inland the impact thrusts up the two parallel mountain ranges that make up the Peruvian Andes: the high Cordillera Negra, the Black Range, to the west, and the still higher Cordillera Blanca, the White Range, to the east. (The White Range has snow; the Black rarely does. Hence the names.) In northern Peru a third range rises between them; the altiplano, a scoop of high plains some five hundred miles long, fills the gap in the south. Taken together, the cordilleras and the altiplano make up the Andes, the second-biggest chain of mountains in the world.

Sandwiched between the Andes and the Pacific, Peru’s coastland is a skinny gray-brown ribbon. From a geographer's point of view, it is a splendid anomaly, commencing with its extreme aridity. Over most of the South American landmass, the prevailing winds come from the east, across Brazil. As the warm, wet Amazonian air hits the towering Andes, it cools and sheds its moisture in the form of snow. Almost nothing is left for the Peruvian coast, which sits in the mountains' rain shadow. Surprisingly, the coast is also walled off from moisture on the Pacific side, where the trade winds create a second rain shadow. Blowing from the southwest, the trades push the warm surface waters northeast, pulling frigid water from the deep offshore trench to the surface. The upwelling, known as the Humboldt Current, chills the air above it. Coming from the west, the Pacific trade winds hit the cold air from the Humboldt Current and are forced upward in a classic temperature inversion of the sort common in southern California. In temperature inversions, air movement is inhibited—the cold air can't rise and the warm air doesn't fall—which in turn inhibits rainfall. Walled off from wet air by both the Andes and the Humboldt Current, the Peruvian littoral is astonishingly dry: the average annual precipitation is about two inches. The Atacama Desert, just south of Peru on the Chilean shore, is the driest place on earth—in some places rain has literally never been recorded. Space researchers use the Atacama as a model for the sands of Mars.

Pizarro’s pilot once explained how to navigate from Mexico's Pacific shore to Peru: Sail south along the coast until you no longer see trees. Then you are in Peru. Yet the coast is not a classic, Sahara-style desert of sand dunes and scorching sun. It is punctuated by more than fifty rivers, which channel Andes snowmelt to the sea. The lines of vegetation along their banks are like oases, fertile places where people can farm in an otherwise almost lifeless land. For much of the year the ocean air is cold enough on winter mornings to make fog roll into the valleys a hundred feet deep. People wear sweatshirts and futilely wipe at the mist on their windshields. By noon the fog lifts, having deposited a few hundredths of an inch of moisture (summed over the year, the fog gives the desert most of its annual two inches of precipitation).

If the anti-Clovis arguments are correct, paleo-Indians walked or paddled to Peru fifteen thousand years ago or more. But Peru's first known inhabitants appear in the archaeological record sometime before 10,000 B.C. According to two studies in Science in 1998, these people apparently lived part of the year in the foothills, gathering and hunting (for the latter, no traces of Clovis points have been found).
When winter came, they hiked to the warmer coast. At Quebrada Jaguay, a dry streambed on the nation’s southern coast that was one of the two sites described in Science, they dug up wedge clams and chased schools of six-inch drumfish with nets. They carried their catch to their base, which was about five miles from the shore. (Quebrada means “ravine” and often refers to the gullies caused by flash floods.) Quebrada Tacahuay, the other Science site, was closer to the shore but even drier: its average annual rainfall is less than a quarter inch. The site, exposed by the construction of a road, is an avian graveyard. On their annual travels between the foothills and the shore, paleo-Indians seem to have visited the area periodically to feed on the cormorants and boobies that nested on the rocks by the beach.

By 8000 B.C., paleo-Indians had radiated throughout western South America. Their lives were similar enough to contemporary hunter-gatherers that perhaps they should now be simply called Indians. Whatever the name, they were varied enough to have pleased Walt Whitman. Some groups had settled into mountain caves, skewering deer-size vicuña on spears; others plucked fish from mangrove swamps; still others stayed on the beach as their forebears had, weaving nets and setting them into the water. In the parched Atacama Desert, the Chinchorro created history’s first mummies.

Mummies were first discovered in the Atacama at the beginning of the twentieth century. But the Chinchorro attracted sustained attention only in 1983, when ninety-six superbly preserved cadavers were discovered beneath a massif that rises above downtown Arica, Chile. About 90 percent of their diet was seafood—fish, shellfish, marine mammals, and seaweed—the Chinchorro ate almost no fruit, vegetables, or land animals. Sometime before 5000 B.C. they began mummiﬁying bodies—children at first, adults later on. Nobody knows why. They peeled off the skin from the limbs like so many socks, covered the result with white clay, painted it to resemble the deceased, and ﬁtted the head with a wig made from its own hair. Such was the skill of the Chinchorro at preserving human flesh that scientists have been able to extract intact DNA from cadavers thousands of years older than the Egyptian pyramids.

Many of the child mummies exhibit signs of severe anemia, surprising in people who lived on seafood. In the preserved cadavers paleoparasitologists (scientists who study ancient parasites) have discovered eggs from *Diphyllobothrium pacificum*, a marine tapeworm that usually affects fish and sea lions but can slip into human beings who eat raw seafood. The parasite clamps onto the intestines and siphons nutrients from the body. Some grow to lengths of sixteen feet. If the tapeworm attaches to the right place in the gut, it can leech vitamin B₁₂ from the victim, instigating a lethal form of anemia. The Chinchorro, it seems, were beset by parasites.

The Chinchorro mummies were often repainted, indicating that they were not quickly interred but kept on display, perhaps for years. One can speculate that grieving parents were unable to let go of their children’s bodies in a society that viewed the spirit as adhering to the flesh. What is certain is that the Chinchorro mummies are the first known manifestation of a phenomenon that marked Andean society all the way up to the Inka: the belief that the venerated, preserved dead could exert a powerful impact on the living.

Sometime before 3200 B.C., and possibly before 3500 B.C., something happened in the Norte Chico. On a world level, the eruption at the Norte Chico was improbable, even aberrant. The Tigris–Euphrates, Nile, Indus, and Huang He Valleys were fertile, sunny, well-watered breadbaskets with long stretches of bottomland that practically invited farmers to stick seeds in the soil. Because intensive agriculture has been regarded a prerequisite for complex societies, it has long been claimed that civilizations can arise only in such farm-friendly places. The Peruvian littoral is an agronomical no-go zone: barren, cloudy, almost devoid of rain, seismically and climatically unstable. Except along the rivers, nothing grows but lichen. “It looks like the last place you’d want to start up something major,” Creamer said to me. “There doesn’t seem to be anything there to build it on.”


While a very small number of moderate sites with communal architecture . . . are found in other parts of the Andes, the concentration of at least 25 large ceremonial/residential sites in the valleys of the Norte Chico is unique. Metaphorically, most of the Andes is covered with granules of sand [between 3000 B.C. and 1800 B.C.]. In a few spots, there are anthills that clearly stand out from the loose granules. Then in the Norte Chico, there is a volcano.
The Norte Chico consists of four narrow river valleys: from south to north, the Huaura, Supe, Pativilca, and Fortaleza. They converge on a slice of coastline less than thirty miles long. The first full-scale archaeological investigation of the area took place in 1941, when Gordon R. Willey and John M. Corbett of Harvard worked at Aspero, a

salt marsh at the mouth of the Supe. They found a big trash heap and a multiroomed building with no pottery and a few maize cobs under the pounded clay floor. They didn’t know what to make of it. Why was there no pottery, when all previously examined large settlements in Peru had pottery? Why only a handful of maize cobs in the whole site, when maize, at least for the elite, was a staple food? How did they grow maize in a salt marsh, anyway? How could they have agriculture but no pottery? Working before the invention of carbon dating, they had no way to determine Aspero’s age. The puzzled archaeologists took thirteen years to publish their data.

Among Aspero’s many curiosities, Willey and Corbett noted, were a half-dozen mounds, some of them nearly fifteen feet tall. These "knolls, or hillocks," the two men wrote, were "natural eminences of sand." Thirty years after his initial excavation, Willey revisited Aspero with Michael E. Moseley, an archaeologist now at the University of Florida. To his chagrin, Willey quickly recognized that the natural "knolls" were, in truth, human-made “temple-type platform mounds,” evidence of a more materially advanced culture than he had imagined possible for the era. Indeed, Aspero may have had as many as seventeen artificial mounds, all of which Willey missed the first time round. "It is an excellent, if embarrassing, example,” he remarked, “of not being able to find what you are not looking for.”

At about the same time, one of Moseley’s graduate students wrote his doctoral dissertation about Aspero. He had enough grant money to pay for seven radiocarbon dates. According to one of them, Aspero went back to 3000 B.C. The student also had a smaller, nearby site called As8 tested and got a date of 4900 B.C. Ridiculous, he in effect thought. These dates are too old—obviously something went wrong. Maybe the samples were contaminated. And he tossed the dates out.

That may have been a mistake. In 1994 Ruth Shady Solis, of the National University of San Marcos in Lima, began working fourteen miles inland from Aspero, at a site known as Caral. From the sandy soil emerged an imposing, 150-acre array of earthworks: six large platform mounds, one sixty feet tall and five hundred feet on a side; two round, sunken ceremonial plazas; half a dozen complexes of mounds and platforms; big stone buildings with residential apartments. Haas and Creamer worked with the project in 2000 and helped establish Caral’s antiquity: it was founded before 2600 B.C. While Shady continued work on Caral, Haas, Creamer, and Ruiz split off to investigate

Indian cities in Peru are some of the most heavily looted archaeological sites in the world. The looting dates back millennia, with the Inka having ravaged the centers of their predecessors, sometimes reusing art and stonework. The Spanish sack of Tawantinsuyu calamitously expanded on this tradition of plunder, which has greatly accelerated in modern times, fueled by the desperate poverty of Peru’s Indian population. Here in the Fortaleza Valley, graverobbers—almost certainly local farmers—have ripped apart thousand-year-old tombs in a futile search for golden artifacts. Others gathered the remains into shrines for secretive, candlelit prayers to the dead, whose powers are recognized by alcohol and cigarettes.
the Pitivilca, the next river to the north, and the Fortaleza, just north of the Pitivilca. They found, Haas told me, "major urban centers on a par with Caral in terms of monumental architecture, ceremonial structures, and residential architecture. And some of them were older."

Examination of Huaricanga and the surrounding communities is far from complete—Haas, Creamer, and Ruiz published their first findings in December 2004. They found evidence of people living inland from the coast as early as 9210 B.C. But the oldest date securely associated with a city is about 3500 B.C., at Huaricanga. (There are hints of earlier dates.) Other urban sites followed apace: Caballete in 3000 B.C., Porvenir and Upaca in 2700 B.C. Taken individually, none of the twenty-five Norte Chico cities rivaled Sumer's cities in size, but the totality was bigger than Sumer. Egypt's pyramids were larger, but they were built centuries later. I asked Haas and Creamer where a race of alien visitors in, say, 3000 B.C. would have landed if they were searching for earth's most sophisticated society. "I hate questions like that," Haas said, because they ask scientists to engage in the dubious enterprise of ranking cultures against each other on a scale.

"Wouldn't it depend on what the aliens thought was sophisticated?" Creamer asked. "I mean, who knows what they would think."

I asked them to indulge me.

"I know what you're getting at," Haas said, reluctantly. "In 3000 B.C. your aliens would have had a very limited number of options on the menu. And one of those options would have been the Norte Chico."

Because human beings rarely volunteer to spend their days loading baskets with heavy rocks to build public monuments, Haas, Creamer, and Ruiz argued that these cities must have had a centralized government that instigated and directed the work. In the Norte Chico, in other words, Homo sapiens experienced a phenomenon that at that time had occurred only once before, in Mesopotamia: the emergence, for better or worse, of leaders with enough prestige, influence, and hierarchical position to induce their subjects to perform heavy labor. It was humankind's second experiment with government.

"Where does government come from?" Haas asked. "What makes
people decide to surrender some of their personal liberty to it? What did they gain from it? Philosophers have been asking this question for centuries. But archaeology should have something to contribute. In the Norte Chico, we may be able to provide some answers. It's one of only two places on earth—three, if you count Mesoamerica—where government was an invention. Everywhere else it was inherited or borrowed. People were born into societies with governments or saw their neighbors' governments and copied the idea. Here, people came up with it themselves."

Haas's enthusiasm seems hyperbolic to some of his colleagues. "What about Amazonian chiefdoms, North American Mississippian societies, and so on?" James Petersen, an archaeologist at the University of Vermont, asked me. "Plus Africa. Government was independently invented there, too." But Haas argues that these peoples knew of the existence of hierarchical, structured societies with strong central leaders, and could pattern their societies after them. Only in a very few places, he says, Norte Chico among them, were cultures proceeding without a map.

In the Norte Chico, Haas told me, government seems not to have arisen from the need for mutual defense, as philosophers have often speculated. The twenty-five cities 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, he said, the basis of the rulers' power was the collective economic and spiritual good. Norte Chico was the realm of King Cotton.

To feed Norte Chico's burgeoning population, Shady discovered, the valley folk learned how to irrigate the soil. Not given an environment that favored the development of intensive agriculture, that is, they shaped the landscape into something more suitable to their purposes. Luckily for their purposes, the area is geographically suited for irrigation. The peril of irrigation for farmers is evaporation. Just as water evaporating in a glass leaves behind a film of salts and minerals, water evaporating from irrigation channels leaves deposits in the soil. In a surprisingly short time, the salty deposits can build up to toxic levels, making the land unusable. Because the Cordillera Negra bulges especially close to the coast in the Norte Chico, the valleys are short and steeply walled; almost hurled from the heights, the rivers shoot toward the sea at high velocity. Even after diversion, the water rushes through irrigation channels so quickly that it can't evaporate and build up salts in the soil. To this day, one can only reach many archaeological sites in the Norte Chico by navigating around surging, brimful irrigation ditches, some of them probably laid out originally by the same farmers who built the mounds.

The most important product of irrigation was cotton. Almost forty species of cotton exist worldwide, of which four have been domesticated, two in the Americas, two in the Middle East and South Asia. Cotton was known in Europe by the thirteenth century but not common until the eighteenth; Columbus and his men wore sturdy flax and coarse wool. South American cotton (Gossypium barbadense) once grew wild along the continent's Pacific and Atlantic coasts. It may first have been domesticated in Amazonia, presumably near the river's mouth. Today it has been supplanted by Mexican cotton (another species, Gossypium hirsutum), which provides most of the world's harvest. But in the Andean past, the long, puffy bolls of South American cotton, some varieties naturally tinted pink, blue, or yellow, were the soft underpinning of Andean culture. "In the Norte Chico we see almost no visual arts," Ruiz told me after I gave him the scrap of cloth. "No sculpture, no carving or bas-relief, almost no painting or drawing—the interiors are completely bare. What we do see are these huge mounds—and textiles."

Cotton was a key element in regional trade. People in shoreline settlements like Aspero could catch vast quantities of anchovies and sardines; Caral, Huarianga, and the other inland towns had irrigation-produced cotton, fruit, and vegetables. The countless fish bones in inland Caral and Huarianga and the fruit seeds and cotton nets in shoreline Aspero are evidence that they swapped one for the other. According to Haas, the inland centers must have con-

*Given the choice between their own scratchy wool and the Indians' smooth cotton, the conquistadors threw away their clothes and donned native clothing. Later this preference was mirrored in Europe. When cotton became readily available there in the eighteenth century, it grabbed so much of the textile market that French woolmakers persuaded the government to ban the new fiber. The law failed to stem the cotton tide. As the historian Fernand Braudel noted, some woolmakers then thought outside the box: they proposed sending prostitutes in cotton clothing to wander Paris streets, where police would publicly strip them naked. In theory, bourgeois women would then avoid cotton for fear of being mistaken for prostitutes and forcibly disrobed. This novel form of protectionism was never put into place.
trolled the exchange, because the fishers needed their cotton for nets. Cotton was both needed and easily stored, which made it useful as a medium of exchange or status. At Upaca, on the Pativilca, Haas’s team discovered the ruins of stone warehouses. If they were for storing cotton, as Haas surmises, they would have been, in this textile-mad society, an emblem of state power and wealth, the ancient equivalent of Fort Knox.

By making these claims, Haas and Creamer were staking out a position in a long-running theoretical dispute. In 1975 Michael Moseley, the Florida archaeologist, drew together his own work in Aspero and earlier research 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 subsistence agriculture around Aspero because it was a center of fishing, and that the later, highland Peruvian cultures, including the mighty Inka, all had their origins not in the mountains but in the great fishery of the Humboldt Current. Rather than being founded on agriculture, the ancient cities of coastal Peru drew their sustenance from the sea.

The MFAC hypothesis—that societies fed by fishing could have founded a civilization—was “radical, unwelcome, and critiqued as an economic impossibility,” Moseley later recalled. Little wonder! The MFAC was like a brick through the window of archaeological theory. Archaeologists had always believed that in fundamental respects all human societies everywhere were alike, no matter how different they might appear on the surface. If one runs the tape backwards to the beginning, so to speak, the stories are all the same: foraging societies develop agriculture; the increased food supply leads to a population boom; the society grows and stratifies, with powerful clerics at the top and peasant cultivators at the bottom; massive public works ensue, along with intermittent social strife and war. If the MFAC hypothesis was true, early civilization in Peru was in one major respect strikingly unlike early civilization in Mesopotamia, Egypt, India, and China. Farming, the cornerstone of the complex societies in the rest of the world, was in Peru an afterthought. (In Chapter 1, I called Peru the site of an independent Neolithic Revolution, which I defined, following archaeological practice, as beginning with the invention of agriculture. If the MFAC is correct, the definition will have to be changed.)

The MFAC hypothesis was radical, its supporters conceded, but the supporting evidence could not be dismissed. Bone analyses show that late-Pleistocene coastal foragers “got 90 percent of their protein from the sea—anchovies, sardines, shellfish, and so on,” said Susan deFrance, an archaeologist at the University of Florida. And the pattern continued for thousands of years and archaeological dig after archaeological dig. “Later sites like Aspero are just full of fish bones and show almost no evidence of food crops.” The MFAC hypothesis, she told me, can be summarized as the belief “that these huge numbers of anchovy bones are telling you something.” That “something” is that, according to Daniel H. Sandweiss of the University of Maine, “the incredibly rich ocean off this incredibly impoverished coast was the critical factor.”

Further evidence both for and against the MFAC hypothesis emerged in the mid-1990s, with Shady’s pathbreaking work on the Supe River. (Aspero, one recalls, sat at the river’s mouth.) Shady’s team uncovered seventeen riverside settlements, the second-biggest of which was Caral. In her view, monumental buildings implied a large resident population, but again there were plenty of anchovy bones and little evidence that locals farmed anything but cotton. To Moseley, the fish bones 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. The need for nets, in Haas’s view, gave the inland cities the whip-hand—Norte Chico was based on farming, like all other complex societies, although not on farming for food. Besides, he says, so many more people lived along the four rivers than on the shore that they had to have been dominant. Moseley believes that Aspero, which has never been fully excavated, is older than the other cities, and set the template for them. “For archaeology,” deFrance said, “what may be important” in the end is not the scope of the society “but where it emerged from and the food supply. You can’t eat cotton.” Evidence one way or the other may emerge if Moseley and Shady, as planned, return to Aspero. If they are correct, and Aspero turns out to be substantially older than now thought, it might win the title of the world’s oldest city—the place where human civilization began. “Maybe we might actually stop people calling it the ‘New World,’” Moseley joked.

Norte Chico chiefdoms were almost certainly theocratic, though not brutally so; leaders induced followers to obey by a combination of ideology, charisma, and skillfully timed positive reinforcement. Scattered almost randomly around the top of the mounds are burned, oxidized chunks of rock—hearth stones—in drifts of fish bones and ash.
To Haas and Creamer, these look like the remains of feasts. The city rulers encouraged and rewarded the workforce during construction and maintenance of the mound by staging celebratory roasts of fish and achira root right on the worksite. Afterward they mixed the garbage into the mound, incorporating the celebration into the construction. At these feasts, alcohol in some form was almost certainly featured. So, perhaps, was music, both vocal and instrumental; excavating Caral, Shady discovered thirty-two flutes made of pelican wingbones tucked into a recess in the main temple.

What was it like building these first great structures? In June 1790, a year after the French Revolution swept away a corrupt and ineffectual monarchy, thousands of Parisians from every social class united to create the enormous Champ de Mars as a monument to the new society. Working in heavy rainfall without coercion or pay, they dug out the entire enormous space to a depth of four feet and then filled it up with enough sand and gravel to make an outdoor amphitheater suitable for half a million people. The whole huge effort took only three weeks. Something analogous—an awed, wondering celebration of a new mode of existence—may have occurred at the Norte Chico.

Even today, the contrast is startling between the desert and the irrigated land, with its lush patchwork of maize, sugar, and fruit trees. Beyond the reach of the water the barrens instantly commence; the line of demarcation is sharp enough to cross with a step. To people born into a landscape of rock and fog, the conflagration of green must have been a dazzlement. Of course they would exalt the priests and rulers who promised to maintain this miracle. The prospect of a drunken feast afterward would be a bonus.

The only known trace of the Norte Chico deities may be a drawing etched into the face of a gourd. It depicts a sharp-toothed, hat-wearing figure who faces the viewer frontally and holds a long stick or rod vertically in each hand. When Creamer found the gourd in 2002, the image shocked Andeans. It looked like an early version of the Staff God, a fanged, staff-wielding deity who is one of the main characters in the Andean pantheon. Previously the earliest manifestation of the Staff God had been thought to be around 500 B.C. According to radiocarbon tests, the Norte Chico gourd was harvested between 2280 and 2180 B.C. The early date implies, Haas and Creamer argued, that the principal Andean spiritual tradition originated in the Norte Chico, and that this tradition endured for at least four thousand years, millennia longer than had been previously suspected.

Many researchers reacted skeptically to the finding. According to Krzysztof Makowski, an archaeologist at the Pontifical Catholic University of Peru in Lima, the image is so anomalous—Creamer found it in a strata dating between 900 and 1300 A.D.—that a more likely explanation is that the figure was carved onto an ancient gourd that had been preserved by the extremely arid climate. Such reuse of old materials is not unknown, though nobody has ever seen it with a gourd three thousand years old. More important, Makowski says, researchers have little evidence that ancient Peruvians actually believed in a single overarching deity called the Staff God. "What we describe as the 'Staff God' is a convention," he explained to me, a standardized pose reminiscent in its way of the standardized poses in Byzantine art. The religious tradition of Peru, in his view, was an overlapping sequence of related faiths that has barely begun to be unraveled; it is as if archaeologists from the far future were excavating in Europe, and mulling over the ubiquitous image of the man on the cross. Was this one man? Many men depicted in a similar fashion? One man whose meaning changed over time?

What is known is that the tradition evolved, as religions will, with the circumstances of its believers. As Andean societies grew richer,
their temples and the images in them grew grander and more refined, though the former stayed true to the U-shape-and-sunken-plaza pattern I saw in the Norte Chico and the latter, depicted often in the "Staff God" pose, never lost their erect postures, gnashing fangs, and brandished staffs. Over the millennia, this god or gods transmuted into Wiracocha, the Inka creator deity, whose worship was brutally suppressed by Spain.

Whether on the coast or in the river valleys, Moseley said, the Norte Chico lighted a cultural fire. During the next three thousand years, Peru hosted so many diverse cultures that the archaeological timelines in textbooks, with their multiple arrows and switchbacks, are as impenetrable as the family trees of European kings. Despite their variousness, Haas says, all seem to have drawn in their diverse ways from the well of Norte Chico. Characterizing the similarities is as difficult as nailing down a blob of mercury, because exceptions abound and human behavior is always multifaceted. Nonetheless, visitors to Andean history note certain ways of doing things that recur in ways striking to the outsider, sometimes in one variant, sometimes in another, like the themes in a jazz improvisation. The primacy of exchange over a wide area, the penchant for collective, festive civic work projects, the high valuation of textiles and textile technology—Norte Chico, it seems possible to say, set the template for all of them.

And only Norte Chico. For the next four thousand years, Andean civilization was influenced by only one major import from the world outside: maize. A few other minor crops made the trip later, including tobacco, domesticated in Amazonia, then exported north to become the favorite vice of Indians from Mesoamerica to Maine. But it is a mark of maize's social, cultural, and even political centrality that it was the first—and for centuries the only—phenomenon to pass from Mexico to the Andes. The next major import, alas, was smallpox.

**TINY COBS**

Although it was just after dawn, several people were already waiting outside the small store. When the metal grating rolled up, I followed them inside. The shop was in a middle-class neighborhood of Oaxaca city, in southern Mexico. Behind the low counter, half a dozen women hovered over waist-high stoves made of concrete block. Recessed into the dome-shaped top of each stove were two shallow clay dishes that served as burners. With expert motions the women slipped tortillas—thin discs of cream-colored flour perhaps nine inches in diameter—onto the hot burners. In seconds the tortilla dried and puffed up like a soufflé. And from the storefront floated the aroma of toasting maize, which has permeated Mexico and Central America for thousands of years.

Established in 2001, the tortilla store is an innovative attempt to preserve one of earth's greatest cultural and biological assets: the many local varieties of maize in the narrow "waist" of southern Mexico. The isthmus is a medley of mountains, beaches, wet tropical forests, and dry savannas, and is the most ecologically diverse area in Mesoamerica. "Some parts of Oaxaca go up nine thousand feet," T. Boone Hallberg, a botanist at the Oaxaca Institute of Technology, told me. "Other parts are at sea level. Sometimes the soil is very acid, sometimes it's quite basic—all within a few hundred feet. You can go on either side of a highway, and the climate will be different on the east side than on the west side." The area's human geography is equally diverse: it is the home of more than a dozen major Indian groups, who have a long and fractious history. Despite the strife among them, all of them played a role in the region's greatest achievement, the development of Mesoamerican agriculture, arguably the world's most ecologically savvy form of farming, and of its centerpiece, Zea mays, the crop known to agronomists as maize.

I was visiting Amado Ramírez Leyva, the entrepreneur behind the tortilla store. Born in Oaxaca and trained as an agronomist, Ramírez Leyva had established a consortium of traditional farmers, Indians like himself (Ramírez Leyva is Nudzahui [Mixtec], the second most numerous Indian group in the region). The farmers supply eight different varieties of dried maize to his shop, Itanoni, where the kernels are carefully ground, hand-pressed into tortillas, and cooked fresh for customers. Itanoni means "maize flower" in Nudzahui, and refers to a flower that blooms in maize fields. It is one of the few tortillerias in Mexico—perhaps even the only one—to sell what might be described as "estate" tortillas: proudly labeled as being made from maize of one variety, from one area.

"Everyone in Mexico knows the rules for making a true tortilla,"