Profile of Charles Stanish

A magazine photograph shows archaeologist Charles Stanish posing against the bleak backdrop of Northern Chile's Atacama Desert in the shimmering heat of noon. Thrown into relief by the desert's vast emptiness, Stanish stands in the foreground of a forbidding landscape marked by the remains of a centuries-old irrigation canal built by indigenous people who introduced agriculture into the desert. For nearly four decades, Stanish, a member of the National Academy of Sciences and professor of archaeology at the University of California, Los Angeles (UCLA), has followed a winding path through two continents to discover the origin of ancient American societies. His zeal has helped reconstruct the fortunes of indigenous folk who thrived around Lake Titicaca, nestled in the Andes between Bolivia and Peru at an altitude unmatched by any other navigable lake in the world.

Raised under modest circumstances, Stanish grew up in the suburbs of Pittsburgh, Pennsylvania. From an early age, he nursed a love of ancient Greek and Roman history. Upon graduation from high school in the mid-1970s, Stanish pursued a bachelor's degree in archaeology at Pennsylvania State University. There, he absorbed the teachings of a coterie of Jewish émigrés from the Vienna School of Philosophy who had fled Nazi Germany. Among his teachers were protégés of the renowned Austrian philosopher Karl Popper, whose treatise exploring the nature of the scientific quest for knowledge, *The Logic of Scientific Discovery*, was hailed as a milestone by communities of scientists and philosophers alike. "That experience cemented my love of science," he says.

Yet it was the authority and erudition of late Penn State archaeologist William Sanders, who studied the rise of ancient societies in Mexico, Guatemala, and Honduras, that fed Stanish's interest in the field. "He asked the big questions about why societies evolved and collapsed, and introduced the archaeological survey method I use today," Stanish says, alluding to Sanders' efforts to integrate the analysis of agriculture, craft, trade, and lifestyle into archaeological expeditions that seek a portal to life in the dim past. While at Penn State, Stanish volunteered on an archaeological trip to Mexico and learned Spanish along the way.

Passkey to the Past

From one perspective, archaeologists go beyond unearthing artifacts to uncover hidden truths about once-peopled places; they compare long-extinct cultures across continents to bring to light principles that govern the evolution of civilizations throughout the world. Known as comparative archaeology, this field of endeavor marks a shift in emphasis from shovel-and-pick site scouring to model-based social science. To explain the discipline, Stanish asks rhetorically: "What common patterns do we see in the manner in which cities developed in Mesoamerica, Mesopotamia, and China that we could use to test cultural evolution elsewhere?" That brand of archaeology, which uses case studies to understand the worldwide evolution of cultures, prompted Stanish to pursue graduate school in the early 1980s. He chose the University of Chicago, in part because the university was home to the renowned archaeologist Robert McCormick Adams, Jr., who went on to serve as the secretary of the Smithsonian Institution for a decade beginning in the mid-1980s. But there was another factor: Among the faculty was a young archaeologist eager to explore the development of ancient societies in Central America. "Sanders thought that the confluence of the grand master and the up-and-coming youngster, Don Rice, made Chicago the best place in the United States to get a graduate education in archaeology," Stanish recalls.

Image courtesy of Ran Boytner.

Charles Stanish.

Before long, Stanish accompanied Rice, who later became his doctoral mentor, to the densely forested Petén region of northern Guatemala, where little-explored relics of Maya civilization lie amid pockets of grassland created by slash-and-burn agriculture. The Maya encroachments into the region's forests reveal a landscape of visible contrasts marked by jaguars and jungle vegetation. Set against this lush backdrop, Stanish's work revealed the impact of Maya settlements around A.D. 400 on the region's soils; where the Maya had cleared stands of trees for agriculture, leaving traces of their activities, he found, the soil was well drained, whereas thick, swampy stretches of land showed few signs of human settlement. No sooner had Stanish begun unraveling ancient anthropogenic influences on the region's ecology than perilous conditions triggered by political unrest in Guatemala forced an early retreat.

Which is why, upon the urging of archaeologist Michael Moseley, then curator of Chicago's Field Museum of Natural History, Stanish left for Peru, embarking on an expedition to study the evolution of ancient economies in the south central Andes, a region under the influence of cultures that thrived around Lake Titicaca, which straddles the border between Peru and Bolivia at an altitude of 13,000 feet. Using a case study from the Moquegua and Puno regions in this part of Peru, Stanish refined a long-entrenched archaeological concept called zonal complementarity, which sought to explain the rise and fall of early Andean societies. Those efforts, summarized in scholarly tomes called *Ancient Andean Political Economy* and *Ancient Titicaca*, not only revealed that early peoples created complex societies through barter systems before the onset of currency-based market economies, but helped straighten the historical record on the circumstances under which land changed hands among pre-Inca settlers, the Inca, and their Spanish conquerors (1, 2). "The findings showed that the indigenous people were much more savvy than we had been giving them credit for," he says.

Those studies helped establish Stanish's reputation among his peers, and when Moseley left for the University of Florida in 1988, Stanish became an obvious choice for his successor at the Field Museum. There, over the course of a decade, Stanish rose through the ranks from assistant curator to chair of the anthropology department. Nearly a decade after joining the museum, Stanish left for new challenges on the West Coast,

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accepting an associate professorship in anthropology at UCLA, where he has since unearthed insights into ancient societies that once flourished in Peru's Titicaca basin.

Before the Inca

While at UCLA, Stanish began to document ancient sites along a stretch of Andean landscape thought to have been a pilgrimage route dotted by Inca temples that served as shrines to the sun and the moon more than 500 y ago. "It was virgin territory for the study of indigenous state formation; there were areas the size of Belize that had largely been untouched by professional archaeologists," says Stanish. Archaeological expeditions in these parts of Peru involve braving the precarious political conditions of a region plagued by terrorist insurgency, drug running, and guerilla warfare orchestrated by a group of militants known as the Shining Path, whose periodic uprisings have claimed tens of thousands of lives. Braving the odds, Stanish and his collaborator Brian Bauer at the University of Illinois at Chicago found evidence through surveys and excavations that suggested that the Islands of the Sun and the Moon, which sit in the lake's azure waters surrounded by the snow-dusted peaks of the Andes, were likely occupied since the time of hunter-gatherers—around 2300 B.C. Mapping dozens of archaeological sites amid the ruins, the team found further evidence that pilgrims traveled along a route from the mainland to the islands' ends, where the shrines are situated. The work suggested that the shrines were built not by the Inca but by an earlier people from the prehistoric, indigenous state of Tiwanaku, located in modern Bolivia and thought to be a forerunner of Inca civilization. "We discovered that the Inca had simply built on earlier patterns of Andean state development," Stanish says. Popularized on National Public Radio by a reporter who accompanied Stanish on his expedition to Peru, the findings, published in *Ritual and Pilgrimage in the Ancient Andes*, hinted that ancient peoples used religious worship to expand their empires (3).

By the end of the 15th century, the reign of the Inca had spread across the Andes, swelling into an empire more than a million square kilometers large and counting several million people from dozens of ethnic groups among its subjects. Yet, for all of the Inca's might, Andean cities had much lower population densities than contemporaneous states around the world, such as ancient China, Egypt, and Mesopotamia. Stanish offers a plausible explanation for that seeming paradox: Part of the Inca's imperial power stemmed from the lack of price-fixing markets in the Inca political economy, which relied on barter fairs, coercive leadership, intensive labor control strategies, and elaborate systems of taxes, thus limiting the spread of urbanism. And if Stanish's work is any indication, the mode of Inca trade was a radical departure from that of their Tiwanaku forerunners, whose informal trade practices shaped the development of their societies.

Image courtesy of Charles Steinmetz.

Stanish holding an artifact in Chincha, Peru.

"If you have a line of prehistoric settlements along a 16th century trade route between the highlands and the tropical forest," reasons Stanish, "you can say with some degree of confidence that trade was an important factor in early state development." Stanish and his team, including Edmundo de la Vega of Peru's National University of Puno, performed an intensive survey of settlements in the southwestern Titicaca basin, which covered a 325-km stretch of land between Tiwanaku, in the Peruvian highlands, and its primary colony, Moquegua, in the Pacific watershed. The team found a string of Tiwanaku settlements with domestic wares and pottery fragments along the trails. "These pre-Inca people were organizing themselves on the landscape to follow the trade routes," he adds. Goods, including pottery, wool, jaguar pelts, and cocoa leaves, likely traveled along these routes, now littered with the remains of once-bustling trade. Other signs of pre-Inca commerce—sophisticated canal systems to reverse the flow of rivers, shards of pottery and obsidian—between the highlands and the Amazonian lowlands, further strengthened the case for a web of trade. The Tiwanaku people, it turned out, did not build way stations or roads reminiscent of the Inca, but instead relied on informal trade plied with camel-drawn caravans (4). Together with other strands of evidence on ritual, craft, and architecture, these findings paint a shifting tableau of largely egalitarian pre-Inca societies that gave way to a power-based Inca political elite in the early 16th century.

Stories Etched in Silver

Despite the informal nature of pre-Inca trade, prehistoric peoples in South America had mastered technologies thought to be sophisticated for their time. One example of prehistoric technological prowess comes from a 2009 PNAS report describing the evidence for 1,900 years of silver production by ancient societies in Southern Peru, beginning as early as the first millennium A.D. Led by doctoral student Carol Schultze, Stanish's team unearthed a wealth of waste products from metal working at Huajje, a hulking U-shaped mound on the northern shores of Lake Titicaca in Puno Bay (5).

Long known for its proximity to Peru's Laicacota silver ore mines, Huajje had previously yielded remains of metal extraction, but the ages of the finds were unknown. Peppering the site were fragments of pottery from Tiwanaku times and relics dating further back in the archaeological record. Yet, many archaeologists believed that metal extraction in South America did not begin until after the Spanish colonization of the Andes. All that changed when Stanish's team unearthed artifacts from a multistep, labor-intensive process for silver extraction that included complex, high-temperature operations such as smelting. Crucibles, hammered copper sheets, fragments of furnace linings, and vitrified ceramics lay strewn under the mound's surface; through radiocarbon dating of the artifacts, which included hundreds of shards of smelting intermediates such as slag and matte, the team established that silver working at Huajje began at least three centuries earlier than previous studies had suggested.

"The data from Puno Bay," the authors wrote, "indicate that high-temperature silver purification began before the Tiwanaku state and continued well after its collapse." Moreover, U-shaped edifices had long been thought to serve as ceremonial centers, so the team's discovery of ritual paraphernalia, such as incense burners and button ornaments, and household articles, such as serving vessels and food remains, near the metal wastes suggested that the structure at Huajje had at once been a setting for residence, ritual, and industry. "The modern-day analogy would be a monastery that makes wine for sale," says Stanish.

Fruit of War

Besides trade and ritualized labor, Stanish has found, another factor shaped the emergence of the first states from prehistoric societies: warfare. Seemingly counterintuitive, the notion of war as cooperation in disguise is now part of long-held anthropological wisdom. Serving as a binding sinew between people who subordinate their self-interests to vanquish a common enemy, war rewards self-sacrifice with its spoils, which are ostensibly shared among the victors. Working with doctoral student Abigail Levine, Stanish found abundant evidence of organized warfare between the ancient societies that preceded the Inca Empire on the north coast of Peru. Consider, for example, the bas-relief rock carvings of priestly warriors and of decapitated and dismembered bodies, the human bones bearing unambiguous signs of inflicted violence, the rubbles of forts atop hills, and the arsenals of weapons, including slings, arrowheads, and mace heads. Taken as a whole, the artifacts point to organized conflict among early Andean chiefdoms.

By drawing links between war and the fortunes of regional political centers in ancient Peru, Stanish has gathered support for the role of war as a nation-building force. In his 2011 Inaugural Article (6), Stanish and Levine described evidence of a conflagration in the first century A.D. that reduced much of Taraco, a regional center along the Ramis river in the Titicaca basin, to ash and rubble. The extent of the damage, the lack of evidence for rebuilding efforts, and the simultaneous rise of the rival political center of Pukara, a complex society in the nearby grasslands, together hinted that raiding, triggered by political conflict, likely sparked the fire, shaping the early political landscape of the northern Titicaca basin. Radiocarbon dating of artifacts revealed that Taraco's agriculture, pottery, and obsidian trade had flourished before the fire but declined after it. "Taraco was burned to the ground precisely when Pukara began its major expansion. Based on models developed by Kent Flannery and Joyce Marcus [archaeologists who have explored the emergence of states from warring clans in Mexico], we concluded that intense competition between the two societies led to the fire. There was a major sociopolitical change after the fire from which Taraco never recovered," Stanish explains. "If this isn't evidence for organized conflict in the archaeological record, then we'll never find it," he adds.

Piecing together fragmentary evidence from the lives of ancient peoples over several decades, Stanish has cut a noteworthy path through the archaeological record in South America. Following that path has helped uncover the checkered fates of ancient societies, underscoring similarities and differences in the dawn of civilizations across the world. Yet, it is the pleasure of sifting legend from history that Stanish counts among the more satisfying rewards of archaeology. "As the giant puzzles are filled in with what we know and what we find, pictures emerge and things begin to make sense. It's a fascinating science," he says.

Prashant Nair, *Science Writer*

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