THE MOCHE: PROFILE OF AN ANCIENT PERUVIAN PEOPLE

[Editor's Note: A recent discovery of a royal tomb at Sipán has focused public attention on the Moche, an ancient but little-known Peruvian culture [see National Geographic reference]. Numbering as many as 50,000, the Moche were an agricultural people who resided along the northern coast of Peru as early as 1,200 years before the Inca. In one of the world's driest deserts, they diverted streams from the adjacent Andes into a large network of irrigation canals to grow corn, beans, squash, peanuts, peppers, potatoes, and manioc as well as avocados and other fruit. They kept guinea pigs and ducks, herded llamas for wool and meat, raised crawfish in the irrigation canals, and fished and hunted sea lions from boats. Their territory stretched over 220 miles along the coast and included towns of up to 10,000 inhabitants: warriors, priests, nobles, artisans, traders, servants, farmers, and fishermen. To house their dead, they built platforms topped with pyramids, today called huacas. Moche art and technology were comparable in sophistication to that of the Maya, their contemporaries. Beautiful gold and copper metalwork, inlays and beads of turquoise, shell and coral, woven materials, and richly decorated ceramics depicting everyday scenes, warfare, and ritual have been uncovered in the tombs. However, unlike the Maya, the Moche did not develop a writing or glyph system. John Verano, a Smithsonian physical anthropologist who assisted at the excavation, shares what he has learned about the appearance, health, and lifestyle of these ancient Peruvians.]

Ongoing excavations at the site of Sipán, directed by Peruvian archaeologist Dr. Walter Alva, are revealing a wealth of new
information about the ancient Moche civilization. Over the past several years, I have had the good fortune to be able to work with Dr. Alva in Peru, helping to analyze the skeletal remains from the Sipán tombs and other sites.

Ancient Peoples of the Coast

The Moche are one of several ancient civilizations that developed in the coastal valleys of northern Peru. The Moche Kingdom dominated the north coast from about A.D. 100 to A.D. 750. Their culture disappeared some 700 years before the Inca Empire began expanding out of the southern highlands. Best known for their beautiful ceramics and expressive art style, the Moche also left evidence of their relatively brief florescence in the form of numerous mud-brick pyramids, which still dot the river valleys of the north coast today.

Human occupation of the coast of Peru goes back many thousands of years. Survival in the otherwise inhospitable coastal desert of Peru is made possible by a series of seasonal rivers and streams that carry water down from the western slopes of the Andes Mountains. These rivers turn the narrow coastal valley floors into green oases, a stark contrast to the surrounding barren desert. Ancient peoples of the coast learned several thousand years ago to draw water off of these rivers into irrigation canals, turning desert into productive agricultural land. Over the centuries many technological advances were made in canal building, eventually leading to complex irrigation networks, which linked several valleys of the North Coast and provided productive agricultural land for thousands of coastal inhabitants.

When the Spanish conquistadors first passed through the northern coastal valleys in the 1530's, they marvelled at the size and sophistication of the irrigation networks. Strangely, however, these first European visitors found many valleys only sparsely populated, and numerous agricultural fields abandoned. What the Spanish did not know at the time was that a devastating disease, probably smallpox, had spread through the Inca Empire some ten years earlier, taking thousands of victims with it. Smallpox, which had swept like wildfire through the Caribbean, Mexico, Central America and then down through Ecuador and Peru, was one of the most deadly of the many infectious diseases brought from Europe to the New World in the 16th century. New World peoples, who had no immunity to the disease, died by the thousands. The epidemic which swept through Peru in the 1520's killed the Inca Emperor and his legitimate heir and led to a bitter civil war between contenders for the throne. It was this divided and traumatized empire that Francisco Pizarro and his soldiers boldly conquered in 1532.

Conquistadors and Huaqueros

By the end of the 16th century, disease, conquest, and social disruption had forever changed the face of the North Coast of Peru. The last of its great civilizations had collapsed, and much of its rich past was lost before it could be recorded by historians. Conquistadors who had sacked the last of the gold and silver from the storehouses and temples of the Inca, then turned to the pyramids and burial places of the Inca's ancestors. Hoping to find the buried treasure of former Kings, they plundered pyramids and ancient burial grounds up and down the coast of Peru. Historians have recently found early colonial documents requesting formal permits from the Spanish crown to "mine" pyramids for gold. And mine them they did--teams of hundreds of forced laborers were used to tunnel into these structures. The scars of 16th and 17th century looting can still be seen at many coastal sites today. In the Moche valley on the north coast of Peru, a particularly determined group of "miners" in search of gold even diverted a river to cut into the center of a large pyramid.

The tradition of grave robbing, which began during the early colonial period, unfortunately has continued for centuries in Peru. "Huaqueros" as they are commonly known today, are professional grave robbers, many of whom make a lifetime career of digging up ancient graves and selling the artifacts. Although the looting and destruction of archaeological sites is strictly prohibited by law in Peru, the limited resources of police and local government officials are simply not sufficient to control the activity. Realizing the importance of preserving and studying its rich pre-Columbian heritage, the
Peruvian government actively supports archaeological research, both by Peruvian and foreign scholars. Such research is gradually bringing to light a long and fascinating sequence of pre-Columbian cultural development.

Reconstructing the Past

Peruvian archaeology traces its roots to the late nineteenth century, when archaeologists began making the first systematic attempts to reconstruct the prehistory of the region. Many of these early excavations focused on coastal Peruvian sites because of the exceptional preservation of perishable materials. The coast of Peru is one of the driest deserts in the world, receiving measurable rainfall only on rare occasions. Such dry conditions make for excellent preservation of plant remains, textiles, and wooden objects—things rarely encountered by archaeologists working in other areas of the world. Bodies buried in the hot, dry sand become naturally mummified, providing physical anthropologists like myself with rare glimpses of details such as ancient hair styles and body decoration (a number of tattooed mummies are known from coastal Peru). I will never forget a naturally mummified dog I helped excavate at an archaeological site on the North Coast several years ago. Some time around A.D. 1300, the dog's owner had carefully wrapped the pet in a cloth shroud and buried it outside the wall of a desert city. Seven hundred years later when we unwrapped the shroud, the dog was perfectly preserved, with ears standing straight up and lips drawn back in a permanent snarl.

Despite the destruction of many pre-Columbian cemeteries by artifact hunters, physical anthropologists have been able to make some important discoveries about the physical characteristics of ancient Peruvians, both by studying skeletal material left behind by grave robbers, and increasingly in recent years, by working side by side with archaeologists conducting scientific excavations. Over the past seven years, I have been fortunate to participate in the excavation of several important Moche sites along Peru's North Coast. Previous skeletal studies have characteristically focussed on only a few isolated sites. Through my study of the skeletal remains, it has been possible to acquire large collections that permit us for the first time to make observations of Moche health, diseases, and demography on a population level.

Physical Anthropology of the Moche

Until recently, the physical characteristics of the Moche people were known to us primarily through the way they depicted themselves in ceramic sculpture and painted murals. Their physical remains had received surprisingly little attention by physical anthropologists. Part of my recent research has concentrated on the study of Moche skeletal remains recovered over the past five years from excavations and surface collections at the site of Pacatnamu (pronounced Pah-caht-nah-moo), a major pre-Columbian ceremonial center. These collections, which are now housed in a research facility in Trujillo, Peru, constitute the largest sample of well-documented human skeletal remains ever recovered from the Peruvian North Coast and are, therefore, a valuable resource both for the study of physical variation among prehistoric coastal populations, and for understanding patterns of health and disease among ancient Andean peoples.

The Pacatnamu Skeletons

The Moche skeletal collections from Pacatnamu pertain to the final phase of the Moche Kingdom (Moche V), and date to approximately A.D. 500-750. The skeletal sample we have recovered to date is comprised of 65 burials excavated from a single cemetery, 26 burials encountered in other parts of the site, and surface collections (approximately 590 specimens) made from three large Moche cemeteries recently damaged by looters.

Life Expectancy in Moche Times

In both the large surface-collected sample and the smaller number of individuals recovered from Moche tombs at Pacatnamu, males and females were present in about equal numbers. Although individuals of all ages, from children to people over 50, were represented, skeletal remains of infants and young children were rare in the surface collections and infants were under-

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Moche skeletons for both males (av. 5'3") and females (av. 4'11") is very similar to that of present day North Coast people of Indian origin. The Moche had wide faces and prominent, relatively narrow noses. Approximately half of the Moche skulls we studied show artificial cranial deformation. This deformation varies from a mild to pronounced flattening of the back of the skull, with flattening of the forehead region occasionally visible as well. Broadening of the cranial vault and slight broadening of the cheeks are noticeable in most deformed skulls, although I believe the deformation we saw was probably the unintentional result of infant cradle-boarding rather than a conscious attempt by the Moche to alter the shape of the head. No depictions of infants in cradleboards are known from Moche art, nor have physical remains of cradleboards been found in a Moche context, perhaps because of poor organic preservation. However, well-preserved cradles and cloth bands which were used to fix an infant's head to the cradleboard have been recovered from later coastal cemeteries, along with skulls showing the same form of deformation observed among the Moche at Pacatnamu.

Family Cemeteries

One preliminary but intriguing finding on Moche mortuary practices has come out of my study of skeletons at Pacatnamu. Here, I expected to find one large cemetery where the local population buried their dead, as I had found at other sites in this area. I found, instead, numerous small cemeteries throughout the site and began to investigate answers as to why so many cemeteries were in use during a single time period.

Variation in the morphology of the facial skeleton is known to be a sensitive indicator of population differences, and has been used successfully by physical anthropologists to differentiate ancient populations as well as to identify the population affiliation of recent forensic cases. By applying some of these techniques to Moche skulls at Pacatnamu, I was able to determine that individuals buried in the same cemetery resembled one another (in their facial morphology) more closely than they did individuals buried in other cemeteries of the same time period. Since greater resemblance implies closer genetic

Physical Characteristics of the Moche People

Based on his early studies of ancient Peruvian skeletons, Aleš Hrdlička of the U.S. National Museum (presently the National Museum of Natural History) described prehistoric peoples of the Peruvian coast as broadheaded (brachycephalic) and of relatively short stature. The Moche population at Pacatnamu conforms well to this description. Living stature calculated from

represented in the excavated burials. Remains of children are more fragile and preserve less well than bones of adults, although it is possible that not all infants and children were buried in cemetery areas.

In the cemetery, which we excavated completely, the remains of 67 individuals were recovered. Almost a third of these (20) were under 5 years old, while only 4 individuals were represented in the child and adolescent age range (ages 5-19). This age distribution is consistent with the U-shaped mortality curve commonly observed in living human populations, where probability of death is highest during the first year of life, declines during early childhood and adolescence, and climbs sharply again in the adult years. Of the individuals who died after childhood, about one third lived to a mature middle age, dying between 35 and 49 years. But a significantly larger proportion of males (12 out of 23) died as adolescents (15-19 years) and young adults (20-34 years), while the majority of females (12 out of 23) fall into the old adult age class (50+). If this sample is representative of the Moche population at Pacatnamu as a whole, these differences suggest that Moche women had a substantially greater probability of reaching old age than did men. Was this due to greater violence or more hazardous activities among men or to greater susceptibility of males to disease? We do know that the Moche frequently depicted scenes of warfare and the capture and sacrifice of prisoners. However, we have found very little skeletal evidence of fractures or other injuries in the Moche sample from Pacatnamu, making it difficult to attribute earlier mortality in males to warfare.
relationship, I interpreted the results as suggesting that the Moche buried their dead by family group. This conforms with the findings of the sixteenth century Spanish Chronicler, Cieza de Leon, who on his travels in 1547 through the valley where Pacatnamu is located, learned that native people buried their dead by kinship group in the hills and bluffs above the valley floor. This, along with the results of my research at Pacatnamu, suggest that burial by family group was a very ancient practice in the valley.

Health and Disease

All the Moche skeletal material excavated or surface collected at Pacatnamu was examined for evidence of disease or nutritional deficiency. Infants and children showed little sign of nutritional stresses due to low protein or insufficient calories, (something which I found in some later burials at the site), and adults were relatively robust. All the older individuals and several younger adults had some degree of arthritis in the joints, particularly in the hips, knees, shoulders, and elbows. In the older adults, arthritis of the temporomandibular (jaw) joint was also common. The Moche also suffered from tooth decay and loss; middle-aged adults (35-49) had lost an average of 4.9 teeth and had cavities in an average of 3.6 of the remaining teeth, while old adults over 50 had lost an average of 17.2 teeth. Remaining teeth were frequently affected by periodontal disease. This is consistent with a growing body of data on dental disease among prehistoric agriculturalists, indicating that people who eat diets rich in soft foods and carbohydrates frequently have a high incidence of cavities and other dental disease, even in the absence of refined sugars.

Understanding the Moche: Ongoing Research and Future Prospects

Recent archaeological excavations at sites such as Sipán are rapidly increasing our knowledge about ancient Moche culture. The study of their skeletal remains is providing additional information about their physical characteristics, health, and mortality patterns. The high status tombs found at Sipán pose some new research questions, which we are currently working to answer. For example: Are there differences in the health, stature, or other physical characteristics of the Moche elite that might reflect a lifestyle and diet different from that of Moche commoners? Do the skeletons of the elite show any rare or unusual skeletal traits that might suggest a lineage of hereditary Moche rulers? Do the skeletons that surround the central occupants of elaborate tombs at Sipán represent retainers or relatives of the deceased?

Ongoing research may provide answers to these and other questions about the population responsible for this remarkable prehistoric South American culture. It may well be that the next generation of school children will be as familiar with the Moche as with the Inca, who dominated the coast of Peru 1,200 years later.

Suggested References:


