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ORIGINS OF THE GREAT SOUTHWESTERN PUEBLOS

by Douglas W. Schwartz



When the Spanish Conquistadors first entered the northern American Southwest (northern Arizona and New Mexico and southern Utah and Colorado) in 1540, they encountered communities of farmers living in massive pueblo villages. Yet, for hundreds of years, prior to the fourteenth century, the ancestors of these pueblo people had lived in small hamlets averaging some fifty rooms. It was only near the early years of the 1300s that an abrupt transformation occurred and they began living in these large mud settlements of a thousand or more rooms. This startling increase in settlement size radically transformed pueblo life from one that had been characterized by hundreds of small villages widely scattered over the whole of the northern Southwest, to a cultural landscape where pueblo people lived in relatively few large settlements concentrated in the Rio Grande Valley, on the Hopi mesas, and around the present day pueblos of Zuni, Acoma and Laguna. This paper addresses the question of why this revolution in settlement size occurred and how it led to the origins of the great pueblo architectural style.

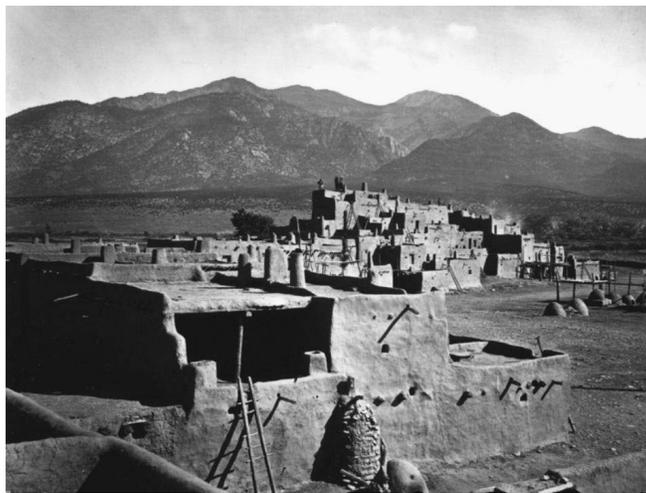
For decades, the widely accepted explanation for the origin of these great pueblos has been a simple story of a great drought in the late 1200s that devastated the regional farming economy of the large population living in the Mesa Verde region in what

is now southern Colorado and Utah. This drought, the story went, forced its peaceful inhabitants to abandon their old homes and migrate south into northern New Mexico and Arizona, where they constructed a new style of huge aggregated pueblos and here they continued their peaceful lives.

I said this was a simple story, but remember the old saying: "Seek simplicity and distrust it." New research in climatology, history, ethnography and archaeology has forced a rethinking of the old story of a peaceful pueblo people affected by a great drought who migrated south to originate the big pueblos.

Basic to this old story was the assumption that pueblo people were profoundly nonviolent. This notion was reinforced by Ruth Benedict in her classic book *Patterns of Culture*, in which she wrote: "the Zuni [who for her represented all pueblos] ... have no place for... force of will... or the disposition to take up arms against a sea of troubles." Rather, she wrote, they are "incorrigibly mild."

Yet, when the Spanish entered the Southwest in the 1500s this was not at all what they encountered. More exactly, they found experienced, committed pueblo fighters who were willing to go to great lengths to protect their communities. At Acoma, for example, the Spanish



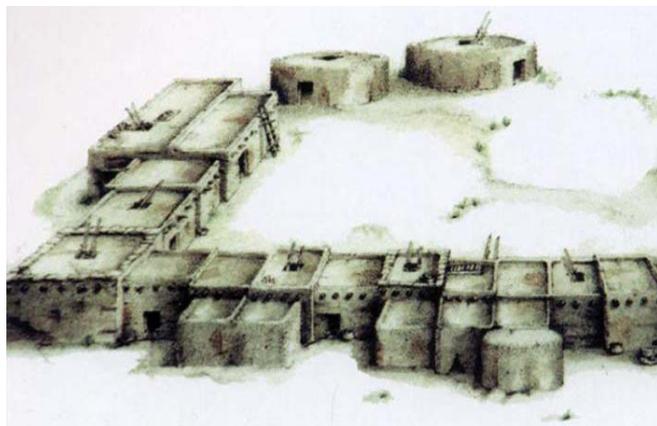
Pueblo village.



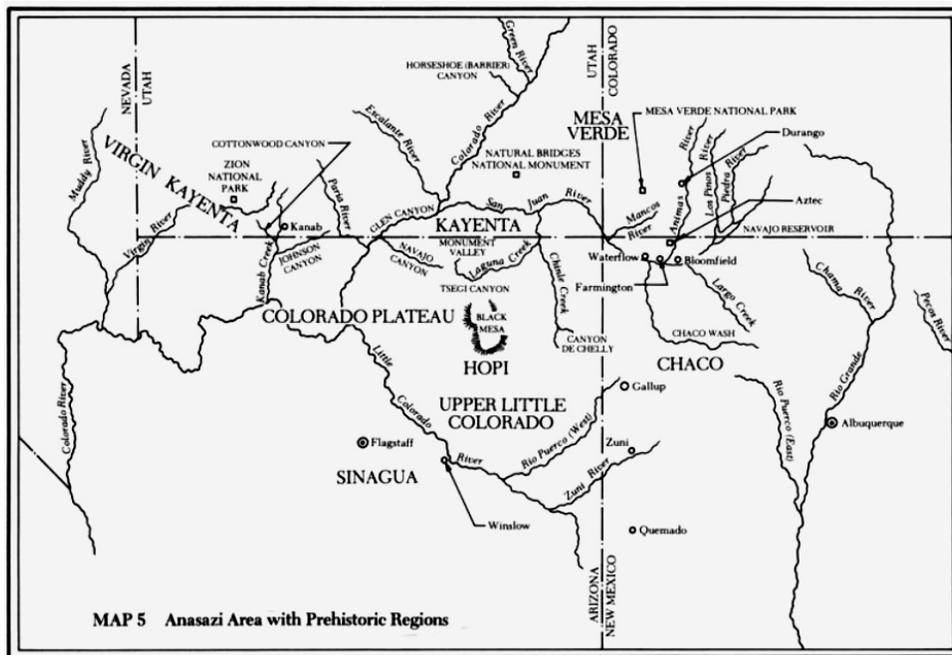
came upon a high plateau holding a pueblo village which, as they wrote, contained, "two hundred warriors-robbers who were feared throughout the land." Around their hilltop village they had constructed a shielding wall behind from which they

could hurl down rocks in numbers so large that no army could reach the top.

Throughout their occupation, the Spanish recorded cases of pueblo aggression and conflict. For example, Adolph Bandelier, the pioneering Southwestern anthropologist, found that war played an "...important role...in pueblo life." He described that during their clashes with others the pueblos used shields, bows and arrows, war clubs, and strong buffalo hide helmets worn by their warriors. He also wrote about their scalp societies, scalp dances, warrior societies, war chiefs, war dances and war gods.



Pueblo hamlet averaging fifty rooms.



Ancestral pueblo area.

Bandelier concluded that conflict was not just present but was a pervasive part of pueblo life.

The Spanish legends also describe the belligerence of which pueblo people were capable. One Laguna tale begins: "Long ago the people...were

ready to fight...some men were brave...and.. not at all afraid to die...they never ran away from a fight. Everyday the Navajo and Apache [who historically were pueblo adversaries along with neighboring pueblos] would come to steal...people would call for help from the war chief. When a Navajo is killed they always take his scalp and carry it home, sometimes displaying it on a pole in the plaza. Every night...they danced the war dance."

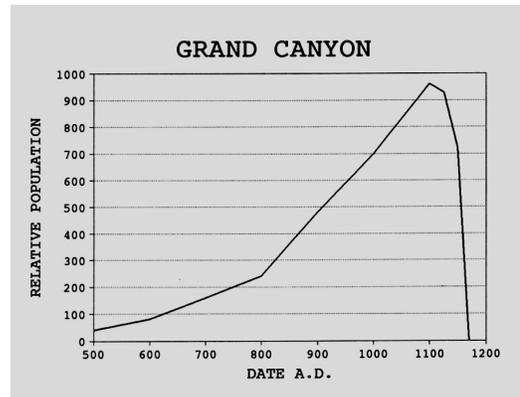


Mimbres pot depicting decapitation.

The archaeological record also provides confirmation of pueblo conflict, as admirably demonstrated in Steven LeBlanc's book *Prehistoric Warfare in the American Southwest*. He identified widespread discord among the pueblos, especially during periods of drought. And, he records evidence for massacres, the rapid construction of defensive settlements, burned kivas, and the fiery destruction of villages. Some archaeologists feel this evidence can be explained in other ways, but none have marshaled the substantial data necessary to refute LeBlanc's argument, which is why his book is such an important contribution to Southwestern archaeology.

Lawrence Keeley's book, *War Before Civilization*, documents that conflict among traditional people—like the pueblos—was common worldwide, even a regular part of their life. All traditional people, he reports, resort to raiding, theft, and fighting whenever their vital interests are at stake. This work puts pueblo aggression in the wider context of more universal violent behavior and underlies my whole argument regarding the origins of the big fourteenth century pueblos.

In the arid Southwest, good climate was critical to the success of traditional farming, and pueblo people continually struggled to control the capriciousness of their weather through prayerful ceremonies for rain and fertility. A graphic example of what they feared was discovered in the late 1920s from the study of ancient tree rings. This data led to the recognition that the Mesa Verde region endured a great drought in the latter part of the 1200s, leading archaeologists to conclude that the "Great Drought," as it became known, was the cause of the region's aban-

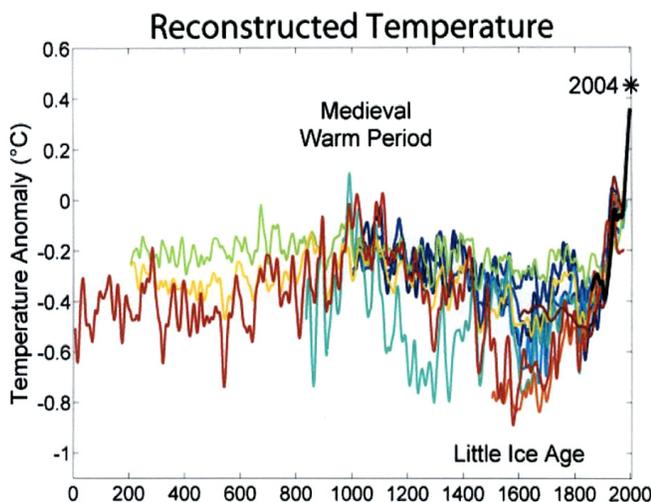


donment by ancestral pueblo people, formally referred to as the Anasazi. Because large pueblos, built in the 1300s, had been discovered to the south just following the drought, many archaeologists assumed these had been built by the fleeing Mesa Verde people.

One of the recent challenges to this story has come from new discoveries about climate change in deep ice cores drilled in the Greenland glacier. These cores have revealed two significant findings that relate to the ancient pueblo story. First, they show that climate change can come quickly, lurching dramatically from one stage of weather to another. And, second, they confirm that there were two quite different climatic periods over the time of ancestral pueblo development.

The ice cores confirm what other studies have shown that beginning about A.D. 900 and lasting to about A.D. 1270 the climate in the northern hemisphere became warm, moist and excellent for farming. Climatologists call this the Medieval Warm Period and historical records from Europe provide important comparative information that sheds light on what happened in the American Southwest during this climatic episode.

Beginning about A.D. 900, a pattern of superb weather began in Europe, resulting in bountiful harvests, a quadrupling of the population, and a flourishing economy that supported the construction of grand architectural works like the soaring medieval cathedrals. In the American Southwest this same remarkable climate also greatly improved the economy of the ancestral pueblo people. These warm, moist centuries produced exceptional harvests and a similar rapid growth in population over the next three hundred years. With the demographic increase, small farming hamlets were built everywhere, even in locations we now think of as marginal, like the bottom of the Grand Canyon, where I have excavated several settle-





Mesa top defensive village.

ments from this time period and where we know from surveys that hundreds more exist. The favorable weather of the Medieval Warm Period also led to a great population increase in the Mesa Verde region.

However, after three hundred years of incomparable weather, and a population boom, a new and destructive climatic episode abruptly arrived. This was the devastating Little Ice Age that emerged first in the late 1100s and lasted well into the 1700s. A similar downturn in climate was also recorded in great historical detail in Europe at this time. By 1300 Europe had entered a period of deep cold and dreadful storms. Harvests plummeted, malnutrition was common, diseases were rampant, and starvation was so common that millions died. Bands of ravenous, homeless men roamed the countryside, plundering for food and creating a landscape of violence.

In the Southwest, the Little Ice Age brought a similar period of cold, resulting in a decline in harvests, widespread famine, devastating raids and incidences of violent carnage. Its effects first appeared in marginal regions like the Grand Canyon, where in the late 1100s there was a sudden decline in population and dramatic evidence of extreme anxiety when nearly inaccessible rock mesas were used for the planting and storing of food, apparently as a safeguard from thieving pueblo neighbors. The presence of these defensive locations coincided with the rapid drop in population, suggesting a time of trouble, famine and raids, with many people either dying from starvation, killed during raids for food, or moving away, no longer able to live off their withered land. Eventually, by whichever course, or a combination of them all, the Grand Canyon and the whole northeastern segment of

ancestral pueblo territory had become completely depopulated.

While pueblo life was vanishing in the northwest, it was flourishing on the more fertile lands to the east, in the Mesa Verde region. However, by 1250 this area also began feeling the damaging force of the Little Ice Age, and over the next decades it too was eventually struck by cold, famine and violent raiding for food. To protect themselves from attack by neighbors, the people of Mesa Verde first moved out of their vulnerable mesa top villages and into the protection of cliff overhangs where they could build a new kind of defensible dwelling. But the unyielding bad weather soon overwhelmed them even here with the same sequence that had affected their cousins to the west. They experienced deep cold, famine, and finally raids by desperate neighbors in search of food. Eventually these raids destroyed whole villages. The starvation and brutality fatally devastated the Mesa Verde population, as it had at the Grand Canyon, and in the end, the once lush Mesa Verde region could no longer sustain a farming life.

In the face of famine and carnage, those who survived moved out, not in great conquering columns, but as small bands of stragglers seeking survival in warmer lands to the south. Now the Little Ice Age had taken its lethal toll on the whole northern part of the Southwest, which by the late 1200s was a cold and deserted landscape, with only ruins as a reminder of its great pueblo past.

There was still a pueblo population to the south, however, in the Rio Grande Valley and further west to Hopi country. This area survived the earliest decades of



Mesa Verde cliff dwelling.

the Little Ice Age because of its lower latitude and warmer temperatures, which somewhat moderated the increasing cold. Nevertheless, archaeological research has demonstrated that these more southern settlements also experienced drought, drastically reduced harvests, malnutrition, frenzied attacks by starving neighbors, and the burning of villages to expel competitors. Horrible as their conditions were, they were not as fatal as those that had depopulated their whole northern pueblo region from the Grand Canyon to Mesa Verde. The slightly more ameliorated climate in the south allowed them to continue to farm successfully. They also arrived at an architectural innovation that allowed them to survive the raids that intensified in the fourteenth century.

In the Rio Grande valley, pueblo people had lived in diminutive, open sided hamlets that had been designed for the beautiful, peaceful times of the Medieval Warm Period.

But, with the onset of the Little Ice Age, these small defenseless villages became a liability. So, if the pueblo people were to survive, they had to transform the way they lived.

This transformation took the form of larger, stronger and safer settlements for protection to house more warriors. This is the kind of settlement I excavated at Arroyo Hondo, five miles south of Santa Fe, New Mexico. It began about 1300 and ultimately expanded to a thousand rooms in response to the new landscape of violence that came with the famine and raids brought on by the Little Ice Age. In establishing this new type of great pueblo, the local people first found an extraordinary location that con-

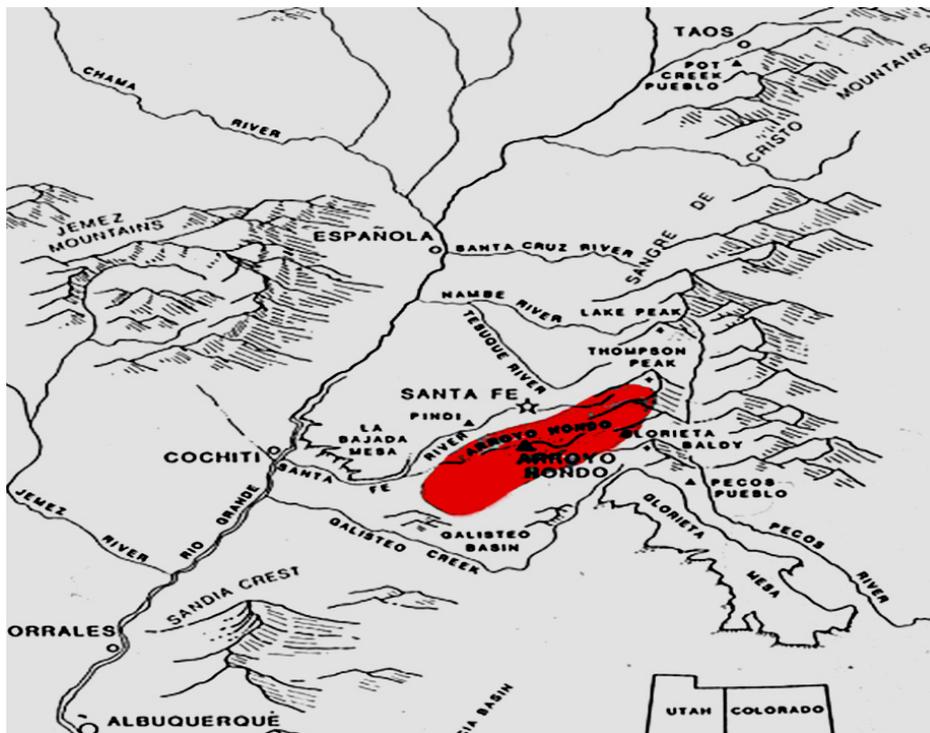
tained all the essentials for making a living - water, farmland, and a wide range of surrounding ecological zones that held an exceptional variety of plants and animals. In addition, the builders focused on critical qualities of defense. The location they chose was positioned at the edge of a deep arroyo whose steep sides would slow access to any attackers. Its elevated position provided good sight lines in all directions, reducing the possibility of sneak assaults.

To ensure their safety further, they incorporated into the architecture of their settlement several defensive features, some of which were new. They planned a larger

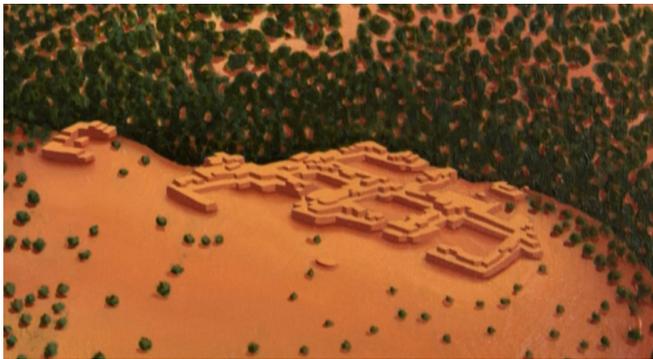
plaza around which they then constructed blocks of rooms for more households and a greater fighting force than could be accommodated in their former hamlets. No doors were built into ground floor rooms. The only access was through a roof opening by way of ladders that could be pulled up after

the family was inside. Each residence then became a tiny stronghold. Entry to the plaza also was made more secure by abutting the corners of the four surrounding room blocks to form a solid barrier that could only be entered through a single gate, which could be closed in time of danger. The surrounding back wall of each room block, with no openings, created another strong barricade against raiders.

This combination of walls, gates and a strategic placement made Arroyo Hondo Pueblo a fortress in addition to being a working community. This citadel was situated above the surrounding landscape, large enough to hold



Arroyo Hondo pueblo territory.



Reconstruction of Arroyo Hondo pueblo.

more warriors than any settlement in the region. It also maintained a vast surrounding territory of some eighty square miles in which its settlers could farm, hunt and gather, and which served as one more buffer against outsiders.

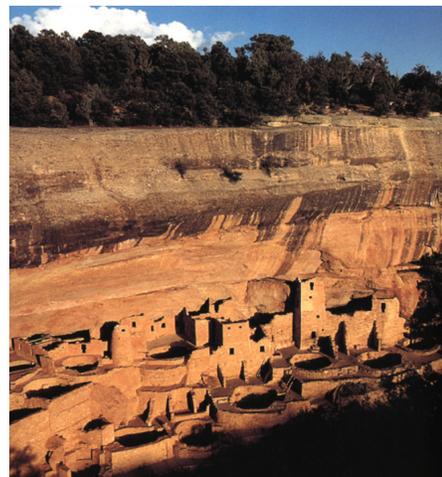
Others instantly recognized the Arroyo Hondo stronghold's success in holding off raiders. Neighboring villagers soon flooded in to join the original settlers for protection and rapidly built, adjacent to the original plaza room block, additional plazas and residences. These resulted in a growing series of adjoining fortified units, each adding more warriors to protect the new town. Over a relatively short time Arroyo Hondo pueblo acquired nine bordering plazas that held nearly one thousand villagers, more than ten times the size of most earlier hamlets.

As the Arroyo Hondo Pueblo fortress rapidly attracted more neighbors and grew in size, this new town presented a serious menace to other smaller villages in the region. Ultimately other settlements replicated Arroyo Hondo's size, construction and defensive location in order



Archaeologists surveying at Arroyo Hondo pueblo.

to protect themselves more effectively. Throughout the Rio Grande Valley, and to the west, traditional hamlets were abandoned and almost overnight new fortified towns appeared. This radical replacement in design completely changed the once peaceful pueblo homeland of hundreds of small scattered villages into a province of relatively few big, brawny, competitive towns. These were not utopian communities built by peaceful migrants from Mesa Verde, as the old story proposed, but sanctuaries for local people seeking protection during a time of regional chaos. Throughout the fourteenth and fifteenth centuries these large competitive settlements continued to raid one another for scarce food, which may have given rise to new, aggressive

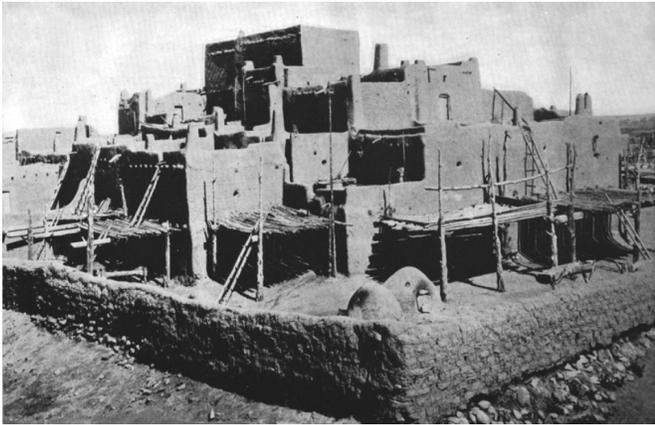


Mesa Verde cliff dwelling.

elements in ancestral pueblo culture like scalp taking, scalp dances, war chiefs, warrior societies, and war gods. This then is the Native American life the Spanish found when they arrived in the northern Southwest: pueblo people living in large fortified settlements interacting in a region of conflict.

The Little Ice Age and the famine and belligerence it provoked turned pueblo culture upside down and could have destroyed its will, or brutally have ended the old way of pueblo life. But throughout their centuries of suffering, pueblo people in some way remained resilient. This resilience eventually allowed them to reemerge, not as passive survivors, but as buoyant victors with robust, flourishing communities filled with music, dance and spirituality.

I wonder if Alfred North Whitehead was correct about this kind of ordeal and renewal when he wrote:



Walled pueblo settlement.

“There must be a degree of instability which is inconsistent with social life, but on the whole, the great ages have been the unstable ones.” I feel this thought holds true for the ancient pueblo farmers of the northern Southwest who lived a precarious life with the onset of a rapid climate change with its resulting famine and conflict.

But in the end they triumphed over these adversities and successfully evolved a thriving, imaginative, and devout existence. It is this extraordinary emergence of a vibrant way of life that arose out of the depths of turbulence that is the powerful lesson I take from the contentious origins of the great pueblo architectural style.

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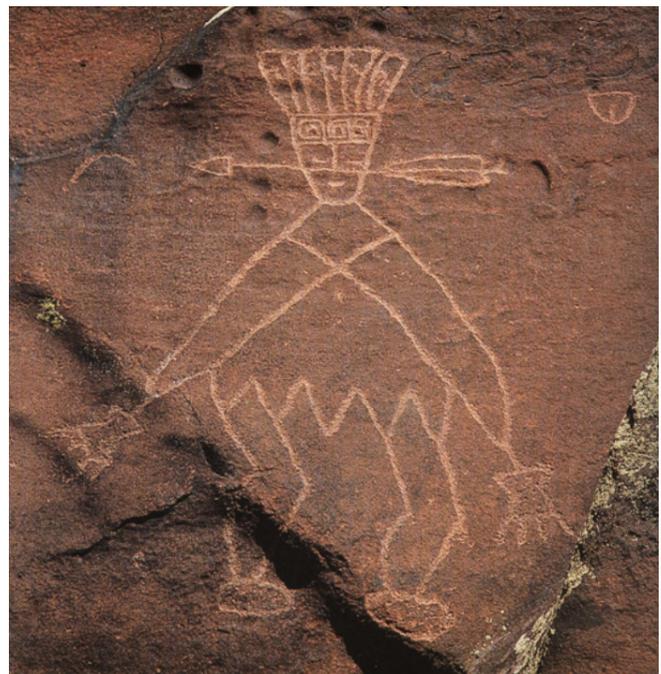
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Douglas W. Schwartz is president emeritus and senior scholar of School of American Research, now School for Advanced Research, in Santa Fe, New Mexico.



Ancient petroglyph showing conflict.

WRITTEN IN BONE READING THE REMAINS OF THE 17TH CENTURY

by Kari Brunelheide and Douglas Owsley



[Editor's Note: The Smithsonian's Department of Anthropology has had a long history of involvement in forensic anthropology by assisting law enforcement agencies in the retrieval, evaluation, and analysis of human remains for identification purposes. This article describes how Smithsonian physical anthropologists are applying this same forensic analysis to historic cases, in particular seventeenth century remains found in Maryland and Virginia, which will be the focus of an upcoming exhibition, *Written in Bone: Forensic Files of the 17th Century*, scheduled to open at the Smithsonian's National Museum of Natural History in November 2008. This exhibition will cover the basics of human anatomy and forensic investigation, extending these techniques to the remains of colonists teetering on the edge of survival at Jamestown, Virginia, and to the wealthy and well-established individuals of St. Mary's City, Maryland. These "bone biographies," as compiled through a unique combination of scientific and historical evidence, will provide intriguing information on people and events of America's past. At no other time in our history have we had the technological capabilities or opportunities to tell this story through archaeology. The colonists can now speak for themselves because their story, as ours, is written in bone.]

***"There is properly no history; only biography."* Ralph Waldo Emerson**

If one views history, as Emerson did, as a compilation of individual personal biographies, think of how many gaps in history exist. This is especially true for the 17th century Mid-Atlantic region of North America for which little written documentation remains, but whose settlements had a tremendous impact on our nation as we know it today. The stories of only a few individuals stand out in this history—John Smith, John Rolfe, and Pocahontas, being the primary people who have shaped our understanding of this era. The vast majority of biographies are strikingly absent from the early colonial record. These are the untold stories of the countless men, women, and children

who came to America, many willingly and others under duress, whose anonymous lives helped shaped the course of our country.

As we commemorate the 400th anniversary of the settlement of Jamestown, it is clear that historians and archaeologists have made much progress in piecing together the literary records and artifactual evidence that remain from the early colonial period. Over the past two decades, historical archaeology especially has had tremendous success in charting the development of early colonial settlements through careful excavations that have recovered a wealth of 17th century artifacts, materials once discarded or lost, and until recently buried beneath the soil (Kelso 2006). Such discoveries are informing us about daily life, activities, trade relations here and abroad, architectural and defensive strat-



Figure 1: Doug Owsley measures a human skeleton from a clandestine burial discovered during the excavation of a 17th century house cellar in Anne Arundel County, Maryland.



Figure 2: Kari Bruwelheide and Doug Owsley examine infant remains recovered during Project Lead Coffins, St. Mary's City, Maryland.

egies, and much more. But what do we know about the bearers of this material culture? Imagine how enhanced our view of the past would be if we were also able to fill in some of the human gaps of history, stories of individual lives not previously known to us. Wouldn't 17th century America seem more immediate and compelling if, instead of only reading about important dates and places in time, we learned more about the actual people who lived that past and heard their personal stories of life and death?

Although time travel has yet to be invented in the literal sense, for a number of years physical anthropologists from the National Museum of Natural History (NMNH) have had the privilege of "meeting" individuals from seventeenth century America on a daily basis and "hearing" their stories first hand. This is possible because physical anthropologists at the NMNH, like those elsewhere, have the job of examining human skeletal remains. In their role most familiar to the public they are the "forensic anthropologists" who locate and analyze bones from modern contexts, usually related to criminal or missing

persons' investigations. The information these scientists obtain from contemporary bones and burials is used to solve crimes and identify individuals (see past issues of *AnthroNotes* for more details on forensic anthropology: 1993 Vol.15 No.1; 1998 Vol.20 No.1; 2006 Vol. 27 No.1; 2006 Vol. 27 No.2). Most people are not aware, however, that the same investigative techniques used to examine modern human remains are being applied to bones hundreds, or even thousands, of years old. Such work is conducted in much the same way and with the same degree of compassion, respect, objectivity, and scientific inquiry as are modern forensic investigations.

This is because people from the present and those from the past share a fundamental connection: we all have a skeleton. Bones provide the framework for our soft tissues, allow for movement, protect many of our vital organs, serve as the center for the production of blood cells, and help regulate tissue metabolism as an important warehouse of nutrients necessary for life. With this shared foundation, all humans are remarkably similar—from the number of bones in our bodies, to the types of bones present, to the way we grow and develop. And yet, differences in our bones do exist. These slight differences, mostly in size and shape, separate males from females, young from old, and tall from short. Slight variations in skull form give each of us our unique facial appearance, and more broadly, can differentiate people from various parts of the world. Injuries to bones can alter their shape permanently, and diet affects not only bone growth and form, but also affects bone chemistry. The old adage "you are what you eat" is certainly true for the skeleton. In short, bones store a vast amount of data on who we are and how we live.

What, then, can we learn from our bones? The answers gathered from the forefront of scientific skeletal analysis are remarkably detailed and include a person's age, sex, and stature, as well as clues to their ancestry, diet, health, activity patterns, and much more. This information is encoded in the bones of past peoples and in our own bones and teeth throughout our lifetime. Skeletons may not provide information on one's thoughts or ideas, but they certainly yield information about our aches and pains, as well as providing a durable physical record of who we are as individuals—information that cannot be obtained so clearly from any other source.

(continued)

Reading the Remains

How is the information extracted from the bone? Much like the archaeologist who reads the clues left in the soil and material remains from a site in order to reconstruct life-ways, events, and habitation patterns, the physical anthropologist uses his or her training in human anatomy and human variation to read the clues left in the bones. The scientific methods used in this process are at the same time both basic and complex, and are often interdisciplinary, combining aspects of both human biology and chemistry.

At the most basic level, visual inspection of the bones is performed. This examination, sometimes done in the field (Figure 1, p. 9), but more often performed in the laboratory (Figure 2, p. 10), confirms the identification of bone as human or non-human, and is the first step toward compiling a detailed bone and tooth inventory for each set of remains analyzed. Determinations of age, sex, stature, body build, and sometimes ancestry then follow based on specific observations of bone morphology, such as shape, robusticity, and development of the areas on bones where muscles attach. Examination at this stage is assisted by methods of greater complexity involving two- and three-dimensional measurements of specific skeletal elements and mathematical calculations in order to determine stature and ancestry.

Radiography through standard X-ray and computed tomography (CT) complements the visual inspection of the skeleton by obtaining images of the internal structure of teeth and bone (Figures 3a & 3b). These images assist in evaluating the health and well-being of an individual: his or her dental pathology, childhood illness, nutrition, disease, and trauma, all of which can modify bone, both externally and internally. When performing these types of analyses it is essential to have a good understanding of the appearance of normal versus abnormal bone, in addition to understanding how natural processes can alter bone. More recently, CT scans have been used to compile three-dimensional coordinate data on bone size and shape, providing a virtual image record useful for comparing bone structure and form within and between populations. A model of the bone can also be made from the CT data creating an almost permanent anatomical record of the remains.

Perhaps most exciting within the field of physical anthropology are modern applications of molecular biology and bone chemistry, which are carrying the interpretative abilities of physical anthropologists one step further

and are increasingly being used to answer questions of ancestry and diet. DNA retrieval and analysis, once implemented solely within the realm of contemporary forensic cases, is now being successfully attempted in studies of old bones (Owsley et al. 2006). If preservation allows, determination of biogeographical ancestry, sex, and even personal identity are possible through DNA studies of old skeletal remains. Dietary information is also obtainable through bone chemistry and is based on the different chemical signals of foods and the transmission of these differences to the tissues of the consumer. Dietary patterns, changes in diet, and the movement of people into new environments are often distinguishable by measuring the chemical signals in bone. The application of dietary studies to colonial period skeletal remains has proven especially useful in that for the first time in history we have the ability to identify the human remains of first generation immigrants versus American-born colonists by the chemical signals in their bone (Ubelaker and Owsley 2003).

The 17th Century Skeletal Record

Over the past decade numerous skeletons representing the first century of British colonial settlement in North America have been discovered. These human remains have come from a variety of contexts with differing circumstances prompting their removal. Burials dating to the 17th century have been discovered during archaeological excavations in Virginia and Maryland. Some of these discoveries are part of large-scale investigations at historically important sites such as Jamestown, Virginia, and Historic St. Mary's City, Maryland. Others have come from isolated, incidental findings of small, unmarked cemeteries removed by salvage archaeological work necessitated by land development and construction projects. A good place to live and build a residence community today often was a good place to live and bury the dead three centuries ago. Surprisingly, other 17th century remains come from seemingly unconventional discard contexts, such as old trash pits and wells linked to habitation areas.

Systematic study of all of these skeletal remains has resulted in the collection of life-history information on more than two hundred early European and a much lesser number of African immigrants who lived and died in the Chesapeake region during the 1600s. With rare exceptions, these remains have come from forgotten, unmarked, and unnamed burials, yet this fact doesn't lessen their identity.



Figures 3a & 3b: Radiographies of a child's skull showing internal structure and development of the deciduous ("baby teeth") and permanent (adult) dentition.

Each individual becomes known through the biological data obtained from their skeleton, along with information from the burial context and period documentation. This evidence produces amazingly detailed personal profiles for each set of human remains.

One Boy's Case History

An excellent example of this can be found in the human remains dating to 1607 Jamestown, the first permanent English settlement in the New World. Efforts by archaeologists to uncover the original James Fort have simultaneously resulted in the discovery of human skeletons buried within and near the three-sided log palisade, including the remains of men and boys from the first voyage. During the Association for the Preservation of Virginia Antiquities (APVA) excavation of James Fort in August, 2005, a skeleton was discovered along the western palisade wall (Figure 4, p. 12). Clues from the grave, including its location relative to the fort, indicate the burial took place early in the settlement. The original burial shaft, distinguishable by slight variation in the color and consistency of the soil, appeared to have been poorly and hastily prepared as indicated by the unevenness of its walls and floor and its length, which was short relative to the length of the body. No

coffin was used, as no remains of one were visible. The presence of a loose shroud was evidenced not by the material itself, which had decomposed long ago, but by the position of the mandible, legs and feet of the skeleton within the grave. The mandible had fallen out of articulation with the upper jaw during decomposition and had shifted downwards due to the pressure of the earth on the shroud covering the face. If a shroud had not been used, the mandible would have been held in place by the surrounding soil. The position of the mandible also reveals that no wrapping or chin strap was used around the head to hold the mouth closed and which would have also held the jaw in place in the grave. The shroud appears to have been tied or wrapped around the ankles keeping the lower appendages together. Also, the feet remained pointing upward toward the top of the grave. The shroud wrapped around the ankles prevented the feet from falling laterally to the grave floor after the body was buried. The arms, however, were not tightly secured within the shroud, allowing them to fall at awkward angles as the body was lowered into the grave.

The position of this skeleton not only yields clues on how the body was prepared for burial, but also provides evidence regarding the actions of the burial party.



Figure 4a (left): *In situ* remains of a boy found buried within the original perimeter of James Fort. The contorted position of the right arm, a broken clavicle, and the presence of a stone arrowhead pointing towards the boys left thigh bone suggest traumatic death. Figure 4b shows a close up of the arrowhead against the thigh bone.

The position of the bones indicates that the burial party lowered the remains from the left side of the head and foot ends of the grave shaft. This interpretation is evidenced by the slight upward inclination of the left side of the remains, the position of the arms, and the body's curvature. The right side of the torso settled first leaving the left side at a slightly higher elevation in the grave. A consequence of the weight of the torso falling to the right side of the body is that the untied arms gravitated toward the right side of the shroud. The abdominal and hip regions of the body are more toward the right side grave wall, while the head and feet regions are directed slightly toward the left wall. This subtle curvature of the extended body suggests the burial was somewhat rushed, as is also indicated by unevenness of the floor of the grave, resulting in slightly higher elevations of the head and feet. As stated, the grave was

too short to fully accommodate the individual. Thus, the feet are elevated from the grave floor and are in direct contact with the bottom grave wall. The head is uplifted as well by a pedestal of dirt. In effect, the *in situ* positioning of the arms and the distortion in the body layout indicates that no effort was made to reposition the body in the grave after it was lowered.

Circumstances relating to the subtle neglect of care in the burial process are further revealed by clues in the bones. The skeleton does not represent a grown man, which excludes identification of the remains as one of the older "gentlemen" of the Jamestown venture. Rather, the body is that of a young boy. The bones and teeth show incomplete growth, and suggest an age of about 15 years. Features of the skull and additional dietary information obtained through bone chemistry indicate the boy is of Eu-

ropean decent. His socioeconomic status is unknown, but was likely modest as suggested by bone markers of poor health and nutritional stress. The skull has a remodeled depression fracture on the bone of the forehead, above the left eye orbit indicating a healed blow. The boy has signs of nutritional deficiency in the form of porosity in the roofs of both eye orbits. This condition, known as cribra orbitalia, is typically related to iron deficiency and anemia. In addition, radiographs of the boy's leg bones reveal multiple, transverse, radiopaque bands. These bands, or lines, are markers of disturbed bone growth and are referred to as "Harris lines." They form during periods of arrested and then resumed growth and are the result of nutritional or disease stress during childhood. Most telling of the boy's health, however, is a severe tooth abscess that was active at the time of death. The abscess had its origin in a broken mandibular incisor crown, which exposed the pulp chamber to bacterial infection. The cavitation formed by the abscess is large and includes most of the chin (Figure 5). In life, the chin would have been inflamed, undoubtedly painful, with sinuses of draining pus into the vestibule between the lower lip and front teeth. The severe tooth abscess had turned into a severe osteomyelitis, an expanding bone infection that was destroying the front portion of the jaw.

This boy's compromised health and weakened condition provides context for evidence pointing to his violent death. The boy exhibits a fracture of his right

clavicle that is unhealed and therefore, was broken at or near the time of death. This trauma is supported by the positioning of the right shoulder and arm in the grave. In order for the shoulders to have been so close together, one or both of the clavicles had to have been broken, indicating upper thoracic trauma. This extreme compression of the upper thorax was not caused postmortem, or by natural conditions in the grave after burial. Furthermore, a stone projectile point was found with the skeleton. The point of the arrowhead was directed toward the lateral surface of the distal left femur (Figures 4a & 4b). No tip damage is evident indicating the projectile did not directly impact bone, but its position indicates that it was lodged in the flesh of the lower thigh. This arrow injury might not

have been immediately fatal, but combined with evidence of upper body trauma signifies a violent confrontation that ended in death.

This boy's story, as told from the remains, parallels two historic accounts from the early days of Jamestown. Both can be found in "Jamestown Narratives," a compilation of eyewitness accounts of the Virginia Colony during its first decade (Haile 1998). Both accounts relay the circumstances of an attack in May 1607 on the Englishmen by Native Americans soon after the men landed. Both accounts mention the death of a boy, but neither referred to him by name, possibly due to his younger age and/or lower status within the group. Regardless, the



Figure 5: Skull of the boy from James Fort showing a large area of missing bone in the front of the jaw. This hole was formed in life as a result of a cracked tooth, which allowed bacteria to enter the pulp chamber, resulting in a deep bone infection.

event and death were traumatic enough to warrant description in diary entries from the time.

...They came up almost into the fort, shot through the tents, appeared in this skirmish, which endured hot about an hour, a very valiant people.

They hurt us 11 men, whereof one died after—and killed a boy, yet perceived not they this hurt in us. We killed divers of them, but one we saw them tug off on their backs, and how many we hurt we know not . . .

...28. Thursday. We labored palisading our fort.

Gabriel Archer: *A relation of the discovery of our river from James Fort into the main, made by Captain Christofer Newport, sincerely written and observed by a gentleman of the colony.* (pp.115)

...Had not God beyond all their expectations, by means of the ships at whom they shot with their ordnances and muskets, caused them to retire, they had ent'red the fort with our own men, which were then busied in setting corn, their arms being them in dryfats and few ready but certain gentlemen of their own; in which conflict most of the council was hurt, **a boy slain in the pinnace**, and thirteen or fourteen more hurt. . .

John Smith: *A True Relation / of such occurrences and accidents of note as hath hap'ned in Virginia since the first planting of that colony which is now resident in the south part thereof, till the last return from thence. Written by Captain Smith, one of the said colony, to a worshipful friend of his in England.* [1608] (pp. 147).

The story of this boy, compiled through clues from the bones and grave, is compelling in its own right. More fascinating is its ability to fill in the narrative of a known event and place it in early colonial history. It cannot yet be said for certain that these remains are those of the boy killed in the referenced attack, but the evidence along these lines is intriguing. What the skeleton does provide with relative certainty is physical evidence for early conflict between the English and the native population, a tenuous relationship that held the lives of many people, both Englishmen and Native Americans, in the balance. It also provides an intimate portrait of the harsh conditions faced in the New World, even by the young, who were also participants and victims of the Jamestown venture.

The ability of this boy's skeleton to introduce us to the events of the past is not unique. From the indentured servant, to the African slave, to a ship's captain, to the established families of England, each individual who came to and died in America left behind an equal and lasting legacy of bone. It is the job of physical anthropologists specializing in human skeletal research to reveal the legacy and investigate the "mysteries of history" as they present themselves through archaeology. It is this message that will be featured in the exhibition, *Written in Bone: Forensic Files of the 17th Century*.

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We thank the APVA and lead archaeologist William Kelso for allowing us to assist with the exciting investigations being conducted at Historic Jamestown. Photography was done by Chip Clark, Scientific Photographer, Smithsonian Institution.

Kari Bruwelheide is a physical anthropologist in the Department of Anthropology, National Museum of Natural History and Doug Owsley is curator and head of the physical anthropology division.

ANTHROPOLOGY EXPLORED

The revised and expanded edition of *Anthropology Explored: The Best of Smithsonian AnthroNotes®* is edited by Ruth Osterweis Selig, Marilyn R. London, and P. Ann Kaupp (Smithsonian Books/HarperCollins). Order from Amazon.com or Google: *Anthropology Explored Revised 2nd Edition*. For a desk copy or a classroom adoption, call HarperCollins at 1-800-242-7737. ISBN#: 1-58-834093-7, or contact seligr@si.edu. **Free Instructor's Guide available online** at http://www.nmnh.si.edu/anthro//outreach/anthropology_explored.htm.

RACE Are We So Different? A New Public Education Program

by Mary Margaret Overbey



After more than six years of planning, the American Anthropological Association (AAA) has created a highly acclaimed public education program on race and human variation to promote broad understanding of race and human variation, to explain what race is and is not, and to produce tools to teach about race. The program, *RACE Are We So Different?*, was made possible with nearly four million dollars in funding from the Ford Foundation and National Science Foundation. The *RACE* exhibit opened at the Science Museum of Minnesota in St. Paul in January 2007 with outstanding reviews from visitors and the media and began a national tour in May 2007. Twelve other cities across the U.S., including Washington, D.C., will host the exhibit through mid-2011. At this time, more than 18 cities are on a waiting list to host the exhibit.

Race remains an unspoken, yet powerful and not well understood, facet of life in the United States. More than 40 years after the civil rights movement and with long-standing remedies and mechanisms in place to counter and track discrimination and social injustice, we like to think that America has moved beyond race. But have we?

Educators know more than most that race continues to underlie relationships among students, teachers, and administrators and daily life in schools and communities across the U.S. Increasingly diverse student populations require schools to ensure that administrators, teachers, and students understand and appreciate diversity. Multicultural activities celebrate the foods, dress, and languages that reflect the many cultures represented among students, faculty, and administrators in schools.

Focusing on differences, however, make it difficult to see and celebrate the similarities among people. And it does little to explain and disentangle notions of race from the concept of culture, adding to the confusion about what race is and isn't.

Project Goal & Resources

The goal of the *RACE Are We So Different?* project was to produce a traveling museum exhibit, a website, and educational materials to convey a comprehensive and integrative story about race and human variation. The story, geared for middle-school aged children through adults, relays three overall messages:

- Race is a recent human invention;
- Race is about culture, not biology; and
- Race and racism are embedded in our institutions and everyday life.

The exhibit and website present three themes:

- The history of the idea of race;
- The science of human variation; and
- The experience of living with race and racism.

The interactive website (<http://www.understandingRACE.org>) includes a virtual tour of the *RACE* exhibit, videos, historical timelines, and quizzes. It



This photograph of people on a bus welcomes visitors to the RACE Are We So Different? exhibit. One of many images of community life, taken by Wing Young Huie, featured in the exhibit. Photo: Mary Margaret Overbey.

also includes scholarly papers, written specifically for the conferences and activities supported by the project, and a bibliography.

Teachers and families can access educational materials in the website's resources section (www.understandingRACE.org/resources/index.html). Two teacher's guides, one for middle school teachers and one for high school teachers, present race and human variation through the integrated lenses of biology, culture, and history. The guides meet national and select state standards for science, biology, social studies, and social science and provide more than 10 lesson plans that address human biological variation, cultural variation, and the experience of living with race and racism. The teacher's guides include some of the background material and lesson plans published in a related resource for teachers, *How Real Is Race? A Sourcebook on Race, Culture, and Biology* by Carol Mukhopadhyay, Rosemary Henze and Yolanda Moses (Rowman and Littlefield Education, 2007).

The lesson plans are designed to be infused into existing curriculum, and we encourage teachers to consider team teaching. For example, a biology teacher, a history teacher, and a social science teacher may want to work together to design a module that integrates the science of human variation with the history and lived experience of race in their classes.

A family guide, also in the website's resources section, helps parents talk to small children about race. It presents activities, stories, and exercises for parents and chil-



Calipers and hair samples are among the tools scientists used to measure human differences from early to mid-1900s. The calipers belonged to William Montague Cobb, the first African American physical anthropologist. Photo: Mary Margaret Overbey.



A high school cafeteria table invites visitors to listen in on students' conversation about race and how race affects where they sit in the cafeteria and how they think about themselves and others. Photo: by Mary Margaret Overbey.

dren to do together as well as suggestions for discussions about race.

A glossary complements the teacher's guides and family guide. We found that there is no common language for talking about race so we developed a glossary to assist teachers, students, parents, and scholars in discussing race.

Project Background

I want to emphasize a few points about the experience of developing the *RACE Are We So Different?* program.

First, understanding peoples' perception of race and human variation was important. We undertook extensive audience research to ensure that we had a good idea of what people think about race. Over the course of the project, we interviewed students at a diverse high school, interviewed visitors at two museums, held focus groups, and convened fourteen community meetings at seven museum sites across the U.S. to better learn how people talk about race, what they want to know about race, and what suggestions they had on how to draw others to an exhibit, website and educational materials on race. From this research, we learned that people are fascinated by human differences and similarities, and they want to know more about race and human variation. Although conversations were not easy, people wanted to talk about how race affected their communities and their lives.

Second, we designed this as an interdisciplinary project from the start to ensure inclusion of many critical aspects of race and human variation, from the history of the idea of race, to the genetics of human variation, to the effects of racism on education, health and housing. Diversity also was central to the effort, and we worked to make certain that there was diverse representation in the planning and development of the program and in all project activities. A diverse, multidisciplinary 22-person Advisory Board of scholars oversaw the effort. As a result of this interdisciplinary approach, the complicated story of race is made understandable. Visitors can see and understand how science, society, and government shaped the idea of race in such a way that it remains a powerful force that continues to impact our institutions and everyday lives.

Third, developing the *RACE Are We So Different?* program was a collaborative effort, involving more than 20 organizations, including the Smithsonian Institution's National Museum of Natural History and seven other museums. The AAA worked with the Science Museum of Minnesota to develop the exhibit, S2N Media, Inc. to develop the website, Randi Korn & Associates to evaluate the exhibit, Museum Solutions to evaluate the website, and Marmillion + Company to develop a communications strategy and materials. More than 150 individuals contrib-



Piles of money show the wealth disparities that exist among those who identify as white, Asian, African American, and Hispanic/Latino. The exhibit explains how wealth accumulation occurred. Photo: Mary Margaret Overbey.

uted to the project. It took many people and organizations working together to make the *RACE Are We So Different?* program what it is, and we believe the very positive public response demonstrates that the result was well worth the effort.

I encourage you to visit the *RACE Are We So Different?* website, acquaint yourself with the variety and range of activities, review and use the teacher's guides and glossary. If the RACE exhibit comes to your city or nearby, consider taking your students to visit, or take a virtual tour of the exhibit with your students and incorporate a lesson plan in your class. I think you and your students will be glad you did.

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Mukhopadhyay, Carol, Rosemary Henze and Yolanda Moses. 2007. *How Real Is Race? A Sourcebook on Race, Culture, and Biology*. Lanham, MD: Rowman & Littlefield Education.

Mary Margaret Overbey is an anthropologist and serves as principal investigator and director of the RACE Project at the American Anthropological Association.



A turn of the century ceremonial vest with American flags stands in contrast to signs illustrating discrimination. The exhibit explores "white" as a racial category. Photo: Mary Margaret Overbey.

VOLUME 3: HANDBOOK OF NORTH AMERICAN INDIANS

Ubelaker, Douglas H., volume editor. *Handbook of North American Indians. Volume 3: The Environment, Origins, and Population*. 2006. William C. Sturtevant, gen. ed. Smithsonian Institution. 1,160 pp.

This 14th volume of the Handbook encyclopedia consists of 72 illustrated chapters, authored by 96 scholars from leading academic institutions and research firms, with 9,600 references. The volume is divided into four major sections: Paleo-Indian, Plant and Animal Resources, Skeletal Biology and Population Size, and Human Biology, edited by Dennis Stanford, Bruce D. Smith, Douglas H. Ubelaker, and Eموke J.E. Szathmary, respectively.

The section on Paleo-Indian summarizes current information about the human colonization of the continent before about 9,000 B.C. when glacial ice sheets covered the northern landscape and saber-toothed cats roamed the area.

The Plant and Animal Resources section documents how American Indians survived and adapted by utilizing the plant and animal components of the environment. Special topics in the section explore the presence of the dog, turkey, and tobacco in Indian cultures; domestication of plants; and, the introduction of plants and animals from Mexico and Europe.

The section on Skeletal Biology and Population Size focuses on biocultural history and what is currently known about Indian populations based on archeological samples of human remains. Thematic discussions include dentition, paleopathology, and population inferences from bone chemistry.

The last section, Human Biology, deals with contemporary studies of Indians and Eskimos (Inuit) – physical types and bodily adaptations, health, demography, and

genetics—providing the reader with different viewpoints and interpretations on the question of origins, admixture, and population variation.

The *Handbook of North American Indians* is a leading source of information on Indian history and culture, described by the *Wall Street Journal* (March 9, 2005) as “the bible of scholarship on native people.”

Two volumes in production are *Volume 2: Indians in Contemporary Society* and *Volume 16: Technology and Visual Arts*. Other published volumes include: *Volume 4: History of Indian-White Relations*, 1989; *Volume 5: Arctic*, 1984; *Volume 6: Subarctic*, 1981; *Volume 7: Northwest Coast*, 1990; *Volume 8: California*, 1978; *Volume 9: Southwest* (Puebloan peoples and Southwest prehistory and history), 1980; *Volume 10: Southwest* (non-Puebloan peoples), 1983; *Volume 11: Great Basin*, 1986; *Volume 12: Plateau* 1998; *Volume 15: Northeast*, 1979; and *Volume 17: Languages*, 1996; *Volume 13: Plains*, 2001; *Volume 14: Southeast*, 2004.

The *Handbook of North American Indians* is available from the Government Printing Office: <http://bookstore.gpo.gov>; (866) 512-1800.

In Memoriam

William C. Sturtevant, world-renowned expert on the traditional cultures of the North American Indians and general editor of the *Handbook of North American Indians*, died March 2 at the age of 80.

He had worked at the Smithsonian Institution for fifty years. He was hired as an ethnologist by the Bureau of American Ethnology in 1956, becoming a curator in the Department of Anthropology in the National Museum of Natural History when the Bureau was closed in 1965. In 1970 he led the planning of the Smithsonian's *Handbook of North American Indians*, a massive encyclopedia of a projected 20 volumes, and he was its General Editor until his death. He retired in January of this year and lived in Washington, D.C.

Sturtevant received a B.A. from the University of California at Berkeley in 1949 and a Ph.D. from Yale University in 1955. His doctoral dissertation was on the medical beliefs and practices of the Mikasuki Indians of Florida. In 1996 he received an honorary doctorate of humane letters from Brown University.

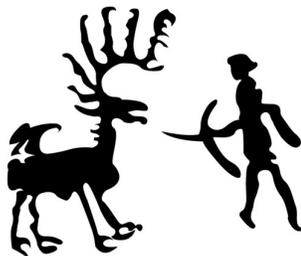
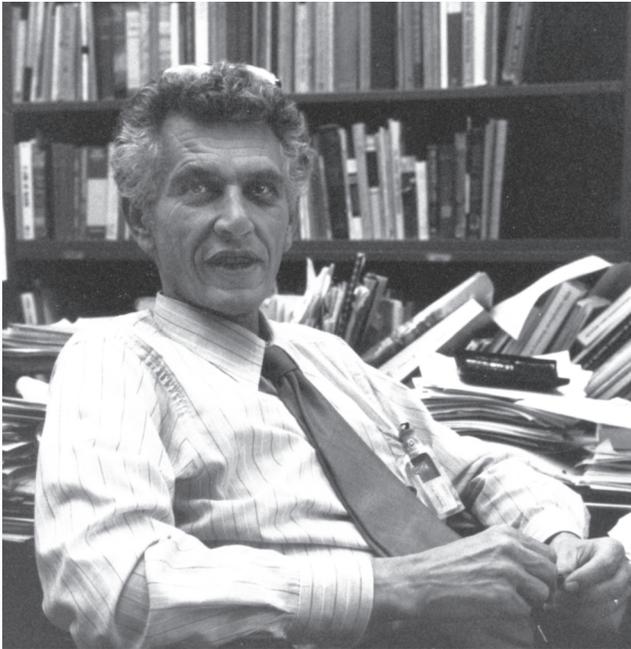


Illustration of an early North American petroglyph by Handbook illustrator Roger Roop.



He was a pioneer in and helped to define the interdisciplinary field of ethnohistory and that of ethno-science. While still a graduate student, he testified persuasively in 1954 against a bill that would have terminated the federal recognition of the Seminole tribe, beginning a life-long commitment to supporting tribes in their struggle to maintain and regain their rights and land.

In 2002 he was honored by a festschrift written by 34 of his friends and colleagues (*Anthropology, History, and American Indians: Essays in Honor of William Curtis Sturtevant*, edited by William L. Merrill and Ives Goddard; Smithsonian Contributions to Anthropology 44).

Bill Sturtevant wrote or edited more than 200 publications and served on many professional boards and committees. He was president of the American Society for Ethnohistory (1965-1966), the American Ethnological Society (1977), the Anthropological Society of Washington (1992), and the American Anthropological Association (1980-1981).

The American Philosophical Society (104 S. Fifth St., Philadelphia, PA 19106) has set up, at the request of the family, the William C. Sturtevant Memorial Fund in support of research in museums and archives on collections pertaining to the Native Peoples of the Americas.

He will be greatly missed.

Ives Goddard

(With thanks to Sally McLendon, Harriet Shapiro, and Bill Merrill)

FORENSIC ANTHROPOLOGY Workshop for High School Students

July 16–July 27, 2007

9am – 4pm* M-F

Catholic University of America

Workshop Director: David T. Clark, Ph.D.

Human skeletal remains have much to tell us about how people lived and died. Forensic Anthropology is the study of human skeletal remains in order to reconstruct the events of death. Archaeologists and biological anthropologists scientifically investigate human remains and related physical evidence to determine causes and circumstances surrounding human death and facts about human activities. Trauma, violence, disease, nutrition, and longevity are a few common types of evidence revealed by human skeletal studies.

This workshop will study archaeological/biological and anthropological methods used to investigate and document human remains and their associated archaeological sites. Students will study all aspects of the human skeleton, and learn how forensic scientists determine, analyze and interpret clues from sites associated with human remains. Ideas will be reinforced through daily hands-on, interactive projects. Examples of human remains, sites and methods will be exhibited through a variety of visual media: slides, DVD, movies, etc. Students will conduct daily internet projects related to the study of forensic sciences.

Class information will be augmented by field trips to forensic exhibits and local research facilities. Limited financial aid is available for qualified students. Please contact Summer Sessions below for an application.

Tuition-\$950 Room & Board-\$825

For more information, contact The Office of Summer Sessions, Catholic University of America, 321 Pangborn Hall Washington, DC 20064; cua-summer@cua.edu; 202-319-5257

*Students may stay until 6pm for recreational activities, if they need to wait to be picked up by their parents at no extra charge.

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1. To more widely disseminate original, recent research in anthropology in order to help readers stay current in the field;
2. To help those teaching anthropology utilize new materials, approaches, and community resources, as well as integrate anthropology into a wide variety of subjects; and
3. To create a national network of anthropologists, archaeologists, teachers, museum and other professionals interested in the wider dissemination of anthropology, particularly in schools.

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