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Battle of the Bones

Robson Bonnichsen and Alan L. Schneider

The first selection in this group of archaeological papers, like the first selection in the section on biological anthropology, addresses a controversial topic that pits the values of scientific research against, in this case, the religious values of some Native American groups. However, even this characterization oversimplifies the range of issues involved in the controversy. The flashpoint is the desire of some anthropologists to study the skeletal remains of some of the first people to set foot on the North or South American continents and the desire of some Native Americans to rebury these remains without permitting scientific inquiry.

The authors contrast various Native Americans' theories of their origins with scientific theories of the migration of peoples in the New World. They argue that only scientific theories are built on evidence, which can be overturned or adjusted as new evidence is unearthed. Therefore, the authors contend, the repatriation of bones before there is sufficient time to examine the evidence is not acceptable because scientific understanding is necessary. Although it might sound ironic, these anthropological archaeologists believe that, with all due respect for Native American religious beliefs, tradition should not cause us to abandon science. The complications, of course, revolve around the fact that not all Native Americans share the same beliefs about the sacredness of bones, and it is sometimes difficult to know which Native American group should receive and rebury skeletal remains. A crime in north Georgia in February 2002 involved a crematory operator who did not incinerate the bodies that were entrusted to him, but rather hid the bodies willy-nilly on the property. If we want to understand the strong reaction of Native Americans to the skeleton repatriation issue, it might be worthwhile to remember the public outrage and grief that surrounded the crematory scandal.

In the "battle of the bones," it is clear that people of goodwill on both sides of this controversy may seem intractably at odds. As you will see, even scientists differ with regard to this issue. We are once again faced with dilemmas involving the nature of science and scientific investigation, the rights of individuals to hold and act on particular belief systems, the rights of other individuals to know the facts as they can best be understood, and the role of public policy in finding common ground between strongly held positions.

How do we or will we know the history and prehistory of America? From where did our nation's first inhabitants come, and when did they arrive? How important is the answer to this question when it brings people with different belief systems into direct conflict? The answers to these questions are not easy, and we suspect that readers will come away from this selection with quite differing point of views.

As you read this selection, ask yourself the following questions:

- How do nonscientific, traditional origin stories differ from those proposed by scientists?
- Do you feel Native American origin theories and scientifically based origin theories are equally legitimate? What criteria might be used for determining legitimacy?
- Is it possible that the inhabitants who met Columbus when he landed in the New World were not descendants of the earliest Americans?
- How do you feel about the legal battle over the study of these skeletal remains? Make separate lists of the arguments for one side and for the other.

The following t.erms discussed in this selection are included in the Glossary at the back of the book:

Clovis point	*radiocarbon dating*
DNA	*repatriate*
mitochondrial DNA	*Solutrean*

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Some Crow traditionalists believe that the world, the animals and all humans were created by a wise and powerful being named Old Man Coyote. The Brule Sioux have a different tradition: after a great flood, the only survivor was a beautiful girl, who was rescued by an eagle. She married the eagle, and their children became the Sioux people. Where did the native people of the Americas really come from? When did they first appear in those lands, and how? Just as the Judeo-Christian tradition teaches that human beings originated when God created Adam and Eve in the Garden of Eden, so every Native American tribe has at least one creation story.

Archaeologists, meanwhile, take a different view of how people first appeared in the Americas. Although they are sharply divided about the details, they are convinced by the archaeological record that the original peoples of the Americas migrated there from elsewhere. Where they came from and when they arrived are questions that remain to be resolved. Some answers, however, are beginning to emerge, and they indicate a process that was far more complicated than was ever imagined.

In one sense, both scientific theories about human origins and nonscientific traditions about the genesis of a particular tribe have something in common. All people and all cultures strive to understand the world and their place in it. Origin stories—whether traditional accounts or scientific theories—help satisfy those yearnings. They describe how and when people came to be on the earth, and they explain how people survived and prospered in their surroundings. But there are key differences as well. Scientific origin theories are subject to reevaluation as new evidence emerges: indeed, in the past several years the prevailing scientific view about the origins of the first Americans has shifted dramatically. Nonscientific origin theories, by contrast, derive from supernatural or mystical revelation; they tolerate neither doubt nor revision, and must be accepted on faith.

Until recently, archaeologists were able to pin only a few firm dates on the ancient human remains that had been discovered in the Americas. Part of the reason was that the existing dating technology required that large samples—sometimes an entire bone—be destroyed, and so the process was infrequently applied. But in the past decade several new analytical methods have emerged: DNA typing of ancient biological material, comparative skull measurements and accelerator mass spectrometry, a radiocarbon-dating technique that requires only minuscule amounts of bone. Those new techniques have made it possible to accurately determine the ages of skeletal remains, as well as to classify the various human ethnic groups far more precisely than ever before. Moreover, in recent years a few very ancient and well-preserved new skeletons have been unearthed. Those discoveries, combined with the new analyses, have led archaeologists to some startling conclusions—including the possibility that modern-day Native Americans are not descended from the earliest people who colonized the Americas.

Thus the past few years have been an exciting time in the field of Paleo-American prehistory (also known as First Americans studies). And yet, ironically, the period has also been one of disappointment and uncertainty, as government and museum officials are being asked to curtail and even prohibit archaeological research. The reason for the political ferment is that Native American origin theories, which had long been relegated to the realm of personal religious beliefs, are suddenly being thrust into the domain of public policy. That clash between science and religion has commanded the attention of the media, and a surge of new books and articles about the first Americans has been released in recent months. The subject is of more than topical interest: the outcome of the debate could determine the course of American archaeology for decades to come.

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The shifts in public policy stem largely from a ten-year-old federal law, the Native American Graves Protection and Repatriation Act (NAGPRA). Bolstered by that law, some Native American activists are demanding possession of all prehistoric human remains found on federal or tribal lands in the United States and a halt to all study of those remains. In most cases, their intent is to rebury the ancient bones. Native American activists maintain that they already know where they come from, and see no need for further inquiry. They say their oral traditions report that their ancestors have lived in the Americas since the beginning of time. To them, the bones and skulls of ancient people are family members to be put to rest with dignity. Not all Native Americans share those views; many want to learn more about American prehistory and support the scientific study of all relevant remains, artifacts and associated information. Unfortunately, though, many government decision makers seem disposed to side with the anti-science advocates, assigning more legitimacy to Native American religious traditions than to scientific investigation and discourse.

Kennewick Man, a 9,200-year-old skeleton that was discovered on federal land in eastern Washington State on July 28, 1996, has become an important test case. Four weeks after it was found, preliminary radiocarbon-dating results were released, indicating that the skeleton was among the oldest ever unearthed in North America. Within a few days, however, federal officials decided to give the remains to a coalition of

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five local tribes—despite the fact that the bones had received only a preliminary examination. To forestall what would have been a tragic loss for science, one of us (Bonnichsen) and seven other experts in Paleo-American studies filed a federal lawsuit in Portland, Oregon, to prevent transfer of the skeleton. (The other author, Schneider, is an attorney in the case.) We requested, successfully, that the skeleton be kept in federal custody until our lawsuit was resolved. Today the bones remain in limbo as the dispute drags on.

Native American beliefs about the past and the dead certainly deserve respect, but they should not be allowed to dictate government policy on the investigation and interpretation of early American prehistory. If a choice must be made among competing theories of human origins, primacy should be given to theories based on the scientific method. Only scientific theories are built on empirical evidence; only scientific theories can be adjusted or overturned. True, influential scientists have sometimes been able to temporarily smother scholarly debate on views they opposed. But as recent developments in First Americans studies demonstrate, science is an inherently flexible, self-correcting endeavor. Even long-accepted scientific views can be challenged, and truth eventually wins out.

Ever since Thomas Jefferson began collecting Native American artifacts and displaying them in his foyer, many theories have been proposed to explain how people first came to North and South America. The most widely accepted was the Clovis-first theory, named for the elegant, fluted spear points found in association with the remains of mammoths, bison, and other animals near Clovis, New Mexico, in 1932. In subsequent years many similar stone spearheads were found throughout the Great Plains, and eventually in much of the United States and Central and South America. By the late 1960s radiocarbon dating had confirmed that the Clovis artifacts were between 10,800 and 11,500 years old.

In the 1960s and early 1970s the ecologist Paul S. Martin and the geoarchaelogist C. Vance Haynes Jr., both of the University of Arizona in Tucson, together with James E. Mossiman of the National Institutes of Health in Bethesda, Maryland, began to develop a dramatic theory about how the Americas were settled. They hypothesized that about 11,500 years ago, at the end of the most recent Ice Age, a single band of mammoth hunters from Siberia crossed the Bering land bridge into Alaska, and from there began spreading across North America. According to the theory of Martin and his colleagues, there were no people in the New World, as the Americas are sometimes called, until that time. The new arrivals and their descendants prospered and, in just a few centuries, purportedly settled two continents.

The Clovis-first model gained enormous scientific prominence—in fact, to question it was to risk virtual professional suicide. Implicit in the theory is the premise that a single biological population, with a single culture and language, spawned the enormously diverse array of peoples—with their widely divergent cultures and languages—who were living in the New World at the time of European contact. Now, however, thanks to the new archaeological finds and analytical advances, the Clovis-first model has been refuted.

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In 1977 Thomas D. Dillehay—an anthropologist at the University of Kentucky in Lexington and the author of one of the books under review, *The Settlement of the Americas*—began excavations at the Monte Verde site in southern Chile. Dillehay's work showed Monte Verde to be at least 12,500 years old, and he was widely criticized for challenging the validity of the Clovis-first theory [see "The Battle of Monte Verde," by Thomas D. Dillehay, January/February 1997]. Dillehay, however, did not back down, and three years ago a special team of archaeologists, including avowed skeptics, inspected Monte Verde. The result was vindication: the experts confirmed that Monte Verde was a legitimate pre-Clovis site. Acceptance of Dillehay's site broke a logjam in First Americans studies. Other sites—and there were many—that had been in limbo because they seemed to predate Clovis could now be acknowledged, too.

Some of those potential pre-Clovis sites include several in southeastern Wisconsin, where the archaeologist David F. Overstreet of Marquette University in Milwaukee has found 12,250-year-old stone tools and mammoth bones with cut marks. And at the Meadowcroft Rockshelter near Pittsburgh, Pennsylvania, the archaeologist James M. Adovasio of Mercyhurst College in Erie, Pennsylvania, has discovered tapered points and bladelike flakes dated to between 12,000 and 16,000 years ago. Similar artifacts have been excavated at the Cactus Hill site near Richmond, Virginia; investigators have dated that site to between 12,000 and 17,000 years old. And in the oldest archaeological deposits at Monte Verde, Dillehay himself has uncovered flaked stone tools that are apparently about 33,000 years old.

In *The Settlement of the Americas,* Dillehay provides a well organized synthesis of early Paleo-American archaeological findings. But the book falters in an important way. Dillehay is reluctant to recognize human presence in the Americas prior to 15,000 to 20,000 years ago, despite the older artifacts found at his own site. Although Dillehay assures the reader that his research at Monte Verde is sound, he will not accept the 33,000-year-old

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radiocarbon dates associated with the stone tools, he writes, until additional artifacts of such antiquity are confirmed at other sites. We find it disappointing that Dillehay, who has done so much to push back the date for the peopling of the Americas, is hesitant to confront the implications of his own data for early human presence in the New World.

In *Bones, Boats, and Bison,* E. James Dixon does for North America what Dillehay did for South America, providing a useful, up-to-date overview of the complex and scattered archaeological literature. Dixon is even more conservative than Dillehay: he favors the idea that the first Americans arrived only about 13,500 years ago. Around that time, he theorizes, people from the Pacific Rim of Asia traveled in small boats to North and South America and settled on the western shores of both continents. But like Dillehay, Dixon is resolute that the Americas were inhabited long before the Clovis artifacts were deposited.

Not only has the idea that the Americas were devoid of people until 11,500 years ago been disproved, but a second important tenet of the Clovis-first theory has also crumbled: the assertion that the Americas were colonized only once. The latest research shows that the New World probably underwent multiple colonizations: instead of originating in a small area of northeast Siberia, as predicted by the Clovis-first model, the first Americans probably came from many parts of Eurasia.

Perhaps the nail in the coffin for the Clovis-first theory is that no Clovis-style artifacts have ever been retrieved from archaeological sites in Siberia. Furthermore, the variety of the artifacts discovered in the rain forests, deserts, and coastal areas of South America indicate that early New World people were not members of one homogeneous clan of big-game hunters, as the Clovis-first theory proposed. Depending on their environments, some survived by hunting small game, some by fishing, and some by general foraging. As a result, investigators have concluded that, rather than signaling a distinct migration, the Clovis spear points that appear in the archaeological record beginning around 11,500 years ago may simply be the evidence of a technological innovation that took place at that time within groups of people who already lived in the Americas.

The idea that the Americas were settled more than once and by different groups of people is supported by evidence from ancient skeletons that have been examined with new techniques, such as the study of the DNA in the mitochondria of cells. Mitochondrial DNA is a more stable source of information about genetic lineages than is the DNA in the nucleus of a cell because, rather than representing a melding of maternal and paternal genes, mitochondrial DNA is almost always passed on by the mother alone.

The molecular anthropologist Theodore Schurr of the Southwest Foundation for Biomedical Research in San Antonio, Texas, and other investigators have identified five distinct mitochondrial lineages, or haplogroups, as they are called, in modern Native Americans. Four of the haplogroups—A, B, C, and D—are also found in varying frequencies in different Asian populations, which suggests that early immigrants to the Americas may have come from more than one region of Asia. The fifth haplogroup, known as X, is much rarer than the other four haplogroups, and its origin is not clear. It occurs among certain European populations but is absent in contemporary Asian populations, which suggests that it may record another discrete migration to the Americas, possibly from western Eurasia.

In fact, there is growing speculation that Europeans may have traveled to the Americas thousands of years before Columbus and the Vikings made their westward forays. The archaeologists Dennis J. Stanford of the Smithsonian Institution in Washington, D.C., and Bruce A. Bradley of Primitive Tech Enterprises, Inc., in Cortex, Colorado, have noted distinct similarities between the stone tools of the Clovis people and the ones made in France and Spain by members of the Solutrean culture, which flourished between 16,500 and 21,000 years ago. (The theory, only recently proposed, is highly controversial and has yet to be explored in depth.)

The advent of the personal computer has enabled Paleo-American investigators to apply powerful statistical techniques to multiple sets of data. As a result, teams of physical anthropologists have been able to perform comparative analyses of skeletal remains from Asia, North America, and South America, based on extensive measurements of skulls, limb bones, and teeth, and on dates derived from accelerator mass spectrometry.

The work has yielded some tantalizing results that corroborate much of the DNA evidence. For example, the physical anthropologist C. Loring Brace and his research team from the University of Michigan in Ann Arbor have concluded that the modern native peoples of North America are the descendants of at least four different colonizing populations from two different parts of Asia. Furthermore, Brace argues, those populations probably arrived in the New World at different times and by various routes.

Likewise, the physical anthropologists D. Gentry Steele of Texas A&M University in College Station, Douglas Owsley of the Smithsonian Institution, Richard L. Jantz of the University of Tennessee in Knoxville, and Walter Neves of the University of São Paulo in Brazil

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have compiled and analyzed measurements from the earliest known North and South American skeletons. Their research has demonstrated that early New World skulls are quite distinct from the skulls of modern Native Americans. Many of the early skulls display relatively narrow faces, long crania, and oval-shaped eye sockets—characteristics that are more typical of skulls from the Pacific Islands and southern Asia than they are of skulls from modern Native Americans.

The reasons for the difference between early and later New World skulls have yet to be fully explained. The discrepancies may be the result of gradual evolutionary changes that took place over time. On the other hand, the differences may indicate that the early skeletons are unrelated to those of modern Native Americans.

Thus a radical new idea has emerged: The people who inhabited the Americas when Columbus Paleo-American tribes referred to today as Native Americans—may not be descended from the earliest Americans. There is no reason to assume that the first immigrants to the Americas took hold and prospered. Perhaps some of the early colonizing groups died out before later groups arrived. Or it may be that later colonizing groups replaced earlier groups as a result of warfare, the introduction of new diseases, or higher birth or survival rates. If so, the question then becomes not which tribe does Kennewick Man belong to, but whether the skeleton belongs to any existing tribe at all.

Two new books—*Riddle of the Bones,* by the freelance writer Roger Downey, and *Skull Wars,* by David Hurst Thomas, an anthropologist at the American Museum of Natural History in New York City—present the Native American perspective on the argument. We must concede up front that we are far from impartial reviewers. Both of those books discuss the lawsuit that we initiated, and both seem to support the position of our adversaries: that tribal permission is needed before the Kennewick skeleton can be studied.

Downey attempts to relate the Kennewick Man controversy to the more fundamental question of the peopling of the Americas, but his analysis lacks depth and understanding. He presents a misleading view of the scientists involved in the lawsuit, often resorting to simplistic characterizations and innuendos to attack their motives and research goals. Moreover, he implies that science is not a credible method for explaining the past. From Downey's perspective, Native American origin theories are as legitimate as the scientific ones; in his view, both are only theories, and it is impossible to choose between them.

In *Skull Wars* Thomas attempts to provide the historical context that led to the passage of NAGPRA. He describes, for instance, the so-called skull science of the nineteenth century, which was pioneered by the American physician Samuel George Morton. Morton asserted that the variation in skull size among various ethnic groups proved the intellectual superiority of people of white European stock. Thomas writes that Morton's ideas led to a disregard for the right of Native Americans, and provided a justification for the looting and robbing of Native American graves.

Thomas's treatment of the past, however, is selective and largely one-sided. He seems to delight in pointing out the failings and racial biases of early investigators, as if to convince the reader that modern science is fatally tainted by past wrongdoing. Meanwhile, he pays little attention to investigators who championed the cause of Native Americans, dedicating their lives to the preservation of knowledge about those vanishing cultures.

Thomas argues that traditional Native American views about the past should be accommodated in decisions concerning the investigation and interpretation of American prehistory. He makes no attempt, however, to explain how belief systems that reject the need for research and critical analysis can provide a workable basis for scientific programs or for setting public policy. Given Thomas's scholarly stature and professional credentials, his failure to address the fundamental differences that separate supernatural origin theories from scientific explanations may confuse both the public and scientists who are not familiar with the subject.

Downey's outlook—that scientific ideas about the settling of the Americas are only theories, and thus no more reliable than any other account—evokes a familiar precedent. Fundamentalist Christians, who maintain that people were created by the God of the Bible, often assert that evolution deserves little respect because it is only a theory. Indeed, the controversy about the first Americans is similar to the dispute about whether children should be taught evolution or creationism in public schools. In both cases, what is at stake is the role of religion in public institutions. One debate threatens educational standards; the other, the future of American archaeology.

Until a decade ago, government intervention in archaeology was limited to the protection and preservation of archaeological sites and resources. Knowledge of American prehistory was considered the common heritage of all Americans, and investigators were free to explore new theories, regardless of their perspectives or research objectives. But now, even though biological knowledge of the earliest humans in the Americas is amazingly thin—fewer than ten relatively complete, securely dated skeletons more than 8,000 years old have been unearthed in North America—government decision makers are bowing to tribal demands for

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the control of ancient human skeletal remains and artifacts.

For example, the 10,600-year-old Buhl Woman, discovered in Idaho in 1989, was turned over by Idaho state officials to the Shoshone-Bannock tribes, even though scientific evidence indicates that the Shoshone-Bannock have resided in the area for less than 2,000 years. Before its reburial the Buhl skeleton was examined by only one physical anthropologist. Likewise, just a few years later, the 7,800-year-old Hourglass Cave skeleton from Colorado was reburied after limited study. Recently a 7,800-year-old human skull known as Pelican Rapids Woman, along with the 8,700-year-old so-called Browns Valley Man, both from Minnesota, were repatriated to a coalition of Sioux tribes and subsequently reburied in South Dakota.

In addition, the study of key archaeological materials and sites is becoming increasingly difficult. In deference to tribal religious beliefs, the government prohibited independent scientists from studying the Kennewick Man discovery site, then buried the site under 600 tons of rock and fill. Genetic analysis of a 9,400-year-old skeleton that was discovered in Nevada, known as the Spirit Cave Mummy, has yet to be allowed because of objections from the Paiute. And several years ago, a team led by one of us (Bonnichsen) was prevented from conducting DNA tests on ancient human hair from the Mammoth Meadow site in Montana, because several tribes claimed possession of the hair [see "Roots," by Robson Bonnichsen and Alan L. Schneider, May/June 1995].

Those decisions by the government to hand over key archaeological evidence and to restrict scientific work are dictated by misguided public policy. Congress did not anticipate that NAGPRA would be applied to very early human remains that might have no direct relation to modern Native Americans. The purpose of NAGPRA was to reunite Native American skeletal remains, funerary items, and ceremonial objects with living members of the culture that had produced them. Yet in many cases the tribes invoking NAGPRA to block scientific study have no known cultural or biological connection with the remains or artifacts in question.

Traditional stories about supernatural origins may provide a workable structure for ordering human affairs when all the people affected share the same belief system. They do not, however, provide a satisfactory mechanism for setting government policy in a pluralistic, multicultural society such as the United States. If Native American origin theories are accepted as a basis for determining the ownership and study of archaeological resources uncovered on public land, a dangerous precedent will have been set. What will stop the government from incorporating other religious beliefs into its policies?

Scientific theories often offend one or more segments of society because the conclusions of science may differ from those expected by people seeking spiritual answers. Such conflicts are to be expected. But when the government attempts to mediate disputes of that kind, it inevitably ends up censoring the open dissemination of information and ideas. In the quest to understand the history of our species, we need more information, not less. Respect for Native Americans should not cause us to abandon science in favor of politically expedient compromises.

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Around the Mall & Beyond

Michael Kernan

Sometime, out of the clear blue—in the midst of doing something you have done a thousand times—an insight is born or a question is raised. Once, driving through a city neighborhood, I noticed all the windows covered with bars and suddenly realized that it was the bars on the windows and similar conditions on the streets that led me to think the neighborhood might be a dangerous place to be even though I had no idea of the local crime statistics. At the time, I happened to be researching and writing on the subject of urban crime prevention.

These kinds of moments happen occasionally when one is researching a phenomenon and totally entrenched in the subject. Sometimes this happens with undergraduate students, but usually they are engaged in so many courses and subjects that they are not totally immersed in a singular question or project that captivates their every waking hour.

Many anthropologists have said that anthropology is a mirror for humankind. As we study anthropology and other peoples, we come to see ourselves more clearly because we ask questions about why we do things differently than others do. Every discipline raises questions, though of a different type. Imagine a physicist or a chemist caught up in the workings of a pen; the physicist might ponder the role of friction or the chemist the viscosity of the ink inside. What of an engineer or historian?

So, what might an archaeologist think about if he or she had such an epiphany?

As your read this selection, ask yourself the following questions:

- What sorts of material items from your home or school might someday become artifacts of interest to archaeologists, and what sorts of things, if any, would they not be interested in?
- Do you agree that the National Historic Preservation Act is a useful public policy?
- Why would a mammoth bone be found in Maryland, of all places?
- In the study of a poor local community, what might archaeology offer that history does not?

The following terms discussed in this selection are included in the Glossary at the back of the book:

artifacts
cultural resources
middens
shards
paleontologist
patent medicine

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Here I am, getting rid of my used-up Slim-Rite Wundertip felt pen and standing over the wastebasket ready to throw the thing in like a dart—when I stop in my tracks and tell myself, Wait a minute. Did I think this was nothing but a piece of trash? Jetsam from my frantic career? I am holding in my hands here a nugget of history.

Prior to the construction of the National Museum of the American Indian, just east of the National Air and Space Museum, a team of archaeologists excavated the site and unearthed a lot of trash. The National Historic Preservation Act requires that every federally funded building must first have its site vetted for possible impact on cultural resources, which means it has to be checked out for artifacts of bygone civilizations.

It is a useful policy. The practice of looking where we dig has had payoffs for the Smithsonian even when something other than early civilizations have been involved. A dozen years ago, at a construction site near Largo, Maryland, work was delayed for a few days when a giant bone pulled from the mud proved to be the rib of a mammoth. Plunging up to my knees in the mud, I reported the find for the *Washington Post*. And by the time Smithsonian paleontologists had examined

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the find, and the press reported it, we all knew a lot more about mammoths.

And I remember back in 1984 when a 29,000-year-old cyprus log was pulled from the hole that would become the underground complex of the Arthur M. Sackler Gallery and the National Museum of African Art. Once again we got a chance to learn a little something, that time about Washington at the beginning of the last ice age.

For years it was an open green space between the Air and Space Museum and the U.S. Botanical Garden. Now it is home to the Smithsonian Institution's 18th museum. But in the last half of the 19th century and as late as 1929, it was a residential neighborhood whose ambience is suggested by the name of a dirt roadway that ran behind the houses: Louse Alley.

It was not a high-rent district, and probably most residents were more or less transient. A Washington Gas Light Company tank loomed over the street, alongside the E. N. Gray & Co. Foundry and the Taylor and Low Stone Yard. Living in these narrow houses were immigrants from Europe and some African American families. There was no sign of the area's 17th-century inhabitants, the Conoy Indians, a rather sedate group of Algonquian farmers who apparently didn't want to settle on what was then marshland.

The search team dug as deep as eight feet through soil that had been brought in to fill the marshland when Tiber Creek (which ran roughly along today's Constitution Avenue) was drained and channelized in 1815, and they found "oyster shells, 400 pounds of oyster shells!" according to Donna Seifert, the project manager for John Milner Associates, urban archaeologists, planners and architects.

I don't know, maybe oysters were cheap in those days, but 400 pounds of oyster shells means a lot of oysters. It sounded to me as if someone must have had a grand party out there. "Oh no," Seifert says. "We looked on the map and found there had been an oyster house on the corner."

There were also many bucketfuls of crockery shards, blue pottery from Britain, kitchenware, antique beer bottles, medicine bottles, animal bones and a couple of dolls much the worse for wear. All these items have been taken to the Milner lab in Alexandria, Virginia, to be analyzed to determine, for example, what companies made the discarded dishes and bottles. A report is due this summer.

The archaeologists noticed that residents tended to pile up their refuse at the back of their yards, occasionally shoveling dirt on top. And since most of the houses had no running water or bathrooms, "we were hoping to find outhouses," Seifert says, "because a pit of any kind, a cistern or even a well, when it's abandoned, gets filled in relatively quickly with garbage. This makes still-life composed of the chaff of another time; objects were sifted from dirt using shaker screen with tripod. It is a sort of time capsule. But unfortunately the locals used only box privies, the kind with removable drawers for easy cleaning."

Too bad. Ah well. One problem with things that have been scattered about a yard and not neatly collected in a pit is that you often can't tell for sure whether they all really belong together in time and space.

I have seen an old photograph of Louse Alley, probably in connection with outraged articles about the neglected neighborhoods of Washington, showing rows of tumbledown wooden and brick buildings only a few blocks from the Capitol dome.

Back in the 19th century, Louse Alley couldn't have been any more charming than the rest of Washington as described by a French visitor in 1840: "the inhabitants all own cows and pigs, but no stables, and these animals wander about all day and all night through the city . . . the women milk their cows on the sidewalk and sprinkle the passers-by." There was no organized garbage pickup in the city until 1863, and even then, I suspect, Louse Alley may not have been the first neighborhood to have it.

But I am fascinated with the idea of winkling history out of trash, or more to the point, out of the things we take so utterly for granted that we never give them a thought. All we know of many of the very earliest cultures comes from what archaeologists have been able to deduce from the middens. Why shouldn't it work for modern cultures? It is precisely the things we don't pay any attention to, the everyday implements—the toothbrushes and spoons and bottle-tops, the givens—that often prove to be the clues to a particular society.

The mere discovery of a carefully laid out ancient grave in, say, Germany can produce a variety of insights and suggestions: a belief in an afterlife, for example. A bell-shaped, handleless drinking vessel may be found in the grave, causing the experts to slap their foreheads in amazement: the Beaker folk were here! Find enough beakers and a startling new picture of Bronze Age trade emerges, a network covering all of Western Europe. The smallest detail may contain the essence of our own time. A toothpick discarded today might give an archaeologist palpitations in the 22nd century.

What sorts of secrets the denizens of Louse Alley may have harbored, I have no idea. The original wood-frame houses were torn down in midcentury and replaced with brick row houses, and then the whole area was leveled in the 1930s. In World War II a temporary office building was erected there but removed about 25 years later. We do know that most of the people were short-term renters and that a few of the women who lived there at midcentury described themselves as prostitutes by profession, which was one of the entries

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listed on the census forms of the day. No big secret, obviously.

What clues will we get from these poor shards and bottles? It's astonishing how much a thinking person can make out of very little.

Take animal bones.

"If you look at the bones closely," says Theresa Singleton, from the anthropology department of the National Museum of Natural History, "and they are cut into short pieces, show slice marks or are extra brittle, then we might say they were boiled in a stew."

"Then you check out the ceramics," Singleton adds, "and if you see mostly bowls, you know those people ate soups or stews a good deal of the time."

Not many steak knives to be found on Louse Alley.

But how do we tell the African American poor from the Irish, German and French immigrants? "The hard part is figuring out whose trash we're looking at," says Donna Seifert.

"What you need is quantity. You need enough samples of consumer strategies to reach a conclusion. Now, medicine bottles can tell you something. At another site, to give you an example, we found that different ethnic groups tended to use different patent medicines," Singleton explains.

There is a certain amount of discussion, not to say controversy, among professionals over this sort of period research. It was only a generation ago that archaeologists began focusing on the debris of ordinary people from the 19th century. What does archaeology offer that's not in historical documents?

A lot, it seems to me, and if you think I don't see this Slim-Rite Wundertip felt pen in a new light, you haven't been listening. I mean, this is not just a pen, it is an artifact. Furthermore, the ink is, or was, violet, which I failed to notice when I bought it.

Who knows what they might make of it in the 22nd century?

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Culture, Poverty, and HIV Transmission

The Case of Rural Haiti

Paul Farmer

AIDS is currently the deadliest infectious disease in the world, killing more than 3 million people every year. While antiretroviral drugs have lengthened the lives of many people infected with HIV, these drugs are expensive, and millions of people who need them still cannot afford them. Without medications, counseling, and support, people living with HIV are likely to infect others, and then die.

In the history of this epidemic, anthropologists have played an important role in describing and helping to explain how behavioral practices are related to the transmission of the HIV virus. So, too, have anthropologists helped demonstrate how poverty and other inequalities affect people's likelihood of contracting AIDS in the first place.

In this selection, we learn about the circumstances under which three Haitians developed AIDS, and how circumstances such as poverty and gender inequality put them at dramatically increased risk of infection. Much of the public discourse about AIDS reflects moral judgments about people's lifestyles and places blame for the disease on the sufferers. This selection shows how circumstances beyond individuals' control can place them at risk of infection. Paul Farmer, the author of this selection, is both a physician and an anthropologist, and he has been one of the most prominent and vocal advocates for people whose social and political circumstances place them at increased risk of HIV and other infectious diseases. Students interested in learning more about the work of Paul Farmer might be interested in reading his biography, *Mountains Beyond Mountains,* by Tracy Kidder.

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While the biomedical challenge of AIDS is great, the challenge of coping with the human dimensions of AIDS is enormous, requiring resources, compassion, and cross-cultural understanding. Anthropologists have made, and continue to make, important contributions to the efforts of doctors, hospitals, nongovernment organizations, and other people and institutions to cope with the human dimensions of this devastating virus.

As you read this selection, ask yourself the following questions:

- How does poverty affect one's risk of becoming infected with HIV?
- What cultural and political factors influence the distribution of AIDS in Haiti?
- How can HIV infection be seen as *not* the result of bad personal decisions?
- What are some practical suggestions for reducing the human suffering caused by AIDS?
- What does Farmer mean when he says that there is "an AIDS of the North, and an AIDS of the South?"

The following terms discussed in this selection are included in the Glossary at the back of the book:

AIDS	*seropositive*
epidemic	*seroprevalence*
HIV	*SIDA*
medical anthropology	*transmission*

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Haiti, a country of well over seven million inhabitants, is generally considered to be a substantially rural nation,[1] yet few studies of HIV transmission have been conducted in rural parts of the country.

Early reports by Pape and Johnson, based on small studies conducted in 1986–87, noted that the

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seroprevalence rate for HIV averaged 3 percent "in rural areas."[2] The seroprevalence in 97 mothers of children hospitalized with dehydration was 3 percent; of 245 unscreened rural blood donors, 4 percent had antibodies to HIV. In an area even more distant from urban centers, only 1 percent of 191 adults who came for immunizations were seropositive. Unfortunately, we know little about the individuals bled for these studies. Just how rural were they? What was the nature of their ties to Port-au-Prince and other high-prevalence cities? How did the seropositive individuals come to be at risk for HIV? How did they differ from seronegative controls? How rapidly was HIV making inroads into the rural population? What, in short, are the dynamics of HIV transmission in rural Haiti?

To understand the rural Haitian AIDS epidemic, we must move beyond the concept of "risk groups" to consider the interplay between human agency and the powerful forces that constrain it, focusing especially on those activities that promote or retard the spread of HIV. In Haiti, the most powerful of these forces have been inequality, deepening poverty, and political dislocations, which have together conspired to hasten the spread of HIV. This chapter details research on HIV transmission in a rural area of Haiti—and also recounts some of the ways such large-scale social forces become manifest in the lives of particular individuals.

AIDS IN A HAITIAN VILLAGE

The setting for the research described here is the Péligre basin of Haiti's Central Plateau, home to several hundred thousand mostly rural people. Although all parts of Haiti are poor, the Péligre basin region and its villages may be especially so.

Before 1956, the village of Kay was situated in a deep and fertile valley in this area, near the banks of the Rivière Artibonite. For generations, the villagers farmed the broad and gently sloping banks of the river, selling rice, bananas, millet, corn, and sugarcane in regional markets. Harvests were, by all reports, bountiful; life then is now recalled as idyllic. With the construction of Haiti's largest hydroelectric dam in 1956, however, thousands of families living in this region were flooded out. The displaced persons were largely peasant farmers, and they received little or no compensation for their lost land.

The hilltop village of Do Kay was founded by refugees from the rising water. The flooding of the valley forced most villagers up into the hills on either side of the new reservoir. Kay became divided into "Do" (those who settled on the stony backs of the hills) and "Ba" (those who remained down near the new waterline). By all standard measures, both parts of Kay are now very poor; its older inhabitants often blame their poverty on the massive buttress dam a few miles away and note bitterly that it brought them neither electricity nor water.

Though initially a dusty squatter settlement of fewer than two hundred persons, Do Kay has grown rapidly in the past decade and now counts about two thousand inhabitants. In spite of the hostile conditions, most families continue to rely to some extent on small-scale agriculture. But many villagers are involved in a series of development projects designed to improve the health of the area's inhabitants. Since 1984, for example, a series of outreach initiatives have complemented the work of our growing team of clinicians, based in Do Kay at the Clinique Bon Sauveur. The most significant efforts were undertaken under the aegis of Proje Veye Sante, the "health surveillance project." Proje Veye Sante, conducted in large part by village-based community health workers from about thirty nearby communities, provides preventive and primary care to close to fifty thousand rural people.

Through Proje Veye Sante, AIDS surveillance began well before the epidemic was manifest in the region. It is thus possible to date the index, or first, case of AIDS to 1986, when a young schoolteacher, Manno Surpris, fell ill with recurrent superficial fungal infections, chronic diarrhea, and pulmonary tuberculosis. Seropositive for HIV, he died a year later.

Although Manno Surpris was from another part of the Central Plateau, it was not long before we began to diagnose the syndrome among natives of Do Kay. The sections that follow offer brief case histories of the first three villagers known to have died of AIDS. None had a history of transfusion with blood or blood products; none had a history of homosexual contact or other "risk factors" as designated by the CDC. They did, however, share two important, if poorly understood, risk factors: poverty and inequality.

Anita

Anita Joseph was born in approximately 1966 to a family that had lost its land to the Péligre dam. One of six children, she briefly attended school until her mother, weakened by the malnutrition then rampant in the Kay area, died of tuberculosis. Anita was then thirteen. Her father became depressed and abusive, and she resolved to run away: "I'd had it with his yelling. . . . When I saw how poor I was, and how hungry, and saw that it would never get any better, I had to go to the city. Back then I was so skinny—I was saving my life, I thought, by getting out of here."

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Anita left for Port-au-Prince with less than $3 and no clear plan of action. She worked briefly as a *restavèk,* or live-in maid, for $10 a month but lost this position when her employer was herself fired from a factory job.

Cast into the street, Anita eventually found a relative who took her in. The kinswoman, who lived in a notorious slum north of the capital, introduced her to Vincent, a young man who worked unloading luggage at the airport. Anita was not yet fifteen when she entered her first and only sexual union. "What could I do, really?" she sighed as she recounted the story much later. "He had a good job. My aunt thought I should go with him."

Vincent, who had at least one other sexual partner at the time, became ill less than two years after they began sharing a room. The young man, whom Anita cared for throughout his illness, died after repeated infections, including tuberculosis. Not long after his death, Anita herself fell ill with tuberculosis.

Upon returning to Do Kay in 1987, she quickly responded to antituberculous therapy. When she relapsed some months later, we performed an HIV test, which revealed the true cause of her immunosuppression. Following a slow but ineluctable decline, Anita died in February 1988.

Dieudonné

Dieudonné Gracia, born in Do Kay in 1963, was also the child of two "water refugees." One of seven children, he attended primary school in his home village and, briefly, secondary school in a nearby town. It was there, at the age of nineteen, that he had his first sexual contact. Dieudonné remarked that his girlfriend had had "two, maybe three partners" before they met; he was sure that one of her partners had been a truck driver from a city in central Haiti.

When a series of setbacks further immiserated his family, Dieudonné was forced to drop out of secondary school and also to drop his relationship with the young woman. He returned to Do Kay to work with his father, a carpenter. In 1983, however, the young man decided to "try my luck in Port-au-Prince." Through a friend from Do Kay, Dieudonné found a position as a domestic for a well-to-do family in a suburb of the capital.

While in the city, Dieudonné's sexual experience broadened considerably. He had five partners in little more than two years, all of them close to his own age. Asked about the brevity of these liaisons, Dieudonné favored an economic explanation: "A couple of them let go of me because they saw that I couldn't do anything for them. They saw that I couldn't give them anything for any children."

In 1985, Dieudonné became ill and was dismissed from his job in Port-au-Prince. He returned to Do Kay and began seeing his former lover again. She soon became pregnant and moved to Do Kay as the young man's *plase,* a term designating a partner in a more or less stable conjugal union.[3]

During this interlude, Dieudonné was seen at the Do Kay clinic for a number of problems that suggested immunodeficiency: herpes zoster and genital herpes, recurrent diarrhea, and weight loss. In the months following the birth of their baby, the young mother fell ill with a febrile illness, thought by her physician to be malaria, and quickly succumbed. Less than a year later, Dieudonné, much reduced by chronic diarrhea, was diagnosed with tuberculosis. Although he initially responded to antituberculous agents, Dieudonné died of AIDS in October 1988.

Acéphie

Acéphie Joseph was born in 1965 on a small knoll protruding into the reservoir that had drowned her parents' land. Acéphie attended primary school somewhat irregularly; by the age of nineteen, she had not yet graduated and decided that it was time to help generate income for her family, which was sinking deeper and deeper into poverty. Hunger was a near-daily occurrence for the Joseph family; the times were as bad as those right after the flooding of the valley. Acéphie began to help her mother, a market woman, by carrying produce to a local market on Friday mornings.

It was there that she met a soldier, formerly stationed in Port-au-Prince, who began to make overtures to the striking young woman from Do Kay. Although the soldier had a wife and children and was known to have more than one regular partner, Acéphie did not spurn him. "What would you have me do? I could tell that the old people were uncomfortable, worried—but they didn't say no. They didn't tell me to stay away from him. I wish they had, but how could they have known? . . . I looked around and saw how poor we all were, how the old people were finished. . . . It was a way out, that's how I saw it."

Within a short time, the soldier fell ill and was diagnosed in the Do Kay clinic with AIDS. A few months after he and Acéphie parted, he was dead.

Shaken, Acéphie went to a nearby town and began a course in what she euphemistically termed a "cooking school," which prepared poor girls for work as servants. In 1987, twenty-two years old, Acéphie went to Port-au-Prince, where she found a $30-per-month job as a housekeeper for a middle-class Haitian woman

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who worked for the U.S. embassy. She began to see a man, also from the Kay region, who chauffeured a small bus between the Central Plateau and Port-au-Prince.

Acéphie worked in the city until late in 1989, when she discovered that she was pregnant. This displeased both her partner and her employer. Sans job and sans boyfriend, Acéphie returned to Do Kay in her third trimester.

Following the birth of her daughter, Acéphie was sapped by repeated opportunistic infections, each one caught in time by the staff of the clinic in Do Kay. Throughout 1991, however, she continued to lose weight; by January 1992, she weighed less than ninety pounds, and her intermittent fevers did not respond to broad-spectrum antibiotics.

Acéphie died in April 1992. Her daughter, the first "AIDS orphan" in Do Kay, is now in the care of Acéphie's mother. The child is also infected. A few months after Acéphie's death, her father hanged himself.

Sadly, however, this is not simply the story of Acéphie and her family. The soldier's wife, who is much thinner than last year, has already had a case of herpes zoster. Two of her children are also HIV-positive. This woman, who is well known to the clinic staff, is no longer a widow; once again, she is the partner of a military man. Her late husband had at least two other partners, both of them poor peasant women, in the Central Plateau. One is HIV-positive and has two sickly children. The father of Acéphie's child, apparently in good health, is still plying the roads from Mirebalais to Port-au-Prince. His serostatus is unknown.

Individual Experience in Context

When compared to age-matched North Americans with AIDS, Anita, Dieudonné, and Acéphie have sparse sexual histories: Anita had only one partner; Dieudonné had six; Acéphie had two. Although a case-control study by Pape and Johnson suggested that HIV-infected urban men, at least, had larger numbers of partners than our patients did,[4] research conducted in Anita's neighborhood in Port-au-Prince suggests that her case is not as unique as it would seem:

> The high seropositivity rate (8%) found in pregnant women 14 to 19 years of age suggests that women [in Cité Soleil] appear to acquire HIV infection soon after becoming sexually active. Moreover, this age group is the only one in which a higher seropositivity rate is not associated with a greater number of sexual partners. Women with only one sexual partner in the year prior to pregnancy actually have a slightly higher prevalence rate (although not significantly so) than the others. This suggests that they were infected by their first and only partner.[5]

TABLE 1 Case-Control Study of AIDS in Rural Haitian Women

Patient Characteristics	Patients with AIDS (N = 25)	Control Group (N = 25)
Average number of sexual partners	2.7	2.4
Sexual partner of a truck driver	12	2
Sexual partner of a soldier	9	0
Sexual partner of a peasant only	0	23
Ever lived in Port-au-Prince	20	4
Worked as a servant	18	1
Average number of years of formal schooling	4.5	4.0
Ever received a blood transfusion	0	2
Ever used illicit drugs	0	0
Ever received more than ten intramuscular injections	17	19

The stories of Anita, Dieudonné, and Acéphie are ones that reveal the push-and-pull forces of contemporary Haiti. In all three cases, the declining fortunes of the rural poor pushed young adults to try their chances in the city. Once there, all three became entangled in unions that the women, at least, characterized as attempts to emerge from poverty. Each worked as a domestic, but none managed to fulfill the expectation of saving and sending home desperately needed cash. What they brought home, instead, was AIDS.

How representative are these case histories? Over the past several years, the medical staff of the Clinique Bon Sauveur has diagnosed dozens more cases of AIDS and other forms of HIV infection in women who arrive at the clinic with a broad range of complaints. In fact, the majority of our patients have been women—a pattern rarely described in the AIDS literature. With surprisingly few exceptions, those so diagnosed shared a number of risk factors, as our modest case-control study suggests.

We conducted this study by interviewing the first twenty-five women we diagnosed with symptomatic HIV infection who were residents of Do Kay or its two neighboring villages. Their responses to questions posed during a series of open-ended interviews were compared with those of twenty-five age-matched, seronegative controls. In both groups, ages ranged from 16 to 44, with a mean age of about 27 years. Table 1 presents our findings.

None of these fifty women had a history of prostitution, and none had used illicit drugs. Only two, both members of the control group, had received blood transfusions. None of the women in either group had

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had more than five sexual partners in the course of their lives; in fact, seven of the afflicted women had had only one. Although women in the study group had on average more sexual partners than the controls, the difference is not striking. Similarly, we found no clear difference between the two groups in the number of intramuscular injections they had received or their years of education.

The chief risk factors in this small cohort seem to involve not number of partners but rather the professions of these partners. Fully nineteen of the women with HIV disease had histories of sexual contact with soldiers or truck drivers. Three of these women reported having only two sexual partners: one a soldier, one a truck driver. Of the women diagnosed with AIDS, none had a history of sexual contact exclusively with peasants (although one had as sole partner a construction worker from Do Kay). Among the control group, only two women had a regular partner who was a truck driver; none reported contact with soldiers, and most had had sexual relations only with peasants from the region. Histories of extended residence in Port-au-Prince and work as a domestic were also strongly associated with a diagnosis of HIV disease.

How can we make sense of these surprising results? In the sociographically "flat" region around the dam—after all, most area residents share a single socioeconomic status, poverty—conjugal unions with nonpeasants (salaried soldiers and truck drivers who are paid on a daily basis) reflect women's quest for some measure of economic security. In the setting of a worsening economic crisis, the gap between the hungry peasant class and the relatively well-off soldiers and truck drivers became the salient local inequality. In this manner, truck drivers and soldiers have served as a "bridge" from the city to the rural population.

Truck drivers and soldiers will soon no longer be necessary components of the rural epidemic. Once introduced into a sexually active population, HIV will work its way to those with no history of residence in the city, no history of contact with soldiers or truck drivers, no history of work as a domestic. But these risk factors—all of which reflect a desperate attempt to escape rural poverty—are emblematic of the lot of the rural Haitian poor, and perhaps especially of poor women.

HIV in a Haitian Village

Extended residence in Port-au-Prince, work as a servant, and sexual contact with nonpeasants—although these risk factors were far different from those described for North Americans with AIDS, they characterized the majority of our male and female patients afflicted with AIDS. The majority of the residents of the area served by Proje Veye Sante shared none of these attributes, however. Did this suggest that few would prove to be infected with HIV? Although a good deal of ethnographic research into the nature of AIDS had already been conducted in the region, no research had addressed the question of HIV prevalence among asymptomatic adults.

Troubled by this lacuna, the staff of the clinic and of Proje Veye Sante established the Groupe d'étude du SIDA dans la Classe Paysanne.[6] GESCAP has a mandate to research the mechanisms by which poverty puts young adults, and especially young women, at risk of HIV infection.[7] With community approval, GESCAP is attempting to illuminate case histories with serologic surveys, an expanded case-control study, and cluster studies (such as those that revealed how a single HIV-positive soldier came to infect at least eleven natives of the region, one of whom was Acéphie).

After considerable discussion, the members of GESCAP decided to undertake a study of all asymptomatic adults living in Do Kay. The study was to include all members of the community who might plausibly be sexually active (fifteen years and older) and who were free of any suggestion of immunodeficiency; patients with active tuberculosis were excluded from this study. Anyone who was the regular sexual partner of a person with known HIV infection was also excluded.

Of the first one hundred villagers enrolling in the program, ninety-nine were seronegative for HIV.[8] The one young woman with HIV infection, Alourdes, had a history of extended residence in Port-au-Prince and also in 1985 of regular sexual contact with a salaried employee of the national electric company. This man, who had several sexual partners during his tenure in central Haiti, was rumored to have died of AIDS. In 1986, Alourdes had been the partner of a young man from her home village, a construction worker. He later developed tuberculosis, initially attributed to respiratory contact with his wife, who had pulmonary tuberculosis. Both were later found to be infected with HIV; neither had ever had sexual contact outside the Do Kay area. The discovery of HIV infection in Alourdes, who was known to have risk factors as defined in the case-control study, helped to identify the routes of exposure of the couple who had HIV-related tuberculosis.

Such discrete studies do not, however, fully define the nature of the large-scale social forces at work. The discussion in the following sections summarizes the factors that seem to be most significant in the ultimate rate of progression of HIV in rural Haiti. Perhaps an examination of these forces can serve to inform understandings of the dynamics of HIV transmission in other parts of Latin America and also in areas of Asia and Africa where prevalence rates in rural regions

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are currently low. It is a cautionary tale that argues for aggressive preventive measures:

> If a disaster is to be prevented in rural Haiti, vigorous and effective prevention campaigns must be initiated at once. And although such efforts must begin, the prospects of stopping the steady march of HIV are slim. AIDS is far more likely to join a host of other sexually transmitted diseases—including gonorrhea, syphilis, genital herpes, chlamydia, hepatitis B, lymphogranuloma venereum, and even cervical cancer—that have already become entrenched among the poor.[9]

Only massive and coordinated efforts may yet avert the ongoing disaster that has befallen urban Haiti, Puerto Rico, inner-city North America, Thailand, Brazil, and many nations in sub-Saharan Africa.

THE DYNAMICS OF HIV TRANSMISSION IN RURAL HAITI

Wherever HIV infection is a sexually transmitted disease, social forces necessarily determine its distribution. Cultural, political, and economic factors, while each inevitably important, cannot be of equal significance in all settings. In rural Haiti, we can identify a number of differentially weighted, synergistic forces that promote HIV transmission.

Population Pressures

Haiti, which covers 27,700 square kilometers, is one of the most crowded societies in the hemisphere. In 1980, only 8,000 square kilometers were under cultivation, giving an effective population density of 626 persons per square kilometer. Unfortunately, Haiti's topsoil is now prey to runaway forces that further compound the overcrowding: "The land suffers from deforestation, soil erosion, and exhaustion; the country is periodically ravaged by hurricanes which cause enormous damage."[10] As the land becomes increasingly exhausted, more and more peasants abandon agriculture for the lure of wage-labor in cities and towns.

Indeed, one of the most striking recent demographic changes has been the rapid growth of Port-au-Prince. More than 20 percent of the Haitian population now lives in the capital, a city of over 1.5 million. Although this concentration is not impressive by Caribbean standards (more than 30 percent of Puerto Ricans live in San Juan), the rate of growth in Port-au-Prince has been striking: "The urban population was 12.2 percent of the total in 1950, 20.4 percent in 1971 and an estimated 27.5 percent in 1980."[11] Haitian demographers estimate that by the year 2000 urban dwellers will constitute 37 percent of the total population.

As is the case with so many Third World countries, internal migration has played the most significant role in the growth of the capital. Locher estimates that "between 1950 and 1971 rural-urban migration accounted for 59 percent of Haitian urban growth, while natural population increase accounted for only 8 percent."[12] Neptune-Anglade has observed that the growth of Port-au-Prince is substantially the result of a "feminine rural exodus," leaving the city approximately 60 percent female.[13] Younger women of rural origin—women like Anita and Acéphie—are most commonly employed as servants.[14] Migrants of both sexes maintain strong ties with their regions of origin. In these respects, the three index cases of AIDS from Do Kay are illustrative of the trends documented by demographers and others who speak of Port-au-Prince as "a city of peasants."

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Economic Pressures

Rural Haiti, always poor, has become palpably poorer in recent decades. A per capita annual income of $315 in 1983 masked the fact that income hovered around $100 in the countryside; in the late 1990s the average annual per capita income is down to around $175.[15] Accompanying the population growth and a loss of arable land to erosion and alkalinization has been an inevitable growth in landlessness. All of these factors have inevitably had a devastating effect on agricultural production. For example, Girault typifies the decade preceding 1984 as marked chiefly "by the slow-down of agricultural production and by a decrease in productivity."[16]

This decline has been further compounded by striking rural-urban disparities in every imaginable type of goods and service. In 1984, Girault was able to complain that "Port-au-Prince with 17–18 percent of the national population consumes as much as 30 percent of all the food produced in the country and a larger share of imported food."[17] Government statistics reveal that the "Port-au-Prince agglomeration" consumed 93 percent of all electricity produced in the country in 1979. As Trouillot notes, the city "houses 20 percent of the national population, but consumes 80 percent of all State expenditures."[18]

In short, current economic conditions push people out of the countryside and into the city or, often enough, out of the country altogether. The Haitian people have long since left behind a peasant standard of living (which did not necessarily mean an exceptionally low one). Whereas Haiti was once a nation with an extremely high percentage of landholders, late-twentieth-century Haiti is increasingly a country of unemployed and landless paupers. When the Population Crisis Committee published its "international index of human

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suffering" in 1992, based on a variety of measures of human welfare, Haiti had the dubious distinction of heading the list of all countries in this hemisphere. Of the 141 countries studied, only three were deemed to have living conditions worse than those in Haiti—and all three of these countries were at the time being consumed by civil war.[19]

Patterns of Sexual Union

In the numerous studies of conjugal unions in rural Haiti, most have underlined the classic division between couples who are *marye* (joined by civil or religious marriage) and those who are *plase* (joined in a conjugal union that incurs significant and enduring obligations to both partners). *Plasaj* (from French, *plaçage*) has generally been the most common form of conjugal union in rural Haiti, outnumbering marriages by two or three to one.

Early studies usually considered *plasaj* to be polygamous, with one man having more than one *plase* partner. This is often no longer the case, as Moral suggested over three decades ago: "It is 'plaçage honnête'—that is, monogamy—that best characterizes matrimonial status in today's rural society."[20] The reason for this shift toward monogamy, he believed, was the same one that leads many rural people to avoid marriage in the first place: formal unions are costly. "If the considerable growth of *plaçage* is to be explained in part by economic factors," continued Moral, "the form that *plaçage* now takes is greatly influenced by the poverty spreading throughout the countryside."

Allman's review suggests that contemporary sexual unions are considerably more complex than the bipolar model just described. In a survey in which women who had sexual relations with the same partner for a minimum of three months were considered to be "in union," interviews revealed an emic typology with five major categories: three of these—*rinmin, fiyanse,* and *viv avèk*—did not usually involve cohabitation and engendered only slight economic support; two others—*plase* and *marye*—were deemed much stronger unions, generally involving cohabitation as well as economic support.[21]

In addition, a number of other sexual practices have often been loosely termed "prostitution," in Haiti a largely urban phenomenon and much understudied.[22] It is clear, however, that unemployed women from rural areas may become involved in occasional and often clandestine sex work (variously described by terms such as *ti degaje, woulman*) when other options are exhausted. There are few avenues of escape for those caught in the web of urban migration, greater than 60 percent unemployment, and extreme poverty.[23]

How are these forms of sexual union related to the dynamics of HIV transmission? To those working in rural clinics, *plasaj* is often implicated in the spread or persistence of sexually transmitted diseases such as gonorrhea and chlamydial disease. Treatment of one or two members of a network is of course inadequate, as even women who have but one sexual partner are indirectly in regular sexual contact with any other *plase* partners of their mate. Regarding HIV, polygamous *plasaj* may be considered a preexisting sociocultural institution that serves to speed the spread of HIV and that constitutes a risk in and of itself, particularly for monogamous women. Women throughout the world bear similar risks—which are compounded wherever gender inequality erodes women's power over condom use.

The unremitting immiseration of Haiti has clearly undermined stable patterns of union such as marriage and *plasaj* by creating economic pressures to which women with dependents are particularly vulnerable. In the wake of these pressures, new patterns have emerged: "serial monogamy" might describe the monogamous but weak unions that lead to one child but last little longer than a year or two. After such unions have dissolved, the woman finds herself with a new dependent and even more in need of a reliable partner.

Equally dangerous, as we have seen, is the quest for a union with a financially "secure" partner. In rural Haiti, men of this description once included a substantial fraction of all peasant landholders. In recent decades, however, financial security has become elusive for all but a handful of truck drivers, representatives of the state (such as soldiers and petty officials), and landholders (*grandòn*). As noted, truck drivers and soldiers are clearly groups with above average rates of HIV infection.

Gender Inequality

"The ability of young women to protect themselves from [HIV] infection becomes a direct function of power relations between men and women."[24] Gender inequality has weakened women's ability to negotiate safe sexual encounters, and this sapping of agency is especially amplified by poverty. The Haitian economy counts a higher proportion of economically active women—most of them traders—than any other developing society, with the exception of Lesotho.[25] It is not surprising, then, that the *machismo* that has so marked other Latin American societies is less pronounced in Haiti.[26] (Even the head of the Duvaliers' dreaded paramilitary force was a woman.) But gender inequality is certainly a force in political, economic, and domestic life.

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It would be difficult to argue with Neptune-Anglade when she states that, in all regards, rural women "endure a discrimination and a pauperization that is worse than that affecting [rural] men."[27]

Preliminary ethnographic research in the Do Kay area suggests that many rural women do not wield sufficient authority to demand that *plase* partners (or husbands) use condoms. A growing literature documents similar patterns throughout the developing world and in the inner cities of the United States.[28] These considerations lead us to agree with those calling for preventive efforts that are "women-centered." "In societies where the female has a weaker hand," Desvarieux and Pape argue, "effective methods of prevention have a better chance of working if the woman does not have to rely on either the consent or the willingness of her partner."[29]

Other "Cultural" Considerations

Practices such as the widespread and unregulated use of syringes by "folk" practitioners unschooled in aseptic techniques received a fair amount of attention as possible sources of HIV transmission. But far more frequently invoked were "voodoo practices," which played a peculiarly central role in early speculations about the nature of the AIDS epidemic. These speculations, which sparked waves of anti-Haitian sentiment, had the added disadvantage of being incorrect; none of these leads, when investigated, panned out. In urban Haiti, GHESKIO did not even consider these hypotheses worthy of serious investigation.

In our small-scale but in-depth study of AIDS in the Central Plateau, we did not find any strong implication of nonsexual transmission of HIV.[30] Similarly, the Collaborative Study Group of AIDS in Haitian-Americans initiated the first and (so far) only controlled study of risk factors for AIDS among Haitians living in the United States. Compiling data from several North American research centers, the investigators reached the following conclusion: "Folklore rituals have been suggested as potential risk factors for [HIV] transmission in Haiti. Our data do not support this hypothesis."[31] Such hypotheses reflect less an accurate reading of existing data and more a series of North American folk theories about Haitians.[32]

There have been few ethnographic studies of Haitian understandings of AIDS, and most of these have been conducted in Montreal, New York, or Miami. To my knowledge, the only such study conducted in rural Haiti demonstrated that such understandings were in fact changing, at first quite rapidly. Over time, however, a stable illness representation of *sida*—as AIDS is termed—seemed to evolve.[33]

In the Do Kay region, serial interviews with the same group of villagers permitted us to delineate a complex model of illness causation, one linked fairly closely to understandings of tuberculosis. Villagers often, but not always, cited sorcery in discussions about *sida,* which nonetheless came to be seen as a fatal illness that could be transmitted by sexual contact. Local understandings of *sida* did not seem to affect disease distribution, but certainly they may hamper preventive efforts if not taken into account when designing interventions. Far more disabling, however, has been the nation's political situation.

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Political Disruption

It is unfortunate indeed that HIV arrived in Haiti shortly before a period of massive and prolonged social upheaval. Political unrest has clearly undermined preventive efforts and may have helped, through other mechanisms, to spread HIV. Although many commentators observed that political struggles served to divert the public's interest away from AIDS, this was not the case in the Do Kay region. In fact, periods of increased strife were associated with increased public discourse about the new sickness.

But the same political disruptions that may have stimulated commentary about AIDS also served to paralyze coordinated efforts to prevent HIV transmission. For example, although the Haitian Ministry of Health has identified AIDS prevention as one of its top priorities, the office charged with coordinating preventive efforts has been hamstrung by six coups d'état, which have led, inevitably, to personnel changes—and to more significant disruptions. At the time GESCAP was founded, in 1991, *there had been no comprehensive effort to prevent HIV transmission in rural Haiti*. Even in Port-au-Prince, what has been accomplished thus far has often been marred by messages that are either culturally inappropriate or designed for a small fraction of the population (for example, Haitians who are francophone, literate, and television-owning). These messages are especially unsuccessful in rural areas, where even well-funded "social marketing" schemes have had little cultural currency.

A sense of hopefulness, rare in Haiti, returned to the public health community in 1991, when the country's first democratic elections brought to office a social-justice government headed by a progressive priest. A new Ministry of Health promised to make AIDS, tuberculosis, and other infectious pathogens its top

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priority. But in September of that year, a violent military coup brought a swift end to Haiti's democratic experiment. The impact on the population's health was incalculable.[34]

Political upheaval did not simply hobble coordinated responses to the AIDS epidemic. It has had far more direct effects. One of the most epidemiologically significant events of recent years may prove to be the coup d'état of September 1991. As noted earlier, surveys of asymptomatic adults living in Cité Soleil revealed seroprevalence rates of approximately 10 percent, whereas surveys of asymptomatic rural people were likely to find rates an order of magnitude lower. Following the coup, the army targeted urban slums for brutal repression. A number of journalists and health care professionals estimated that fully half of the adult residents of Cité Soleil fled to rural areas following the army's lethal incursions. It takes little imagination to see that such flux substantially changes the equations describing the dynamics of HIV transmission in rural areas sheltering the refugees.[35] Similar patterns have been noted elsewhere, particularly in sub-Saharan Africa:

> Women living in areas plagued by civil unrest or war may be in a situation of higher risk. In many countries, relatively high percentages of male military and police personnel are infected and their unprotected (voluntary or forced) sexual encounters with local women provide an avenue for transmission. Patterns of female infection have been correlated with the movements of members of the military in parts of Central and Eastern Africa.[36]

Concurrent Disease

The progression of HIV disease depends on host variables such as age, sex, and nutritional status; viral load, CD_4-cell number and function; and concurrent disease. Concurrent illness can alter this progression in at least three ways: first, any serious illness, including opportunistic infections (most notably, tuberculosis), may hasten the progression of HIV disease; second, various diseases can heighten an individual's "net state of immunosuppression," rendering him or her increasingly vulnerable to infection; and, third, certain infections seem to increase the risk of *acquiring* HIV—the point considered here.

Sexually transmitted diseases have been cited as AIDS co-factors in a number of studies, especially those conducted in tropical and subtropical regions.[37] Researchers view STDs as particularly important in the heterosexual spread of HIV, as the virus is less efficiently transmitted from women to men than vice versa. Thus vaginal and cervical diseases—even those as ostensibly minor as trichomoniasis—may increase the risk of HIV transmission through "microwounds" and even through mere inflammation (as certain lymphocytes are, after all, the target cells of HIV).[38]

Although researchers are now collecting important data about STDs in Port-au-Prince,[39] few studies have focused on rural areas.[40] But there is no evidence to suggest that villagers are more sexually active than their urban counterparts; there is even less evidence to suggest that rural Haitians are more sexually active than age-matched controls from North America. What is evident is that a majority of STDs go untreated—which certainly implies that sores, other lesions, and inflammation will persist far longer in rural Haiti than in most areas of the world.

Other diseases—including leprosy, yaws, endemic syphilis, and various viruses—have been suggested as possible co-factors in "tropical" AIDS, but their roles have not been clarified. It seems safe to add, however, that serious co-infections do enhance the net state of immuno-suppression. Similarly, malnutrition clearly hastens the advent of advanced, symptomatic disease among the HIV-infected, although this dynamic may lessen the risk of transmission: the Haitian variant of "slim disease" is now popularly associated with AIDS, and visible cachexia is likely to drive away potential sexual partners.[41]

Access to Medical Services

Finally, in seeking to understand the Haitian AIDS epidemic, it is necessary to underline the contribution, or lack thereof, of a nonfunctioning public health system. Medical care in Haiti is something of an obstacle course, one that places innumerable barriers before poor people seeking care. Failure to have an STD treated leads to persistence of important co-factors for HIV infection; failure to treat active tuberculosis causes rapid progression of HIV disease and death—to say nothing of its impact on HIV-negative individuals, for HIV-infected patients with tuberculosis have been shown to be efficient transmitters of tuberculosis.[42] Contaminated blood transfusions alternate with no transfusions at all. Condoms are often not available even to those who want them. The cost of pharmaceuticals, always prohibitive, has skyrocketed in recent years. Antivirals are in essence unavailable to most Haitians: in February 1990, "local radio stations announced . . . that for the first time,

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the drug AZT is available in Haiti. It might as well have been on Mars. A bottle of 100 capsules costs $343—more than most Haitians make in a year."[43] Since that time, it has become possible to find newer, highly active antiretroviral agents in Haiti—but for a prince's ransom.

AIDS, ANALYSIS, ACCOUNTABILITY

Identifying and weighting the various social forces that shape the HIV epidemic is a perennial problem, but one too rarely addressed by medical anthropology, which is often asked to elucidate the "cultural component" of particular subepidemics. By combining social analysis with ethnographically informed epidemiology, however, we can identify the most significant of these forces. The factors listed here are differentially weighted, of course, but each demonstrably plays a role in determining HIV transmission in rural Haiti:

1. Deepening poverty
2. Gender inequality
3. Political upheaval
4. Traditional patterns of sexual union
5. Emerging patterns of sexual union
6. Prevalence of and lack of access to treatment for STDs
7. Lack of timely response by public health authorities
8. Lack of culturally appropriate prevention tools

Many of these factors are a far cry from the ones that anthropologists were exhorted to explore—for example, ritual scarification, animal sacrifice, sexual behavior in "exotic subcultures"—during the first decade of AIDS. But the forces underpinning the spread of HIV to rural Haiti are as economic and political as they are cultural, and poverty and inequality seem to underlie all of them. Although many working elsewhere would agree that poverty and social inequalities are the strongest enhancers of risk for exposure to HIV, international conferences on AIDS have repeatedly neglected this subject. Of the hundreds of epidemiology-track posters presented in 1992 in Amsterdam, for example, only three used "poverty" as a keyword; two of these were socioculturally naïve and did not seem to involve the collaboration of anthropologists.

What were anthropologists doing in the early years of AIDS? The mid to late 1980s saw the formation of task forces and research groups as well as an increasing number of AIDS-related sessions at our professional meetings. The central themes of many of the early sessions focused on the "special understanding of sexuality" that was, suggested certain speakers, the province of anthropologists. The scenario most commonly evoked was one in which ethnographers, steeped in local lore after years of participant-observation, afforded epidemiologists and public health authorities detailed information about sexual behavior, childbearing, and beliefs about blood and blood contact. This knowledge transfer was deemed indispensable to determining which "behaviors" put individuals and communities at risk for HIV infection.

Fifteen years into the AIDS pandemic, after at least a decade of social science studies of AIDS, we must ask, How substantial were these claims? How many secret, AIDS-related "behaviors" have we unearthed in the course of our ethnography? Anthropologists deeply involved in AIDS prevention now know that many such claims were immodest. Everywhere, it seems, HIV spreads from host to host through a relatively restricted set of mechanisms. We've also learned that preventive efforts, even the most culturally appropriate ones, are least effective in precisely those settings in which they are most urgently needed. Africa, long a favored proving ground for anthropology, offers the most obvious and humbling example. Haiti offers another.

In the interest of enhancing the efficacy of interventions, it's important to pause and take stock of the situation. How might anthropology best contribute to efforts to prevent HIV transmission or to alleviate AIDS-related suffering? One major contribution would be to help show where the pandemic is going, which leads us back to analytic challenges such as these:

> Identifying and differentially weighting the major factors promoting or retarding HIV transmission
>
> Linking the sexual choices made by individual actors to the various shifting conditions that restrict choice, especially among the poor
>
> Understanding the contribution of the culturally specific—not only local sexualities but also kinship structures and shifting representations of disease—without losing sight of the large-scale economic forces shaping the AIDS pandemic
>
> Investigating the precise mechanisms by which such forces as racism, gender inequality, poverty, war, migration, colonial heritage, coups d'état, and even structural-adjustment programs become embodied as increased risk

Anthropology, the most radically contextualizing of the social sciences, is well suited to meeting these analytic challenges, but we will not succeed by merely "filling in the cultural blanks" left by epidemiologists, physicians, scientists, and policy makers. Nor will we

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succeed without a new vigilance toward the analytic traps that have hobbled our understanding of the AIDS pandemic.[44]

First, we often find widespread, if sectarian, ascription to behaviorist, cognitivist, or culturalist reductionism. Just as many physicians regard social considerations as outside the realm of the central, so too have psychologists tended to reify individual psychology, while economists have reified the economic. Anthropologists writing of AIDS have of course tended to reify culture. We must avoid confusing our own desire for personal efficacy with sound analytic purchase on an ever-growing pandemic: HIV cares little for our theoretical stances or our disciplinary training. AIDS demands broad biosocial approaches. Jean Benoist and Alice Desclaux put it well:

> The conditions limiting or promoting transmission, illness representations, therapeutic itineraries, and health care practices—none of these subjects are captured by disciplinary approaches. They evade even the distinction between biology and social sciences, so tightly are biological realities tied to behaviors and representations, revealing links that have not yet been fully explored.[45]

Second, much anthropologic analysis focuses overmuch (or exclusively) on local factors and local actors, which risks exaggerating the agency of the poor and marginalized. Constraints on the agency of individual actors should be brought into stark relief so that prevention efforts do not come to grief, as they have to date. To explore the relation between personal agency and supraindividual structures—once the central problematic of social theory—we need to link our ethnography to systemic analyses that are informed by history, political economy, and a critical epidemiology. It is not possible to explain the strikingly patterned distribution of HIV by referring exclusively to attitude, cognition, or affect. Fine-grained psychological portraits and rich ethnography are never more than part of the AIDS story.

Third, the myths and mystifications that surround AIDS and slow AIDS research often serve powerful interests. If, in Haiti and in parts of Africa, economic policies (for example, structural-adjustment programs) and political upheaval are somehow related to HIV transmission, who benefits when attention is focused largely or solely on "unruly sexuality" or alleged "promiscuity?" The lasting influence of myths and immodest claims has helped to mask the effects of social inequalities on the distribution of HIV and on AIDS outcomes.

The recent advent of more effective antiviral therapy could have an enormous impact on what it means to have AIDS at the close of the twentieth century—if you don't happen to live in Africa or Haiti or Harlem. Protease inhibitors and other drugs raise the possibility of transforming AIDS into a chronic condition to be managed over decades, but they also remind us that there are two emerging syndromes: an AIDS of the North, and an AIDS of the South.

Perhaps this does not sound much like an anthropologist speaking. Why talk of latitude (North/South) and class (rich/poor) before speaking of culture? One answer to this question is that, for many of us, the view that AIDS is a culturally constructed phenomenon is not open to debate. AIDS, like sexuality, is inevitably embedded in local social context; representations and responses must necessarily vary along cultural lines. The contribution of cultural factors to the lived experience of AIDS is and will remain enormous. Indeed, the true and vast variation of HIV lies not, as we had been led to believe, in its modes of spread, nor is it found in the mechanisms by which the virus saps the host. The variation of HIV lies, rather, in its highly patterned distribution, in its variable clinical course among the infected, and in the ways in which we respond, socially, to a deadly pathogen.

NOTES

1. In their consideration of unequal exchange and the urban informal sector, Portes and Walton (1982, p. 74) designate Haiti as the most rural of all Latin American nations: in 1950, the nation was described as 88 percent rural; in 1960, 85 percent; in 1970, 81 percent.
2. Pape and Johnson 1988.
3. See Allman 1980 and Vieux 1989 for extended discussions of *plasaj*.
4. See Pape and Johnson 1988.
5. Desvarieux and Pape 1991, p. 275.
6. GESCAP (whose name is translated as "Study Group on AIDS in the Peasant Class") was founded with the generous support of the World AIDS Foundation.
7. Given that the staff of the clinic and of Proje Veye Sante are accountable to the communities served rather than to funding organizations or to research institutions, and given the poverty and non-HIV-related sickness in the region, it is not surprising that research as such is not seen as a high priority. In order to meet our obligations to the community, all serologic studies became part of a *dossier préventif.* This instrument included a series of laboratory examinations (such as hematocrit and RPR), a chest radiograph, and a physical examination. Any abrnormal findings were to be pursued aggressively; free dental care was also offered as part of the program. This proposal was presented to members of the community in four different public meetings, engendering considerable enthusiasm for the undertaking.

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8. One additional young woman, the regular sexual partner of a truck driver, was also found to be seropositive. She died suddenly during the course of the study, however, less than a week after a negative physical examination. Although the cause of death is unclear—she had explosive, watery diarrhea and presented in shock—she is not considered in this cohort.
9. Farmer 1992, p. 262.
10. Feilden, Allman, Montague, and Rohde 1981, p. 6.
11. Ibid., p. 4.
12. Locher 1984, p. 329.
13. Neptune-Anglade 1986, p. 150.
14. "Note that, in the cities, the [economically] active 10–14-year-old girls are essentially all domestics. . . . These 'restaveks' find themselves at the very bottom of the social hierarchy" (ibid., p. 209). My translation.
15. See Farmer 1988b for a review of data concerning the Haitian economy. In a personal communication on 18 September 1998, a desk officer at the US State Department's Haiti desk offered an annual per capita income estimate of $175 (not adjusted for Purchasing Power Parity); she cited internal IMF memos from April 1998 as her source.
16. Girault 1984, p. 177.
17. Ibid., p. 178. For a critical perspective on more recent "food security" issues, see Woodson 1997.
18. Trouillot 1986, p. 201. My translation.
19. Population Crisis Committee 1992.
20. Moral 1961, p. 173. My translation.
21. Allman 1980.
22. But see Laguerre 1982.
23. This is a cursory discussion of a very complex—and changing—subject. For a more complete discussion of sexual unions in Haiti, see Lowenthal 1984, Murray 1976, Neptune-Anglade 1986, Sylvain-Comhaire 1974, and Vieux 1989.
24. United Nations Development Program 1992, p. 6.
25. See Mintz 1964, Neptune-Anglade 1986, and Nicholls 1985.
26. See Murray 1976.
27. Neptune-Anglade 1986, p. 155. My translation.
28. Maria de Bruyn offers a helpful review of these issues as they affect women in developing countries. She writes: "Even if they dare suggest avoiding risky sexual acts or using condoms, they often encounter male refusal, are accused of adultery or promiscuity (the desire to use condoms being interpreted as evidence of extramarital affairs), are suspected of already being infected with HIV or are said to accuse their partners of infidelity" (1992, p. 256). The mechanisms by which gender inequality conspires with poverty to enhance women's risk for HIV are the subject of Farmer, Connors, and Simmons 1996.
29. Desvarieux and Pape 1991, p. 277.
30. Farmer 1992.
31. Collaborative Study Group of AIDS in Haitian-Americans 1987, p. 638.
32. On American "folk models" of Haitians, see Lawless 1992 and, as related to AIDS, Farmer 1992.
33. The word "*sida*" is derived from the French acronym SIDA, for *syndrome immunodéficience acquise*. The French acronym is commonly rendered as S.I.D.A., SIDA, or Sida; *sida* is the Creole orthography. I have adopted the latter here in order to reflect the substantial difference between the terms as used in different national and cultural settings.
34. See Farmer 1996a for a more complete discussion of "Haiti's lost years."
35. Farmer 1996a examines the effects of the 1991 coup d'état on rates of HIV diagnosis in the Kay region.
36. de Bruyn 1992, p. 253.
37. See, for example, Laga, Manoka, Kivuvu, et al. 1993.
38. Poor, young women may be especially at risk of genital trauma: "Non-consensual, hurried or frequent intercourse may inhibit mucus production and the relaxation of vaginal musculature, both of which would increase the likelihood of genital trauma. A lack of control over the circumstances in which the intercourse occurs may increase the frequency of intercourse and lower the age at which sexual activity begins. A lack of access to acceptable health services may leave infections and lesions untreated. Malnutrition not only inhibits the production of mucus but also slows the healing process and depresses the immune system" (United Nations Development Program 1992, pp. 3–4).
39. For example, see Liautaud et al. 1992; Deschamps, Pape, Williams-Russo, Madhavan, Ho, and Johnson, 1993; and Behets, Desormeaux, Joseph, et al. 1995.
40. We do know that in one study of one hundred women presenting to our women's health clinic in 1991 fully 25 percent had trichomoniasis. GESCAP thanks Dr. Anna Contomitros for conducting this study, which included Pap smears. See also Fitzgerald 1996.
41. Data from GHESKIO (e.g., Deschamps et al. 1992) suggest, however, that those ill with HIV disease continue to have sex.
42. DiPerri, Cade, Castelli, et al. 1993.
43. Lief 1990, p. 36.
44. For a review of recent anthropological writings on AIDS, see Farmer 1997b.
45. Benoist and Desclaux 1995, p. 363. My translation.

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"Clean Your Plate. There Are People Starving in Africa!"

The Application of Archaeology and Ethnography to America's Food Loss Issues

Timothy W. Jones

Excess food waste is a serious problem, particularly in the global context of widespread hunger, population growth, and dwindling environmental resources. As the author of this selection points out, millions of tons of edible food, worth more than $100 billion, are thrown out annually in the United States alone.

What causes this tremendous amount of waste? How do "normal" business practices, purchasing patterns, and eating habits contribute to this major problem? Moreover, how can a garbologist—an archaeologist specializing in the study of garbage—help explain the scope and nature of the problem or assist in finding solutions?

Understanding patterns of food use and food waste is no simple task. Researchers cannot obtain reliable information just by asking the people who grow, sell, or purchase and consume food. Many people simply do not know exactly how much food they waste, and others may be willing to answer questions but only offer the answers they think a researcher wants to hear. Moreover, food wastage, which the author of this selection calls "food loss," may be called by a different name, or it may be so ingrained in everyday business or household practices as to go unnoticed.

Although archaeology developed primarily as a means of studying the past, this article shows how its research methods can serve as important tools for understanding the problems of the present and, importantly, for developing solutions that can help bring about a better—and, in this case, a less wasteful—future.

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As you read this selection, ask yourself the following questions:

- Why does America waste so much food?
- Why might behavioral data collected using interviews, questionnaires, or observation be inaccurate? How can archaeological research methods be used to gain a more accurate picture of what people actually do?
- Why might farmers choose to "walk by" a crop rather than harvest it?
- Why, according to this selection, is the commercial apple industry more efficient than most other forms of commercial agriculture?
- What is "shrinkage" in the retail food industry, and how might it be reduced?
- How did the author use archaeological methods to help understand the discrepancy between Americans' food purchasing behaviors and their food consumption patterns?

The following terms discussed in this selection are included in the Glossary at the back of the book:

food loss
material culture
waste behavior

Did your mother ever talk to you about starving people in Africa in an effort to get you to eat all of your food? If she did, it did not make much sense that the food could not be sent to starving people around the world. A recent study of food flows and losses in the American food system shows that food losses are having a negative economic, environmental, and social impact in the United States. The facts may encourage

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you to tell your children, "Don't waste your food. It hurts the American economy and the environment!"

Over the past two decades, archaeologists have started to study problems and issues in contemporary societies by applying archaeological theory, method, and techniques. Archaeology is unique in the social sciences in that its subject matter is material culture and the human-constructed world. Contemporary archaeology provides a window to human behavior as expressed in the manufacture, use, discard, and recycling of materials and in the physical transformation of the natural landscape. Archaeology seeks explanations for social and cultural variability in the ways in which people interact with material culture. It complements those social sciences that focus on perception, attitude, and belief by providing an independent measure of individual and social action.

You might ask, "Why do we have to do archaeological studies in contemporary society? Why don't we just ask people what they do and measure material use in that way?" Considerable research has shown that information about behavior derived from the study of modern materials can provide different information from that derived from interviews, questionnaires, and observation (Binford 1977; Dobyns and Rathje 1985; Harrison and Ritenbaugh 1987; Hughes and Ho 1987; Johnstone 1986; Jones 1995; McGuire 1985; Rathje 1977, 1984, 1985a,b; Rathje et al. 1987). Further research has shown that archaeologically measured behavior is different from reported behavior—particularly repetitive everyday behavior such as food consumption. People also report far wider varieties and types of behavior than are actually measured archaeologically since their perceptions and realities are more likely to influence their reported behavior than their actual behavior (Jones et al. 1994; Jones 1995).

FOOD LOSS

Food loss constitutes a significant portion of the solid waste stream, amounting to 12–15 percent of the waste that ends up in landfills (Environmental Protection Agency 2002, Rathje et al. 1992). The first studies on U.S. retail and service food loss estimated annual losses totalling nearly 80 billion pounds (Kantor et al. 1997), representing a loss of over $40 billion. Despite the significant implications of this degree of food loss, a comprehensive study had never been conducted. Instead, studies relied on compilations of existing information, much of which did not include empirical measures like those used in contemporary archaeology. To gain a better understanding of food loss, I conducted a study titled, "Food Loss from the Farm to the Landfill" for the United States Department of Agriculture (Jones 2003; Jones et al. 2002a, 2002b, 2003a, 2003b). The study collected food data from three separate sectors: (1) commercial farms (fresh vegetable, apple, and citrus), (2) retail food establishments (restaurants, fast foods, grocery, convenience stores), and (3) private households. Research methods include, first, quantifying food produced or purchased using receipts, accounting data, and interviews with management and workers; second, direct observation of food production, handling, and use; and third, measurements of the food deposited in refuse. The results provide surprising insights into sources of inefficiency in the American food system and the economic, environmental, and social effects of these efficiencies.

FOOD LOSSES IN AMERICAN FARMING

If one looks across the nation's expansive fields of mechanized modern farms, it is difficult to imagine a more efficient food production system. But inefficiencies in farming and fresh-food processing keep more than 12 percent of America's agricultural bounty from reaching American tables. The cost to the farming and fresh-food-processing sector may be as much as $20 billion annually (Jones 2003).

Our study of farming food loss covered three core areas: the Salinas and inland valleys in California, the nation's primary center for growing and processing fresh vegetables; apple country in Washington and Oregon; and Florida's orange growing region. Each region experienced losses for different reasons.

The majority of the nation's fresh lettuce, cauliflower, broccoli, and carrots are grown in the Salinas Valley and some locations further inland. Most losses are due either to "walk-by's," when farmers decide not to harvest a crop, or to the production of "higher value" products, like salad mixes or broccoli crowns. A farmer's decision to walk by a ready crop is based on a whole host of factors, most focusing on profit. For instance, inconsistencies in predicting market prices often lead farmers to turn under marginally profitable crops rather than "take the risk" of a loss.

Prepared fresh vegetables offer convenience for consumers and higher profits for producers. But mechanized and rapid-hand preparation create more waste and make vegetables deteriorate more quickly. A head of lettuce will last for days in the refrigerator whereas a bag of lettuce is already on its way to becoming compost.

The focus on ever-higher profits comes out of the vegetable industry's gambling-style culture. By attempting to get the most money out of their crops, commercial growers keep playing in order to "hit" those years when prices soar and they bring in a "full house." They also complain about price fluctuations without much consideration for the ways in which their own practices accentuate those fluctuations.

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The Florida orange industry has been besieged by cheap foreign frozen juice, catastrophic freezes and hurricanes, land-value pressures from the Florida housing boom, the dot-com crash, and soft consumer demand. During my fieldwork, I watched as one of the largest and most innovative orange processors and distributors declared bankruptcy, and I drank in local bars with industry employees who had been laid off for the first time in four generations. These difficult conditions have led to losses in the industry as high as 29 percent. Nearly half of these losses are due to a lack of interest in even harvesting the crops.

The apple orchards dotting the foothills of the Cascade Mountains, in contrast, represent an industry with a refreshing presentation of progress and innovation. Apple growers continue some very old and basic farming concepts. For them, it's all about respect for the land, a desire to feed fellow humans, a reverence for life and the life cycle, and the ability to make a decent living in a spectacular location. My interviews would often come to a halt as participants stopped to watch an eagle skirting the mountains or a deer nibbling fruit at the edge of an orchard. One participant commented, "I've seen those mountains every day for more than 80 years and every time I see them they take my breath away."

Losses in the Washington/Oregon apple industry appear high at about 12 percent. But apples are grown and harvested only seven or eight months of the year and stored the rest. For decades, the apple industry's goal has been to become a stable, sustainable, and profitable business in contrast to the race after short-term market fluctuations that characterizes much of today's farming.

To accomplish this degree of sustainability, growers work together to maximize orchard and harvest use and yields. In cooperation with one another, they determine the number of acres under cultivation based on demand, remove diseased and old trees, finance the development of higher-yielding varieties, and finance the development of more efficient storage mechanisms. They also cull apples that fail fresh standards to produce other products such as applesauce, apple juice, and sliced apples for canning and dehydration.

FOOD LOSS IN THE RETAIL FOOD INDUSTRY

Food retailers work hard to satisfy the American demand for prepared and instant foods, yet many are unaware of the profits they lose through food loss. Each year, at least 35 million tons of edible food worth nearly $30 billion are thrown away from the nation's restaurants (both traditional and fast food), convenience stores, and supermarkets (Jones et al. 2002b, 2003c).

You can never stop all food loss. Fallible humans and the machines that transport, handle, and prepare food aren't perfect. But losses could potentially be cut in half, thereby adding nearly $15 billion in profits to retail food companies. Just how much food is lost and why varies by sector and even within sectors. Nearly every retail food sector in the study included at least one company that understood the importance of food loss. These firms provided an opportunity to evaluate just how efficient their sector could be. On average, losses at small mom-and-pop restaurants, convenience stores, and fast-food restaurants were about one-tenth the losses of their large, corporate brethren.

Losses were proportionally highest at convenience stores, where they amounted to about 25 percent. "Instant" food is one culprit. An important market niche for convenience stores is ready-to-eat sandwiches, hot dogs, pizza, fried chicken, and nachos. If not purchased within a limited time, such "instant foods" quickly end up in the garbage.

The other reason for such high loss is a lack of management and training. Store workers generally don't know how long they can safely leave prepared food out for sale, nor are they skilled at predicting potential demand. They often throw food out when it is still good and prepare more food than necessary before lunch, for special events, and at other peak demand periods.

One exception was a locally owned, four-store chain that made significant profits from lunch and special event rushes. Their employees were well paid and, at the time of the study, most had been with the company for more than a decade. Given their experience, they were consistently able to predict demand, often selling more than 500 sandwiches in less than two hours. The four or five sandwiches that weren't sold were consumed by the employees as a well-deserved lunch break.

Losses in fast-food establishments are two to three times higher than they calculate, at about 10 percent, on average. The miscalculation comes from faulty inventory practices and from what is called "shrinkage." Inventory information is only as good as the accuracy of the counts upon which they are based, and shrinkage is a measure of unaccounted inventory. Retail businesses often believe their shrinkage is due to theft. Based on what we observed in our study, however, much of that assumed theft is probably loss. There also are losses that are not measured in the inventory system. While our study cannot explain why the inventory system does not account for all food (since we did not have access to those systems), we are certain first, that food loss occurs, and second, that companies are not aware of the extent of the loss.

We were surprised to find loss rates as high as 20 percent to 40 percent in medium-sized fast-food restaurant chains (those with a few stores in one

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city or state). These extraordinarily high loss rates resulted in large part from the near absence of training and experienced management. Typically, one manager ran three to five stores. Employees with only a few months of experience trained new workers.

Another factor leading to increased food loss is that many companies treat food the same way factories ship auto parts, using "just-in-time" delivery systems. Such systems have allowed companies to redesign stores with less frozen and cold storage capacity. If managers misjudge consumer demand and their freezers are still full, they will check with other stores or consider returning deliveries to the warehouse. If that doesn't work, however, managers have no choice but to throw food away. Just-in-time delivery systems need considerable adjustments in order to reduce food loss.

While food loss in restaurants is relatively low at 3 percent to 4 percent, it still could be reduced. The greatest losses in large restaurant chains come from miscalculations in demand and advance preparation of too much food, particularly for salad and self-serve bars. The absence of food loss training and education, a notable characteristic of the entire retail food industry, was also a factor.

Supermarkets exhibited surprisingly little loss, at less than 1 percent. With their trash bins overflowing with food, they may appear to waste a lot. In fact, they handle massive quantities of food, particularly highly perishable fruit and vegetables, and what you see out back is only a fraction of what came into the store. Supermarket chains took on the issue of food loss years ago when their profit margins declined from intense competition in a soft economy. Unable to raise prices, they concentrated on efficiency, with positive effect. Supermarket chains are still struggling, but many exist today because they acted to reduce food loss. It's a lesson that other retailers would do well to learn as a way of increasing their bottom line.

FOOD LOSS IN THE HOUSEHOLD

Americans perceive food to be cheap and plentiful. While food in the United States is, indeed, plentiful, whether it is also cheap is an arguable point. According to the Bureau of Labor Statistics Consumer Expenditure, the typical household spent 11 percent of its expenditures on food in 2002 (Bureau of Labor Statistics 2002). Even this information may not be accurate since the data is derived from quarterly interviews and weekly diary surveys. Previous studies have shown that survey data on food use may be highly inaccurate. The Food Loss Study shows that much inaccuracy in food reporting is grounded in the fact that Americans are simply unaware of, or inattentive to, their actual food use patterns.

American households allow 14 percent of the food they purchase to end up in their garbage. This costs a household of four nearly $600 a year and deprives the American economy of $43 billion annually. Americans are unaware of the myriad ways in which they lose food. In fact, when most households are asked about how much food they lose, responses are usually "none" or "very little." During household interviews, it was not unusual to see household members throwing leftover food in the trash while simultaneously stating that they do not waste food (Jones et al. 2002a, 2003a, 2003b).

Nearly a fourth of fruits and vegetables, 13 percent of meat, and 16 percent of grains that Americans buy are trashed because they have "gone bad." Since many households do not know when a food has "gone bad," they throw leftovers out at the end of a meal. Food storage through freezing and airtight containers has become a withering American art.

Americans also tend to misjudge their future food use by basing it on their *perceptions* of how they should eat rather than how they *actually* eat. Americans typically purchase many more fruits and vegetables than they will eat. Basing their purchases' practices on the assumption that they live a healthy lifestyle, they tend to buy lots of nutritious fruits and vegetables expecting to consume them throughout the week. Many Americans, however, come home from a long workday exhausted and shove a frozen dinner into the microwave so they can eat before going to bed. By the time Saturday comes around and they have the time and energy to cook, the vegetables in the refrigerator have turned to mush.

Another interesting finding was that 14 percent of household food loss consists of packaged edible food, or foods that had not been taken out of their original packaging and had not yet expired. Much of this food loss is due to misjudgment in American food purchasing behavior. People purchase new products and never get around to using them since we tend to be creatures of habit. People also purchase more product than they will use in order to "save money" on large quantity purchases. Every so often, Americans clean out their cupboards and throw out these perfectly good foods. This was one of the household food loss patterns that showed potential for efficiently recovering food for America's food banks.

THE COST OF FOOD LOSS

Food loss in America is a major problem that costs Americans more than $100 billion annually. Annual retail sector losses amount to at least 35 million tons worth, nearly $30 billion (almost $20 billion in fast food alone), while losses in the farming industry reach $20 billion and in private households more than

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$40 billion. These calculations do not include losses in food processing and wholesaling, two areas not included in our study.

Food loss represents a significant drain on the American economy, particularly since more than half of these losses could be stopped easily and economically. The result would increase profits in fast-food and convenience store companies by at least 5 percent, save farms and fresh fruit and vegetable processors billions, and potentially add another $200 to $300 per year to the budget of each American household. Reducing these losses would also yield other benefits, including more jobs, energy savings, and less environmental degradation.

So, too, would they reduce the amount of food that ends up in landfills. Current estimates suggest that food constitutes 12–15 percent of the garbage that ends up in landfills (Environmental Protection Agency 2002, Rathje et al. 1992). It is a major contributor to landfill methane, an ozone depleting gas, which accounts for at least a third of human-produced emissions in the United States (Intergovernmental Panel on Climate Change 1992). Landfill costs are expensive and do not end when a landfill "closes," since closed landfills cost millions of dollars annually to monitor and maintain. Future landfill costs are problematic since someday they will represent a major cleanup and recovery. Entombed in these landfills, the largest human structures ever built, are massive quantities of hazardous materials (Wilson et al. 1994, Wilson and Rathje 1990).

It takes land, fertilizer, water, soil nutrients, pesticides, herbicides, fuel, and labor to produce our food. The waste of precious energy resources (fertilizer, many pesticides and herbicides, diesel, and gasoline are produced from oil) is staggering, and the current level of waste is not sustainable from either a resource efficiency perspective or an economic perspective. Reducing food loss would take us a long way toward a sustainable food growing capacity.

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