A question mark has long hovered over human transitions from hunting and gathering to farming: did agriculture spread by communication—in archaeological parlance, by diffusion? Or did the early practitioners of farming migrate, carrying their technology with them, and displace native hunter-gatherers? In the American Southwest, at least, a tentative answer may be in hand, stored in some of the most banal artifacts held by Harvard’s Peabody Museum: prehistoric wads of chewed leaves called “quids,” and thonglike “aprons,” fashioned from shredded juniper bark, stained with what is presumed to be menstrual blood.

ROBERT WOOD E-MAIL ADDRESS:
rjwood@eecs.harvard.edu
ROBERT WOOD WEBSITE:
http://micro.seas.harvard.edu
In an unusual cross-disciplinary collaboration funded by the provost’s office, the museum’s director of collections, Steven LeBlanc, teamed with Harvard Medical School’s Thomas Benjamin, a research professor in pathology whose lab normally studies mouse cancer, to recover DNA thousands of years old from the artifacts. They focused on mitochondrial DNA, which is passed from mother to child for generation after generation, and which exists in a thousand copies per cell, and extracted it successfully from about a quarter of the quids they sampled, and from a smaller fraction of the aprons. What they found in their small sample from an early corn-growing culture suggests that in this part of the New World, at least, migrating Uto-Aztecans from Mexico probably did not pass their technology to the indigenous hunter-gatherers, but instead out-reproduced and replaced them.

LeBlanc says this theory—that farmers spread north from central Mexico—was advanced by Peter Bellwood of Australian National University in a controversial 2005 book, First Farmers. “Bellwood argues that this is a worldwide pattern of how farming spreads: by migration, not division,” he explains. There were exceptions: places where “the foragers were either dense enough or close enough socially and technologically to the farmers that they were able to adapt. In Europe, it looks like the Basques are an example, and Scandinavia is an example,” LeBlanc says. Different geographical conditions—high altitude, or cold climates not conducive to growing crops—may have momentarily checked the farmers’ advance, giving hunter-gatherers on the other side of the pause line a chance to react. In the American Southwest, he notes, there is a Zuni-speaking population on the Arizona-New Mexico border that took up corn farming without being swamped by an Uto-Aztecan influx.

But “the general pattern suggests that foragers have trouble switching to farming,” he reports, because becoming a farmer requires more than just having seeds. It means staying in the same place, storing food year-round, and changing social behavior: foragers, who often live by an ethic of sharing, would have faced “an enormous potential freeloader problem,” he says. Becoming a farmer requires changing that ethic to a policy that says, “I am not going to share completely, because I’ll starve if I do.”

LeBlanc describes his study as “one little piece of a very large chain of investigation,” but the work has nevertheless demonstrated the efficacy of using DNA analysis on objects held in museums. “The FBI does it all the time,” he says, “but archaeologically, this is the first time that anybody has ever done such a thing.” The earliest artifact LeBlanc and Benjamin studied was

A prehistoric Mimbres bowl from southwestern New Mexico illustrates how women wore thongs (called aprons) secured at the waist by a belt, with the ends dangling behind. Such artifacts (below), stained with blood that yields recoverable DNA, are often found balled up at excavation sites in the region.
about 2,400 years old; whether the methodology is directly transferable to answer similar questions in Europe, for example, where farming’s spread began thousands of years earlier, remains unknown. An answer will also depend on what sorts of objects have been saved from excavations there.

“What archaeologists think of as artifacts does change over time,” LeBlanc notes. Quids—yucca, agave, or cornstalks, probably chewed for perceived or actual medicinal benefit—don’t appear in collections from some of Harvard’s early expeditions. “By 1910, the concept of what to save was growing,” he says, and quids were routinely collected, but even as late as the 1960s there were young researchers who didn’t save coprolites. “They’d throw them at each other because they thought it was funny,” he says. “Fortunately,” he adds, “there were people who believed such objects were important, knew where they were kept, and continued to keep them,” says LeBlanc. “The key is the quality of the collection.”

—JONATHAN SHAW

ABUSE MISCUE

Litmus Test for a Law

Until the mid 1980s, victims of domestic abuse who called the police could expect the officers to do little more than tell the abusive spouse to walk it off. But then two things happened. In 1984, a Connecticut woman successfully sued her city’s police department after her husband stabbed her and then, in sight of an officer standing idle in the house, kicked her in the head. The same year, police in Minneapolis released a study showing that arresting abusers, rather than counseling them or sending them away for a few hours, greatly reduced the risk of future violence. As a result, many states began adopting mandatory-arrest laws that require police to take perpetrators (who are mostly men) into custody. Today 22 states, plus Washington, D.C., enforce either mandatory or prosecutorial arrest laws, which have generally been seen as a boon for abuse survivors.

But are they? According to a recent study by economist Radha Iyengar, the murder rate between intimate partners is more than 50 percent higher in states with mandatory-arrest laws than in those without. Iyengar, a Robert Wood Johnson Scholar in health-policy research at Harvard’s Institute for Quantitative Social Science, analyzed homicide data across the country from 1976 to 2003, a period during which murder rates—including homicides among non-intimate family members such as parents and children (which fall under the jurisdiction of mandatory-arrest laws)—dropped overall. “For months I thought I must be coding something wrong,” she says, but her analyses ruled out other possible explanations, including increased unemployment rates, cuts in police funding, and spikes in other types of crime. After speaking with representatives from domestic-violence organizations across the country, Iyengar began to suspect that the laws aren’t necessarily helping victims, in part because victims may not like the laws. “A big problem is that victims didn’t want to call the police after the laws were implemented,” she says. The reasons for this are unclear, making it harder to find solutions. If victims stay quiet because of psychological ties to their abusers, harsher punishments won’t entice them to call, but more support services might. Victims may also know that, if they don’t take the further step of pressing charges, their partners will return home within a day, possibly raging even more. In some states, like Connecticut, where the first mandatory-arrest laws were passed in 1986, police frequently arrest both the victim and the abuser because they’re unsure who’s who. If there are children in the household, parents who know there’s a risk of dual arrest may decide a call isn’t worth potentially losing the children to social services.

After Iyengar published her findings in a New York Times op-ed last summer, several domestic-violence advocates criticized the study, saying that it didn’t account for the complexities of spousal abuse. Iyengar, who has volunteered with the National Network to End Domestic Violence, acknowledges the criticism, and offers recommendations few would argue with: more police training to help eliminate dual arrests, and more support services (such as housing and counseling) for abuse victims. But she also points out, “At the same time, we need large-scale evaluations of policies. The solution is not to keep bad laws on the books. If we think these laws need more teeth in the criminal-justice system and more bite to be effective, then let’s do that.”

—KATHARINE DUNN

RADHA IYENGAR E-MAIL ADDRESS: riyengar@rwj.harvard.edu

Photograph by Shepard Sherbell/Corbis Saba

Reprinted from Harvard Magazine. For more information, contact Harvard Magazine, Inc. at 617-495-5746.