No Pen or Ink Needed

For most of us, the term “writing” conjures up images of paper and pen. But recording systems through time have developed in a surprising variety of forms, many of which have been ignored, dismissed, or suppressed. Now, as researchers begin to consider how writing systems die (see main text), they also are examining lesser known systems to understand how societies long considered illiterate transmit knowledge.

In the Andes, for example, Incans manipulated knotted strings long before the arrival of the Spanish in the 16th century. Whether this system could record narrative or was simply an accounting device remains fiercely contested, because the precise meanings of the complex strings have yet to be unraveled (Science, 13 June 2003, p. 1650). Yet despite attempts by Spanish authorities to destroy the tradition, it proved surprisingly resilient. Ecuadorian factory workers still employed khipu in 1653 for labor and accounting purposes, and it is used in remote villages for similar purposes even today. “This is not simply a story of attrition,” says Frank Salomon, an anthropologist at the University of Wisconsin, Madison, who has spent years traveling Andean villages to understand khipu.

“One key factor may be the common use of khipu. Mesopotamia’s cuneiform, Egyptian hieroglyphics, and Mayan writing, for example, were the province of a privileged and mostly male elite; at most, only 1% of ancient Egyptians could write, according to Oxford University’s John Baines. When the palace or temple cultures supporting those elites vanished, the scripts eventually died out. But when Incan elites were wiped out by disease and war after the Spanish arrival, khipu use continued quietly, even secretly, among peasants, including large numbers of women who may have been using khipu along with the elite. That fact kept khipu under the radar of authorities.” The survival of khipu has a lot to do with confidentiality,” says Salomon.

Whereas the Inca culture, rich in textiles, developed knotted strings, other agricultural peoples turned to landscape itself as a kind of writing tablet. The Huli people of the central New Guinea highlands, for example, live in a marshy area that they have scored with irrigation ditches named for their ancestors. Although not traditional writing, this method does record history.

“These ditches are genealogical maps,” explains Oxford anthropologist Christopher Gosden, who has studied the Huli. A canal recalling an esteemed clan leader, for example, may be the central artery in that clan’s riverway, with newer ditches representing his successors clustered around it. Many ancient scripts emphasize recording genealogy: the early books of the Bible, for example, or the Sumerian king lists. The Huli’s past may extend that far or even further. Gosden says archaeological evidence in the form of traces of ancient canals and stone implements shows at least 6000 years of human habitation and agriculture in this swampy area. “The very nature of the Huli depends on the preservation of their cultivation system,” says Gosden. Any threat to the Huli’s livelihood—such as today’s increasing pressure on the land from a growing population—also threatens their record of the past. There could be no better example of the way in which a writing system is deeply rooted—in this case, quite literally—within culture. –A.L.

resources into Egyptian temples,” says Baines, at least in part to honor local gods and thereby win domestic support.

The temples provided a last refuge, but even they withered during the economic crisis of the disintegrating Roman Empire in the late 2nd century C.E., according to Baines. In 394 C.E., someone scrawled demotic and hieroglyphic text on the Philae temple in the remote south; the following year, the Christian Church ordered all pagan temples closed. Although some demotic graffiti dates to 452 C.E., and worship continued at Philae well into the next century, nearly 15 centuries would pass until hieroglyphics could be understood again.

The tenacity of Egyptian scribes through the centuries—despite cultural and language change—shows how scripts can linger even as their cultures are transformed. Scripts such as cuneiform and hieroglyphs require extensive schooling, bulky writing material, and significant financial support. Yet the very institutions set up to make this possible can prove remarkably durable, says Baines.

A long death

As hieroglyphics and cuneiform were falling into disuse, a new script was arising in the pre-Columbian world. Maya, which flourished in Mexico and Guatemala from 250 C.E. until 800 C.E., is made up of some 800 picture and syllable symbols that have not been fully deciphered, says Brigham Young’s Houston. Like Egyptian, the script is closely tied to a single language, and like cuneiform it was closely tied to the ruling class and to religion, used to tell of rulers’ exploits and to keep the sacred calendar. In this case the script mirrored its culture’s decline, degrading into peculiar forms, yet it still managed to persist in pockets for a surprisingly long period, says Houston.

A mélange of ecological, social, and political crises afflicted the 9th century C.E. Mayan empire, marking the end of its classical period and leading to a complicated series of disruptions still being debated among scholars. Mayan writing reflects these disasters—script vanishes abruptly and completely at sites such as Tikal in the southern lowlands, which may have encountered devastating droughts. Yet some sites, particularly in the Yucatán to the north, show only a gradual decline in writing, notes Houston.

Overall, he notes a steep decline in the number of texts during this period and the appearance of glyphs without meaning, which may have been an attempt to imitate the script without understanding its rules. By the start of the 10th century, Mayan writing is drastically simplified and nearly illegible and irregular. Mayan classical culture never recovered fully from these disruptions, although small groups of scribes clearly persisted and passed on old traditions. But without a “court culture,” Houston says, there was no place for the “literary sculptors” of Mayan script to flourish.

Maya revived later, as shown by the 13th century Dresden and Paris codices and numerous other manuscripts. It is a matter of some debate whether the script was dying in the 16th century when the Spanish arrived, as Houston maintains, or whether it waxed and waned during the centuries following the end of the classical period—perhaps as Latin degraded during the Middle Ages only to revive in the...