

Did We Kill the Neanderthals?

The mysterious extinction of our sister species may reveal much about the roots of human nature

BY EBEN HARRELL

IT IS ONE OF THE WORLD'S OLDEST COLD cases. Sometime between 50,000 and 75,000 years ago, a Neanderthal male known to scientists as Shanidar 3 received a wound to his torso, limped back to his cave in what is now Iraq and died several weeks later. When parts of his skeleton were pieced together in the late 1950s and early '60s, scientists were stumped by the cause of the fatal rib wound. They hypothesized that it had resulted from a hunting accident or that it had been delivered by a fellow Neanderthal. But new research suggests Shanidar 3 may have had a more familiar killer: a human being.

Using modern-day forensics, Steven Churchill, an associate professor of evolutionary anthropology at Duke University, determined that Shanidar 3's wound was

most likely caused by a thrown spear. At the time of the Neanderthal's death, only humans, who had adapted their hunting techniques for the open plains of Africa, had developed projectile weapons. Neanderthals, who hunted in the close quarters of forests, used thrusting spears.

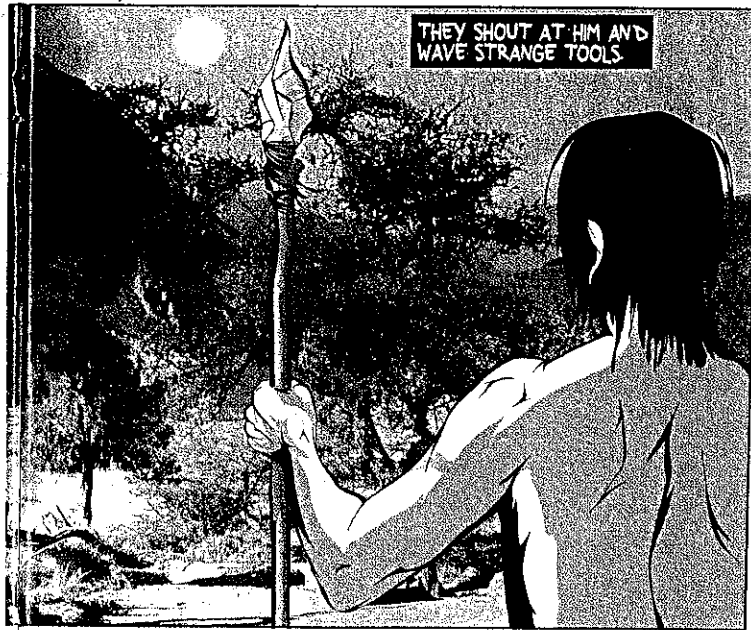
"There's only one species that had the sort of weapon to inflict this injury," Churchill says. "And that's us."

The study, published July 17 by the *Journal of Human Evolution*, contributes to a growing body of research that suggests contact between Neanderthals and humans was often violent and may have played a part in the extinction of our closest prehistoric relatives. Squat and hardy, Neanderthals evolved about 300,000 years ago and dominated Eurasia for more than

100,000 years, surviving an ice age. But the species mysteriously disappeared some 30,000 years ago, about the same time modern humans spread out from Africa.

So what happened? The murderous-human hypothesis, it turns out, is but one of several competing theses. One popular theory is that a particularly volatile period of climate change about 45,000 years ago shrank Neanderthals' arboreal hunting grounds, and the species—incapable of using projectile weapons to hunt on open plains—starved to death. Other anthropologists believe Neanderthals were bred out of existence through coupling with humans, a theory that gained prominence after the 2006 discovery of a 30,000-year-old skeleton in Romania that seemed to have both human and Neanderthal features.

It's possible that the species' extinction was inevitable: for all the muscled brawn of its specimens, *Homo neanderthalensis* appears to have been surprisingly fragile on the whole—at least according to its genome. On July 17, scientists at the Max Planck Institute for Evolutionary Anthropology in Germany said they had found very little genetic diversity between strands of DNA from six Neanderthal fossils, indicating a small population. The researchers concluded that Neanderthals teetered on the brink of extinction throughout their existence,



THEY SHOUT AT HIM AND WAVE STRANGE TOOLS



SOMETHING STRIKES HIS CHEST. THERE IS MUCH PAIN.



HE CRAWLS BACK TO HIS CAVE TO DIE.

probably never reaching more than 10,000 individuals. In the end, huddled in small groups across a vast and inhospitable terrain, with their food supplies dwindling, Neanderthals probably succumbed to a variety of pressures rather than a single extinction event, this research suggests.

But that doesn't absolve humans, as Shanidar 3's rib injury demonstrates. To solve the mystery of this Neanderthal's death, Churchill and his team re-created it using a crossbow, some Stone Age projectiles and a pig carcass. (Pigs' skin and ribs are believed to be about as tough as Neanderthals'.) When fired at a velocity consistent with that of a thrown spear, projectiles left punctures in the pig's ribs that resembled Shanidar 3's isolated wound. By contrast, when Churchill stabbed a pig carcass with the force of a thrust spear, he found that the ribs "were busted to hell. The high kinetic energy had caused a lot of damage in the area."

Furthermore, Churchill calculated that the weapon that killed Shanidar 3 entered at about a 45-degree downward angle. "That's consistent with the ballistic trajectory of a thrown weapon, assuming that Shanidar 3—who was about 5 ft. 6 in. [1.7 m] tall—was standing," says Churchill.

Adding to the dossier of forensic evidence against *Homo sapiens* is a Neander-

Clues to Extinction



The cave

Scientists found Shanidar 3's remains in the cave where he died in what's now modern-day Iraq



The bones

Neanderthals may have had bigger brains, but humans appear to have inflicted deadlier wounds—to Shanidar 3's rib and to a Neanderthal jawbone



thal jawbone discovered by anthropologist Fernando Rozzi of the Centre National de la Recherche Scientifique in Paris. Rozzi found that the jawbone had been butchered in the same way humans carved up deer carcasses in the early Stone Age; he says humans probably removed and ate the Neanderthal's tongue and used the teeth to make a decorative necklace. "Neanderthals met a violent end at our hands, and in some cases, we ate them," Rozzi said at the time of the discovery.

For his part, Churchill is skeptical of Rozzi's claims and believes competition with humans was only one of many factors that led to the extinction of Neanderthals. Humans probably dealt with their stout, strange-looking cousins in a variety of ways, depending on the circumstances, he says. "I suspect that interactions were different all over the place, much like the European colonizers had different interactions with other races. In some places, the interaction was peaceful and there was interbreeding and cultural exchange, and in other places, it was pretty violent."

However the Neanderthals ultimately disappeared, the species Shanidar 3 encountered near his Iraqi home—a creature capable of both cooperation and violent confrontation—is most certainly the same species that dominates the globe today. ■