

ed the age's heightened interest in the self, writes Kramer, a graduate student in history at Columbia University.

In his classic *Renaissance of the Twelfth Century* (1927), medievalist Charles Homer Haskins argued that the century's cultural and scientific flowering gave birth to modern Western civilization. More recent scholars, Kramer notes, have also examined religious thought in the period, finding "a new level of self-awareness or concern with the inner life."

Before the 12th century, Kramer says, the purpose of penance was to reconcile the sinner to the Catholic Church, "which then mediated with God on the sinner's behalf." In Abelard's influential interpretation, however, the object became the sinner's *direct* reconciliation to God.

Abelard—whose theological thinking twice won him condemnations for heresy from ecclesiastical councils—accepted the prevailing doctrine that a sinner's reconciliation to God had three parts: repentance, confession, and satisfaction. But he regarded oral confession to a priest or others as, in a sense, superfluous: God, being omniscient, already

knew the sinner's mind. "[W]ith the sigh and contrition of the heart which we call true repentance . . . we are instantly reconciled to God and we gain pardon for the preceding sin," he maintained.

Even so, confession—which was generally regarded as obligatory by the early-12th-century schoolmen (and which was mandated by the Fourth Lateran Council in 1215 as an annual duty for Christians)—still was useful, Abelard maintained.

In his *Ethics*, Kramer says, Abelard "explains that the faithful confess their sins to one another in order to obtain prayers from one another and 'because in the humility of confession a large part of satisfaction is performed and we obtain a greater indulgence in the relaxation of our penance.' Confession to priests is also instrumental for the imposition of appropriate satisfaction, although we may punish our sins sufficiently according to our own sentencing. Thus, the primary purpose of confession is to make known what had been hidden." Though God alone could truly judge that hidden, inner self, "shame and its expiation are human matters."

SCIENCE, TECHNOLOGY & ENVIRONMENT

Neandertal Scientists

"Who Were the Neandertals?" by Kate Wong, in *Scientific American* (Apr. 2000), 415 Madison Ave., New York, N.Y. 10017-1111.

Were Neandertals (a.k.a. Neanderthals) more like modern humans than many of us care to admit? Were they (gasp!) our ancestors? A fierce scientific debate rages, reports Wong, a *Scientific American* staff writer.

Neandertals first came to researchers' attention in 1856, when a partial skeleton—a heavy skull with arched browridge and massive limb bones—turned up in Germany's Neander Valley. Scientists assigned the newfound hominids to their own species, *Homo neanderthalensis*. Then, a half-century later, came the sensational French discovery of the "Old Man" of La Chapelle-aux-Saints, prompting scientists to draw the now-familiar portrait of Neandertals as primitive protohumans.

After 200,000 years in Europe and western Asia, they said, the dimwitted brutes—stooped, lumbering, apelike—were driven to extinction, unable to compete once intelligent, sophisticated *Homo sapiens* arrived on the scene.

Scientists subsequently determined that Neandertals actually had the same upright posture and way of moving as modern humans have. Even so, such characteristic Neandertal features as robust skeletons, short limbs and barrel chests, prominent browridges and low, sloping foreheads, protruding midfaces and chinless jaws, says Wong, still clearly indicate to many paleoanthropologists "an evolutionary trajectory separate from that of moderns."

Other scientists, such as Milford H.

Wolpoff of the University of Michigan, disagree. They argue that many of the Neandertal features are also seen in some early modern Europeans who came later, such as the ones found at Mladec, a site in Moravia (Czech Republic), and that this is evidence of extensive interbreeding.

But scientists who hold with the separate-species view dismiss that idea. “When I look at the morphology of these people [from Mladec],” says Christopher B. Stringer of London’s Natural History Museum, “I see robustness, I don’t see Neandertal.” The question seemed settled when a 1997 analysis found that mitochondrial DNA from a Neandertal fossil was vastly different from that of living moderns: “Neandertals Were Not Our Ancestors,” shouted the scientific journal *Cell* on its cover. Nevertheless, Wong says, “undercurrents of doubt have persisted.”

Much recent research also has focused on Neandertals’ behavior. In the past, they were often depicted as unable to hunt or plan ahead, but animal remains from a

Croatian site indicate they were skilled hunters, and several Neandertal burial sites contain what might have been grave goods, indicating a capacity for symbolic thought.

“If Neandertals possessed basically the same cognitive ability as moderns,” Wong says, their disappearance becomes all the more puzzling. It did not happen overnight. Anthropologists have recently shown that Neandertals still lived in central Europe 28,000 years ago, thousands of years after moderns appeared.

Gradually, in Stringer’s view, the Neandertals were supplanted by the new species, “because moderns were a bit more innovative, a bit better able to cope with rapid environmental change quickly, and they probably had bigger social networks.”

Not so, contends Wolpoff: The Neandertals were vastly outnumbered, and after thousands of years of interbreeding, their distinctive features were diluted and ultimately faded away. Clearly, the same cannot yet be said of the passionate scientific debate about Neandertals.

Paging Dr. Joe Camel

“The Good Side of Nicotine” by Mairin B. Brennan, in *Chemical & Engineering News* (Mar. 27, 2000), 1155 16th St., N.W., Washington, D.C. 20036.

A good word about nicotine seldom is heard these days, but scientists have discovered that the demonic chemical that makes smoking addictive has some therapeutic virtues, reports Brennan, a *Chemical & Engineering News* senior editor.

Nicotine can help some people suffering from Tourette’s syndrome, an inherited neurological disorder that afflicts as many as 150,000 children and adults in the United States. Though some people with Tourette’s can lead productive lives without medication, others need help to control the

symptoms, which include repetitive twitching, shrugging, and gesturing, as well as “barking” and throat-clearing noises, word

repetition, and, in some cases, involuntary cursing. Haloperidol, which is an antipsychotic drug sold commercially under the name Haldol, controls the tics in most Tourette’s patients but has undesirable side effects. Researchers have learned that nicotine boosts the effectiveness of Haloperidol, enabling its

side effects to be minimized.

Nicotine may also be beneficial in treating other brain disorders, such as Alzheimer’s



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