

Art: Evolution or Revolution?

NEWS

Human artistic ability burst forth in an explosion of creativity 38,000 years ago in ice age Europe—but was this the world's first flowering of artistic talent?

a volcanic eruption buried the soft pebble in a bed of ash, preserving it from erosion. A quarter of a million years later, in 1980, archaeologists dug it up, and since then, the pebble has been the object of rapt attention—far more, perhaps, than it got when it was new. By chance or design, those long-ago scratchings created what looks like a female figure—and a puzzle for the archaeologists who study the beginnings of art.

To many archaeologists, art—or symbolic representation, as they prefer to call it—burst on the scene after 50,000 years ago, a time when modern humans are widely thought to have migrated out of Africa to the far corners of the globe. These scholars say the migrants brought with them an ability to manipulate symbols and

Sometime around 250,000 years ago, an early human living on the Golan Heights in the Middle East picked up a lump of volcanic tuff the size of a plum and started scratching at it with a harder stone, deepening its natural crevices. Not long afterward,

make images that earlier humans had lacked. An explosion of art resulted, its epicenter in ice age Europe starting about 40,000 years ago, when most anthropologists believe modern humans were replacing the earlier Neandertal people. The new Europeans decorated their bodies with beads and pierced animal teeth, carved exquisite figurines from ivory and stone, and painted hauntingly lifelike animals on the walls of deep caves.

Some recent discoveries have strengthened this picture. Hints of art and personal ornaments have been found in Africa from just a few thousand years before the artistic explosion in Europe, supporting the idea that a worldwide migration of protoartists did begin 50,000 years ago in Africa. As Richard Klein of Stanford University puts it, “There was a kind of behavioral revolution [in Africa] 50,000 years ago. Nobody made art before 50,000 years ago; everybody did afterward.”

But other developments have raised awkward questions about this “big bang” theory of art, as some critics call it, hinting that art and the sophisticated cognitive abilities it implies may have a longer history. After years of doubt, most archaeologists accept that the so-called Berekhat Ram object from the Golan Heights is the work of human hands, although there is no consensus about what—if anything—it



Early splendor. An ice age menagerie on the wall of Grotte Chauvet, in southern France. The oldest of the paintings have been dated to 32,000 years ago.

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means. Neandertal sites in Europe, some of them well over 40,000 years old, have yielded a polished plaque split from a mammoth tooth, bones that may have been incised for decorative purposes, and layers of ochre—a red pigment that early humans may have used to decorate their bodies. Ochre is also abundant at early sites in Africa, and ochre “crayons” have turned up at ancient rock-shelters in northern Australia, in layers that may be nearly 60,000 years old. “We’re seeing more and more of these things popping up all over the place,” says Paul Bahn, an independent archaeologist in England.

And 3 years ago, cave art specialists were stunned when carbon dating showed that virtuoso paintings at Grotte Chauvet in France may be more than 32,000 years old, meaning they were created not long after modern humans arrived in Europe. “I simply cannot conceive of the Grotte Chauvet paintings appearing out of nothing,” says Bahn.

Perhaps most telling, many archaeologists now think an array of grooved teeth and other ornaments from a cave called the Grotte du Renne, at Arcy-sur-Cure in central France, is the handiwork of Neandertals. The age of the Arcy deposits is in dispute; most archaeologists think they date to around 35,000 years, a time when modern humans were already spreading into Europe and making stunning art of their own. But the date could be as early as 45,000 years ago, before modern humans arrived. To some researchers Arcy puts the lie to arguments that nonmodern humans like the Neandertals did not—perhaps could not—express themselves in art and ornament. It supports the view that artistic habits going back tens or even hundreds of thousands of years could have prepared the ground on which the ice age explosion took place.

The debate is more about the significance of this early evidence than about its reality. Traditionalists—call them explosion theorists—don’t doubt that humans before 50,000 years ago sometimes left artifacts that appear decorative or symbolic. But they argue that the objects are so rare and crude that they can hardly be taken seriously as part of a systematic symbolic representation of the world. As Paul Mellars of the University of Cambridge puts it, “Everything that’s ever claimed to be Neandertal is so amorphous, so lacking in crisp representation. ... There’s always this massive question of whether it’s just someone doodling.” What impresses him, he says, “is the contrast between that and the clarity you get in the Upper Paleolithic”—the time after 40,000 years ago when modern humans populated Europe.

Art’s big bang

Even for archaeologists who focus on earlier times and other continents, there’s no denying the artistic explosion that took place in ice



The earliest artifacts “may be unique, but [their] complexity raises questions that have to be addressed.”

—Alexander Marshack

age Europe. Some of the earliest confidently dated signs, from a site called Kostenki 17 in Russia, are 38,000-year-old beads and pendants of stone, animal teeth, and marine fossils. After that, ornaments and imagery proliferated. In well-dated 35,000-year-old deposits at a rock-shelter called Abri Castanet in southwestern France, says Randall White of New York University, “I have more material in a few square meters than [there is] in all the rest of the world up until then.”

The ornamental objects at Abri Castanet are beads—thousands upon thousands of them, in all stages of manufacture, made of mammoth ivory and soapstone. And within a few thousand years, the artistic range of these first modern Europeans had broadened to expressive carvings of animals, enigmatic figurines of women in the last stages of pregnancy, and the painted lions, rhinos,

bears, and other animals that romp across the walls at Grotte Chauvet. “Between 38,000 and 33,000 years, everything is there, including Grotte Chauvet,” says White.

Her good side. From some angles, a 3.5-centimeter object from the Golan Heights, carved some 250,000 years ago, looks like a woman.

But what could have touched off this explosion? Klein and a few others think the answer lies in biology—some change in the wiring of the brain that enabled humans to innovate, think symbolically, and make art. “My view is that modern human behavior was a biological advance,” he says. Human ancestors in Africa looked anatomically modern by 150,000 years ago. But Klein thinks an additional evolutionary step, hidden in the brain, came 50,000 years ago. It gave modern humans the cognitive wherewithal to

migrate to the distant reaches of Europe and Asia, replacing archaic human populations as they went.

And, gratifyingly for Klein, Africa is where some of the earliest indisputable body ornaments are turning up. In last April’s *Journal of Archaeological Science*, Stanley Ambrose of the University of Illinois, Urbana-Champaign (UIUC), describes his excavations at a rock-shelter in the Rift Valley of Kenya, at a site called



Beginnings of abstraction? An enigmatic design was scratched 54,000 years ago into a 7-centimeter flint plate, found in Israel.

Enkapune Ya Muto. There he found a cache of beads made of ostrich eggshell, blanks, and shell fragments. Some of the beads, says Ambrose, “are shiny, obviously worn, as if someone was wearing them as part of some ornament.” They must have served as symbolic markings, he says, “expressing an awareness of the self and how to enhance it.”

It’s the same phenomenon seen in Europe 38,000 years ago—but it may be several thousand years earlier at Enkapune Ya Muto, says Ambrose, who has carbon-dated the shells and come up with an age of at least 40,000 years. “These early ostrich eggshell beads are perhaps the earliest indicator” of symbolic behavior anywhere, says Klein. “And it’s very important that they first appeared in Africa,” just as expected if the crucial biological innovation had occurred there.

Other archaeologists agree with Klein about the sudden flowering of art but reject his biological explanation. “I don’t think it’s a mutation for the art gene,” says Olga Soffer of UIUC. “We’re totally on the

CREDITS: A. MARSHACK

wrong track when we're asking the question of biology." White agrees. "I think that what we call art is an invention, like agriculture, which was an invention by people who were capable of it tens of millennia before."

What spurred the invention is a matter of speculation, although many archaeologists think that, at least in Europe, it could have been part of a social change triggered by a challenging new environment. Chasing wide-ranging herds in the shadow of the ice sheets, modern humans thrived by developing an intricate social system, with a complex division of labor and long-distance ties. "That's one way to survive in an environment where you've got scattered and somewhat unpredictable resources," says Philip Chase of the University of Pennsylvania, Philadelphia. Body ornaments and art might have helped express those new social relations.

Or they may have served to distinguish modern humans from the other kinds of people they were meeting as they moved into new and perhaps hostile territory. Says White: "I have a hard time thinking it's coincidental that all of this was going on [in Europe] at a time when you have quite a different hominid moving into territory occupied for 300,000 to 400,000 years [by earlier humans]. A major concentration of art is right where Neandertals were being replaced by modern humans, all the way from the Russian plain to the Iberian peninsula." Modern humans naturally sought ways to distinguish themselves from their neighbors and strengthen their own cultural ties, he suggests, and art was one solution.

It's old, but is it art?

A few researchers, however, think they have a more natural explanation for the ice age explosion: It was grounded in a tradition going back tens or even hundreds of thousands of years and glimpsed fitfully in sites around the world. Alexander Marshack, for instance, an archaeologist associated with the Peabody Museum at Harvard University, has campaigned for years to persuade his colleagues that ice age Europe can't be the beginning of the story.

Thirty years ago, he took his first close look at 30,000-year-old ivory animals from Vogelherd, in Germany, then considered to be some of the earliest art. What he saw, he says, were works "so sophisticated they couldn't have happened instantaneously. Making them required thousands of years of technology, of symboling, of making stories about the animals." Early cave paintings also showed signs of a rich cultural context that, he believed, simply could not have emerged full-blown in a few centuries. Other archaeologists argue that a few centuries is plenty of time for culture to blossom. But Mar-

shack concluded that "there had to be a long prior history, so I began looking for earlier objects."

Here and there, in material from sites around the world, he has found them. From Quneitra in Israel comes a bit of flint

incised with concentric arches some 54,000 years ago. From a site called Tata in Hungary comes an enigmatic plaque made of polished mammoth tooth, 50,000 to 100,000 years old, its crevices filled with red ochre. At a 250,000-year-old rock-shelter site in the Czech Republic, archaeologists found a bed of ochre and the rubbing stone used to make the powder—not art, but perhaps the means of making it. And then there is the 250,000-year-old carving from Berekhat Ram, which Marshack has studied closely and inter-

prets as the figure of a woman with an elaborate coiffure.

To Marshack, the Berekhat Ram object, like the later artifacts from Tata and Quneitra, is a trace of a capacity for making symbols that was well developed long before the ice age explosion. True, he says, it's just one piece of "art" from a span of tens of thousands of years, but it should not be dismissed. "It may be unique, but its complexity raises questions that have to be addressed." It suggests, he adds, that other symbolic objects have simply been lost from the record: "Chances are that if they were making images of volcanic tuff, they were making images of wood," which would have decayed. One reason ice age art is so abundant, he adds, is that modern humans in Europe worked durable materials such as mammoth ivory and bone.

Marshack isn't the only one coming up with such evidence. A smattering of suggestive artifacts have come from Neandertal sites in Europe and Russia: bits of bone with what look like decorative markings, even a 43,000-year-old bone "flute" from Slovenia. But many of those claims have withered as researchers including Francesco d'Errico and Paola Villa of the Institute of Quaternary Prehistory and Geology in Talence, France, have taken a close look at the artifacts. Animal digestion, butchery marks, and even the tracks of blood vessels can easily explain many of the bone markings, says d'Errico. And both d'Errico and Chase have concluded that, as d'Errico puts it, the supposed flute "is absolutely natural and is the result of gnawing by animals."

Some of Marshack's artifacts, however, have held up better. His analysis of the Berekhat Ram object, published last year in *Antiquity*, seems to have convinced most of his colleagues that it was shaped artificially, and a few of them even accept it as an image. "It's extremely clear that it's humanly enhanced. It's definitely an art object," says Bahn. D'Errico and April Nowell of the University



Art explosion. A 30,000-year-old mammoth-ivory horse from Vogelherd, Germany, 6 centimeters long, and a 35,000-year-old bead from Kostenki 17 in Russia, made from a marine fossil called a belemnite, bear witness to ice age creativity.



African genesis. An ostrich eggshell bead from Kenya, shown with fragments from other stages of bead manufacture, dates from 40,000 years ago. These beads are among the earliest undisputed personal ornaments.



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of Pennsylvania, Philadelphia, actually tested Marshack's claims by going to the site and comparing the object with hundreds of other bits of tuff. They, too, are persuaded that it is human handiwork. "No other pieces have this kind of modification," d'Errico says.

But he isn't ready to call it art. "I'm not sure the people who made the grooves were people using symbols. Also, one case does not explain a lot." Exactly, says Cambridge's Mellars. The uniqueness of artifacts like the Berekhat Ram carving "totally undermines their role in a symbolic communication system," he says. Chase sums up the doubts about Berekhat Ram and similar artifacts: "Was it just a kid who was sitting there scratching on something? Or did it have some function we can't recognize?"

Artful Neandertals?

One set of decorative objects apparently made by nonmodern humans can't be dismissed as anomalies, however. At the Neandertal site of Arcy-sur-Cure, archaeologists in the 1950s and 1960s excavated not just one or two but dozens of animal teeth pierced and grooved for use as ornaments, along with a handful of ivory beads and pendants. No other Neandertal site has held anything like this trove of symbolic objects. The same site also yielded bone tools and stone points made by more modern techniques than those of earlier Neandertals. But most of the doubts about whether Neandertals were responsible for these objects faded when Neandertal bones were identified first at another site with the same "Châtelperronian" tool technology and then, 2 years ago, at Arcy itself.

Now archaeologists are debating what the Neandertal ornaments at Arcy mean for the ability of nonmodern humans to traffic in symbols and make art. Although the exact age of the Arcy deposits is uncertain, most carbon dates from the site overlap with dates for modern humans in France and Spain. That leaves plenty of room for archaeologists to argue over whether the Arcy Neandertals developed art on their own or were imitating their trendy neighbors.

At one pole is João Zilhão of the University of Lisbon in Portugal, who published an assessment of Arcy with d'Errico and others in the June issue of *Current Anthropology*. Zilhão says that at other Châtelperronian sites, the Neandertal deposits always underlie the layers of artifacts left by modern humans, implying that the Neandertal activity came first. And he puts his money on the earliest of the widely varying carbon dates obtained from the layers at Arcy, roughly 45,000 years old—a date that would mean the Neandertals made the objects well before modern humans were around to set an example. Zilhão says the evidence is clear: "Strictly empirically, Neandertals invented [ornaments] first."

At the opposite pole is Paul Mellars, who says Zilhão is wrong



Neandertal style. A bovid tooth, grooved for use as a bead, from the Neandertal site of Arcy-sur-Cure.

to the north and modern humans to the south.

It's there that the Neandertals would have taken their artistic cues from their new neighbors, says Mellars. "Here were these 'supermen' coming over the hill, wearing fancy beads, with better weapons, better hunting skills—the Neandertals would have to be staggered by this." They would inevitably try to copy what they saw, if only because the modern style, pierced fox teeth and all, had cachet. The artifacts that resulted should not be taken as a sign of an independent artistic capacity, says Mellars. "To say that the beads must have had exactly the same symbolic meaning to Neandertals as they did to moderns—that's a non sequitur."

Most archaeologists agree with Mellars about the timing. But some note that the Neandertal beads aren't direct imitations of what nearby modern humans were making. The people at Arcy chose different kinds of animal teeth and used different techniques to work them, which leads these archaeologists to suggest that the Neandertals were drawing inspiration from their neighbors rather than simply mimicking them—making beads in their own way, for their own cultural purposes.

If so, the Arcy deposits could still have unsettling implications for the idea that art, and the complex culture it implies, is unique to modern humans. Says Chase, "If this really is symbolism, and taken at face value it is, then you've got Neandertals who were capable of the same symbolic behavior as modern humans." Klein is also mystified. "I want the Neandertals to be biologically incapable of modern behavior.

So [the Châtelperronian] is a real problem."

Zilhão and others hope to do more dating of the Arcy deposits, which might settle the issue if it shows that the ornaments really do predate modern humans in Europe. In the absence of such a tie breaker, the dispute will continue—pitting big bang theorists against gradualists, and archaeologists who stress the overall pattern of evidence against those who focus on the puzzling exceptions. After all, the real answer about what is art and what is not lies in the minds of its makers—and they are long gone.

—TIM APPENZELLER



End of an era. Hair is coiled around the face of a palm-sized female figurine from Mal'ta, in Siberia, made of mammoth ivory and dating from 15,000 years ago, late in the Ice Age.



Lady of the Russian plain. A 12-centimeter mammoth-ivory figurine from Avdeevo, 23,000 years old, was found in a pit with other statuettes, the skull of a lion, and the remains of several wolverines.

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