

# STROKE OF FLAME

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**B**UT this time he brought his little daughter—that is how it all came about. They strolled up from the tiny village of Santillana del Mar to peer into a strange, dark hole that had been accidentally breeched in prying out the prey in a hunt. The narrow crevice led to a cave, and the Marquis de Sautuola, a dilettante in the fashionable fad and a frequent visitor here, crept in to scratch about for old bones and prehistoric implements. The ceiling, once high-flung, was now very low, close to a floor flooded with the settled sludge of centuries. But it was just the right height for a little girl to stand up quite straight. This one soon tired of scuffling in the debris at the entrance. She wandered off with the lonely candle, deeper and deeper, down the dark tunnel. In the fretful soughing of the cave's dank draft, the flame flickered wildly, and she looked toward the dim ceiling. The light uncoiled up the somber wall and, suddenly, licked the flank of a charging red bull. The child shrieked, "Toros! Toros!"

At this moment, after three hundred centuries, the roaring herds leaped to life. Bison, boar, bull, and ibex;

horse, deer, and elk thundered down the walls of the silent corridors at the first lash of that tingling flame. All the symbolic ceremony of the dark past danced again. Ocherish, sulphurous, red, black, and terrifying in the trembling shadows of unbelievable antiquity, the fantastic frescoes of the first artists were here heralded to the modern world. The year was 1879.

When Don Sautuola said that the art of Altamira was made by prehistoric savages, the idea of such a preposterous possibility was scoffed; it was hurriedly "re-buried" and soon forgotten by the savants. Again, when in 1895 the gallery of La Mouthe was uncovered in France, Rivières's description still scared up the appropriate skepticism. But when Les Combarelles and Font de Gaume were found nearby, something began to happen to the scoffers. "Methoune's Cave" at Les Combarelles had always been a stable for plowing oxen. Quite casually someone came upon scratches on the walls of its deeper recesses and thought that they looked like engravings at La Mouthe. But now scholars were on the lookout so that a week later M. Peyrony discovered the caves of Font de Gaume half a mile away. Then a number of successive findings accumulated until 1940, when the magnificent cave of Lascaux was stumbled into. At last it became inescapable that, one by one, the roughest critics succumb, confounded in awe at the art of the earth's first aesthetes.

Prehistoric paintings in caves have a very limited geographical dispersion. Still, they are surprisingly numerous. All the very old ones seem to be in Cantabrian Spain or mostly in the river valleys of southwestern France—at least they have not been found anywhere else. From the

western wall of that huge chunk of upheaved earth called the Massif Central of France, several beautiful rivers drop steeply into deep gorges as they squirm tortuously to the sea. The dramatic Dordogne is about three hundred miles long and flushes a basin of more than three thousand square miles. From the north, it is first fed by the Vézère halfway down; then at its mouth it sucks in the mingled waters of the Auvézère, Dronne, and Isle. From the south, as it sloughs toward the sea, it meets the great Garonne whose capillaries drain the northern wall of the Pyrenees.

This whole lacy system of westerly converging, deep-cut crevices is pitted with countless grottoes, and in them the great majority of prehistoric art museums have been hidden. But the central hearth, the place where art was born and from which it radiated, must have been along the little lower valley of the Vézère. This is the site of at least a score of decorated vaults. Among them are the most famous, and one, the cave of Lascaux, though latest found, is yet of the earliest in art.

Let's look in at Lascaux. It is a mysterious, illuminated manuscript whose murals hint at how that peculiar compulsion called "art" arose. What happened elsewhere happened here first. It is not like just the study of a period of art. Lascaux epitomizes, not a great century of painting, but a period of thousands of years, and this some thirty thousand years back.

The quaint little town of Montignac is up the Vézère, about twenty miles northwest from where it slides into the Dordogne. One dreamy day in the early fall of 1940 two boys were roaming the investing hills. The names may sound funny in English, but Marsal and Ravidat

were real French counterparts of our eternal Sawyer and Finn. They found a hidden cave and most certainly had to scout this forbidding terrain. Such piratical fantasies as they found inside are usually only in the imagination of a boy, and nothing can ever excite a Tom or a Huck more than finding a treasure in a cave. Our adventurers just couldn't keep their secret. They told their old teacher and led him into the cavern.

In Tertiary times a creek had carved a symmetrical swelling out of a small crack in the Cretaceous limestone. In these days a narrow entrance leads down from a plateau dominating the Vézère River's left bank. This vent opens on a voluminous hall a hundred feet long and thirty feet across at the floor level, but its walls bulge widely outward near the middle, then roll in again above to top the chamber with a lofty rotunda. Opposite the entrance, the cave narrows sharply to funnel into an even longer axial gallery, the whole running due south. The right wall of the Great Hall is perforated at its center by an arched portal that opens on a long, low corridor perpendicular to the main axis. For some distance it runs westward; then, suddenly, it spreads into two diverging passages. That on the left enters the beautiful broad Nave, but this soon dwindles to a tenuous tunnel that can be managed only by creeping on hands and knees. At the end of this suffocating passage one is brought up sharply by a steep, slimy incline that rises as a cylindrical tower into the Room of the Felines.

The entry at the right bellies out in a round, domed niche. Here is the delicately etched Apse whose walls are a maze of fine tracery. At the far end of the Apse a dark hole drops through the floor. Halfway down this

deep Well is a narrow shelf in the rock. Standing on it, one gazes across the gaping black shaft at a weird stage on the opposite side. Dimly, on its shadowy backdrop, can be made out the dramatization of a portentous pre-historic tragedy.

Natural surface sculpturing accommodates each grotto most appropriately. From the middle of the wide dome of the Great Hall hangs an imposing cluster of billowing yellow lumps of sparkling stalactite. Low, dark walls lean out to meet the curved ceiling. Between the central "chandelier" and the top of the wall, a broad, white, calcined panel circles the roof's periphery. It faces down and in toward the center of the room. A similar patina finishes the axial gallery, its whole arched ceiling being chalky white with contrasting much darker walls. The Nave and the Apse gradually get to a golden glow, for their crumbly surfaces are not plastered with a protecting coat of calcite.

But, of course, it is the painting, more mystifying than the dark descent into the twisted hollow of the earth's bowel, more disquieting than the eerie architecture of these natural dungeons; it is our own unreasoning response to the muted human message that is uncanny. As art itself meanders between myth and language, here is the tangible presence of a communication come down to us over an unbelievable span of time, from the veriest beginning man.

The Great Hall is perfectly suited for its human decor. Or, better put, those who painted responded to the spaces with what man still thinks is apropos. The paintings were not done all at one time. No single artist had an over-all plan of design, but this great mural grew for



ages and, extraordinarily, developed its own coherent design. Just above eye level, on the concave lateral white ceiling strip, there is a frieze of heroic animals prancing round the room. There are over twenty major recognizable figures in this whirling frescoe. They are horses, bulls, reindeer, a bear, and some cows. The figures, end to end, overlapping, superimposed, are dominated by four colossal bulls.

The bulls are black in outline. The largest is more than eighteen feet long—even the smallest is over ten feet—but always the maintenance of consistent proportion is astounding. Contour shading darkens the bellies of some, and in each the form is vigorous, decisive, and movingly rhythmic. This is not the puerile penciling that we are apt to attribute to savages. The forms are realistic, the anatomy cleanly expressed; that the artist keenly knew these beasts is obvious. The head of the largest bull is magnificent. Its lyre-like horns are stippled for strength; its high arched neck projects the power, both of the bull and of the artist. Seen in profile, its muzzle is darkly shaded, but a dilated nostril and glaring eye are sophisticatedly set apart in stark black and white. Its tense snorting symmetry is wild and alive. It is fantastic, but this is high art!

But all is not merely monotony of black and white outline. Shades range from golden ocher through red, violet, russet sepia, umber, blue-black, to black. And style varies, too, in stroke and texture. Deer are handled in a diversity of modes. Small stags on the left wall are silhouetted in pale-red flat wash. In one, the antlers look like slim winter tree branches; in another, they are shown in spiraled perspective. But, in both, the typical

brow tines of the red deer (*Cervus elaphus*) are attentively true to nature. One dainty fallow deer has short, scrolled tines complementing perfectly the design of the central wide horny webs. The top tines of an odd stag are crowned with spreading palmettes that were once thought thoroughly unrealistic, but even this unexpected peculiarity has been picked up in rare specimens of the very old red deer of Germany.

Herd of very fine horses are seen, some in bistre flat wash sharply outlined in black with slender long legs and sensitive, slim heads; others in red are flowing and active. One proud horse head, with high arched neck and delicate muzzle, is subtly shaded in a violet-red wash. With all else in sharp outline, its mane is made skilfully mobile in a blur of wind-blown contour. In the axial continuation of the Hall there is an appealing series called the "Frieze of the Little Horses." Small, stumpy, fuzzy in dark red, they trot obediently in line down the corridor. They look like shaggy Shetland ponies that should adorn a modern nursery wall. The topping décor in this nursery theme is a brown cow, soaring above the ponies. She is in the midst of a prodigious leap, with forefeet stuck stiffly out before and hind legs clenched up tightly behind, barely to clear the last little horse. He, in turn, seems not too convinced that she'll make it as he scurries ahead to get out of her way. This gay *Bos* is in training for the jump over the moon to fulfil the evolutionary destiny of her more talented descendant.

Each of the main art galleries—the Great Hall, the Nave, the Apse, and the Well—has its own special style, though, for the most part, the animals are remarkably realistic. But, in addition, each chamber has a figure of

enigmatic peculiarity. In the Great Hall there is such a bizarre beast that, for want of a better name, it is called the "Unicorn." Its head is square and almost feline. It has two very long, absolutely straight horns unlike anything in nature. Its rear half looks extraordinarily like a rhinoceros, and its flank is patched with horseshoe tracks. It is possible that the beast was no puzzle to its creator. It is certainly strange to us. An additional item, barely visible nearby, is the stenciled silhouette of a child's arm. This is directly comparable to the ghastly stencils of self-mutilated hands still made on rock walls by primitives. It is the oldest picture at Lascaux.

Now, the Lateral Corridor has a different décor. To begin with, its sandy walls are soft and friable, and painting of the sort found in the grand salon are only fragmentary survivors on patches of the original wall. The passage is narrow, and the passing of time and the broad shoulders of the original inhabitants have rubbed the rest of the paintings away with the loose surface. Near the entrance, in protected wall niches, sweating has prevented drying and crumbling. Moreover, it has lacquered the surface with a mineral precipitate that preserved the painting in part. Not only does this lucky exudation allow us to follow the transition in style but, having *covered* the painting, it establishes the antiquity of the art. A little farther on in the passage a new mode, the beginning engraving, is seen. At first small, hesitant, and incomplete, as one moves down the corridor, these incisions embolden in a crescendo that is crowned in the Apse. They tell of horses, ibex, oxen, bison, a wolf, and countless interwoven, undecipherable fantasies.

On entering the Nave, the ceiling suddenly rises and

the floor slants steeply down. On the left wall the line of pictures rises with the ceiling. Making them easily accessible, a natural ramp runs up to a cornice, where one can conveniently walk beside them. In this gallery the two techniques are blended. The beasts are both engraved and tinted. Experiment in color is evident. Two groups of ibex heads have the colors reversed. In one the heads are painted in black, the horns red; in the other the heads are red, the horns black. Experiment in draftsmanship is not neglected. On the right wall a row of repeated deer heads is drawn in simple, strong, rhythmic black strokes. The necks are all similarly stretched and up-twisted to make the animals seem breathlessly swimming with their heads held high out of water. One notable, flaming masterpiece is that of two bellowing bison. They are turned back to back and their rumps overlap, while they leap in opposite directions. Bristling manes in splashing red, glaring white eyes in black heads, galloping hoofs, and plunging bodies make an explosive, tumultuous, visual roar in the disturbingly silent cave.

Gradually, a peculiar formula for building up an artful composite emerges here in the Nave. First a pregnant mare was carefully painted. After this its outline was engraved. Still later an engraved arrow was stuck in its rump. Other mares, stallions, and bison show signs, first, of being painted in bistre flat wash; next, of having their outlines strengthened in black; then, of a further sharpening of the outline by engraving. Finally, the beasts were vigorously jabbed with numerous engraved arrows. More than twenty horses were developed in this style, and, somehow, seven arrows seems the number of choice.

This design has all the appearance of a repetitious, ceremonial sequence.

At the cave's end a narrow tunnel leads to the Room of the Felines. In it are painted engravings of half-a-dozen lions, quite out of the ordinary for Lascaux. But the enigma of the Nave is a set of symbolic squares, checker-board patterns painted in red, violet, yellow, and black. There are three or four of these patchworks, each made up of nine variously colored engraved squares differently arranged. Their meaning is so abstruse that they have been deciphered as coats-of-arms, tribal totemic signs, robes, or even tents. Probably they, too, are of the oldest age of painting.

The Apse is aptly appointed, sitting to the right at the head of the Nave like the bishop's seat to the east of the choir. The whole surface of this cupola is scarred with the most exquisite intricacy of spider-like webbing. Bison, bulls, horses, reindeer, and possibly even a grotesquely bedecked human sorcerer can be deciphered from this riddle. Many of the figures are obvious, and some of their faded tinting still remains; but, for the most part, the tracery is obscure, and any imagined pattern can emerge. If nothing else, this jumbled maze of superposed cuts, some bold and deep, some fine, even dainty, expresses a feverish, artistic activity that did not let up for generations. The total effect is magnificent, but the detail is so vast that it has not yet been worked out completely. At the back of the Apse gapes the black hole of the Well. Managing the tricky descent, a resting platform is reached part way down. Across the shaft on the opposite wall is the strangest portrayal of all.

This drama really deserves description. Four figures are

on the stage. On the left, a stumpy, powerful rhinoceros, turning his back on the scene, stalks stolidly away. On the right an enraged bison bristles. His head is strangely twisted down over his left shoulder. His mane stands on end, and his lashing tail is tipped with a furiously flicking tuft. A long spear digs through his belly, and a massive coil of gut squirms out through the cut. Between these two beasts is the sharp, painted outline of a man. It is the only, unmistakable, human figure in the entire cave. He cants at an angle with the horizon as if falling violently, right under the horns of the heaving bison. Of all the paintings in the cave, that of the man is most crudely done. The torso is just two parallel lines. These lines continue as legs which are very slightly thickened at the thighs, while the feet are just lines at right angles to the legs. The arms are outspread as if the man were dead, and the hands are fitted with only four fingers. But the head is something extraordinary. Its pinheaded proportion to the body is further distorted by a prodigious, protruding beak. It is exactly the sort of thing that would be done by a child. Speculation suggests a sorcerer wearing the mask of his totem, and this notion is fortified by the fourth figure. It stands just below the man and seems a very strange symbol, the outline of a small bird with a long sharp beak stuck atop a long stick, exactly like totemic signs still used to mark the graves of north-western Amerindians. Crudely as it is conceived as compared with the many artistically more exciting paintings, this curtain scene is emotionally a most memorable climax, hidden as it is in the deepest, most dangerous crack in the cave.

Though this is but a casual scanning of one classic in

cave art, it serves to point up three questions. How are we satisfied about the great age of the art? How was it done? What does it mean?

Just recently, elegant cosmic clocks have been devised by learning to record the decay of radioactive elements. They tick their own deliberate time, measuring the passing of eons. It is pretty current knowledge to what tremendous antiquity this technique leads us in fixing the age of the earth. Conservatively, it is given at over three billion years. The timepiece in charred fossils is a special form of carbon which writes the beasts' obituary. The procedure is simply to measure the ratio of carbon of atomic weight 12 against that of 14, which is produced by cosmic rays in the high atmosphere. At death the input of  $C^{14}$  stops, and the slow decay from 14 to 12 clocks the time since the animal died. The content of fluorine soaked up from the earth, or the content of nitrogen not yet lost, can also be a guide to the age of old bones.

Certainly, there are limitations to each technique, but a good working notion of time is derived, and, even were we to miss by hundreds of thousands of years, the orders of the magnitudes would be known. Fossil-bearing strata show sure signs of life nearly a billion years ago. The Age of Mammals began seventy-five million years back, and the Ice Age (Pleistocene), with its four glaciations and with man on the scene, began a million years ago. It was toward the end of this great cold epoch that the earliest paintings were made, and just after this, about twenty-five thousand years ago, began the time we call Recent.

It is not too difficult to decide the end of the Ice Age. Animals adapted to severe cold once freely ranged Europe

and are found in the appropriate geologic layers. Long ago their living descendants like musk ox, reindeer, bison, saiga antelope, and elk have migrated to the icy plains of the far north and east, while ibex, chamois, and marmot have climbed the nearest cold, high hills. Mastodon, mammoth, and woolly rhinoceros just gave up. They disappeared some twenty-five thousand years ago. This in itself is enough evidence for the age of the pictures. It is less than a century that anyone could have thought of drawing these monstrosities, because no one imagined their existence, let alone of their living in Europe.

But there are other factors that make the phenomenon still more certain. Sometimes, as was seen, a dripping ceiling paints natural coatings of stalactite over the lines of a drawing. Some of the wall figures even dip under deposits laid down on the floor of the cave, and these layers of clay, sand, and gravel, in turn, have been sometimes sealed over with a hard covering of stalagmite. A painting or engraving, continuous above and below a calcite sheet, then comes neatly equipped with its own indisputable time scale. But, better than this, the strata itself may store the tools used to make the pictures, or hunting tools made at the time of the pictures, so that an even bigger picture of the whole culture looms clear.

Studies of the evolution of artistic technique are painfully laborious, but, when done, the story seems so simple. We look at the place where engraving meets painting. If the cut crosses the color, the painting is older. If the groove of the engraving is wholly filled with color, the engraving is older. In time, the surface of a cut becomes oxidized. If one engraving encroaches on an-



other, the later one scrapes off the oxide in the old groove. The ratio of surface oxides reveals the relative age, even if the later cut is deeper. The stratification of a palimpsest can then be decided. From this, by the usual comparative methods, ages of art of the various caves are being catalogued.

Argument of authenticity is, of course, to be expected, and from these squabbles quaint stories grow. When Sautuola talked about Altamira, the paintings were passed off as a conspiracy of Spanish Jesuits who painted them, cackling in Machiavellian glee with the expectation that, the fraud being found out, biblical legend would be safe from the scientist. Just a few years ago André Breton, a French writer, ran his finger across a painting. Damp pigment stuck to the finger. Ha! he had detected a fake. In the middle of this row, on November 21, 1953, the British Museum announced the Piltdown fraud. Of course this increased the crescendo of howls in the caves. The discovery of *fresh paint* seemed to justify the alarm. But long ago it had been noted that the paint in the best-preserved caves had remained damp. It has been estimated that, over a period of many millenniums, miraculously a temperature of 50° F. and a humidity of over 90 per cent have been constant. Only in open, exposed walls has the pigment been found crisp and flaky and very often entirely lost. In those deep, damp, sealed mausoleums it could never dry!

This brings us to the question of how the pictures were made. The artists used all the tricks of the trade. At first they just looked for the flattest surfaces, but, as skill and imagination worked on, suggestive configurations on the walls were sought. Bumps bulging into the buttocks of a

bellowing bull or into turgid vulvae and fat haunches of females were found in the rock, and these were aggrandized, outlined, and tinted to give the art three-dimensional impact.

Pigments were used as they came from the earth. They were ground and churned into paste with water and animal fat. The paste could be thinned to a wash or thickened to a sticky gum. Black and brown came from manganese, red ocher from earthy iron oxide, white from kaolin. Yellow ocher also was common, and bister could be made from burned wood. Variations of these—violet and such—were made by several mixings, but some shades are of uncertain origin, and the range of colors was limited. Many caches of ground ocher have been dug up, showing that the hunt for pigment was incessant. In the archeological debris are found round rocks that were pestles, flat slabs that were mortars, and animal scapulae that made the most elegant palettes.

The paint was applied in a surprising variety of ways, either cold or hot, to give strange effects. At the beginning it was smeared on with the fingers. As virtuosity developed, wads of vegetable fiber or tufts of hair or fur or feathers were used, and, finally, sticks with the ends chewed to shreds made the master's first brush. A most clever technique was invented at Lascaux. Very dry, very fine, pigmented powder was blown through a hollow limb bone onto a wet, greasy wall. The misty margins of wind-blown manes were so made and, often, the subtlest blending of soft shades.

A priori, with such discernment of shade, there had to be light. Cave art had to come after fire was conquered! Great torches, tiny tapers, and lamps were at hand. Flat,

hollow sandstone slabs have been found, charred at one end, clean at the other, exactly like the whale-oil lamps used by Indians and Eskimos today. Lamps of grease with dry-moss wicks burn with bright flames. In one of the caves a rocky cupboard in the wall was uncovered, and in it was a neat pile of these lamps. In Lascaux, on a shelf fronting the stage of the drama of the dead man in the Well, stood a row of these footlights made of stones brought from far outside the cave. They were found as they had been left, untouched for several hundred centuries! At Altamira many charred spots on the walls are the sites of candelabra made from torches that lit the great scenes of the master painters, and, roaming the region today, Cantabrian shepherds still light their caves with rolled birch-bark tubes for torches.

Art is man's most intimate response to life. It is as mysterious as man. Picture-making is one peculiarity of this altogether strange primate, and our view of what it means lacks dimension unless it is pointed up against the backdrop of the whole human scene. Man's course has run naturally through three phases. At first he was barely a man, but he ran around on hind legs carrying home-made tools, grunted signals to his group, and, with much faltering, finally found fire. As true *Homo sapiens*, it is generally agreed that he had a round head with a fairly small face and a cranium that could hold about thirteen and a half hundred cubic centimeters of brain. This all began about a million years back, before which time he had been rattling about, slowly stabilizing himself in competition with other, less precocious, two-legged playmates. During this, the longest and slowest, period obvious behavioral habits were shifting closely with

measurable change in appearance. Since he now stood only on his hind feet, his hands soon got busy grabbing, and, since his mouth was thus freed from grabbing, it got overly busy with gabbing.

All this distasteful forwardness was reflected in his bric-a-brac. The tools he made for teeth are called hand axes. They are points of brittle, chipped stone, quite as effective in a brawl as a broken beer bottle. Other equipment he may have had, but these unequivocal artifacts are found unchanged. With these he caught and killed little animals, and his aim in this training stage was to do bigger and better. He found that a barbed stone on the end of a stick made for better prehension—he could kill from farther away. Learning to handle fire was also a help. By the time he appeared on the European scene, that continent had endured three great glaciations, and he followed the retreat of the last northward as far as the present frost line.

An impending fourth glacier ushered in the second phase, some sixty thousand years ago. Relentlessly, the southward slide of cold polar blight sucked up oceans in brittle ice, changed land arrangements, shifted ecological pockets, climatic ranges, and intercontinental connections, and, of course, upset the proper, human way of life. Here was a dilemma crucial in the survival scene. But this funny fellow began to cook, to make warm clothes, and to get along with the cold. Now he moved north right into the snowy places. Here, herds of big herbivores roamed, and he found how to get his meat in different-sized packages, from mammoth to small deer, suitable to his diverse situations.

But to do this he needed greater poking power. The

answer was not just bigger spears. He devised a throwing stick to cradle his spear and gave an added shove to the shaft by a flick of the wrist at the end of the throw. This extension of the arm gives an impact something like that of a tennis racket on a ball being served. It has maintained its effectiveness for the Eskimo seal-hunter today. The several oscillations of the uncertain fourth glacier were somewhat inconvenient; first the ice sheets were shoved south and then hauled back a bit, but, with increased use of fire, man managed pretty well, and, pushing all over, he finally broke into the new world through Siberia. By the end of this era he had invented the bow.

At last the icecap shrank back toward the Pole. With the concomitant warmth and mildness came the third phase. The depression was over—man luxuriated. He tamed the animals he had once hunted, herded them, protected them from other hunters, and comfortably ate them at home himself. He planted and grew foods, made more penetrating instruments, and pushed farther and faster than ever. He poked noisily into every isolated place, ruining much of the earth's material—all of which compulsiveness has been feverishly accelerated to the present.

It is said that man is unique among animals because he can speak, or because he makes tools, or because he uses fire or paints pictures. Many other animals have complex communication systems; vide the insects. Some—apes, monkeys, and even birds—use tools of a sort. Animals have many complexities in common, and students have long been fascinated with the intricacies of insect societies and with the stability of primate and avian social hierarchies. The gap between the others and man may be

just *quantitatively* enormous enough that he has ever found it a bore to forgo the titillation of slipping himself into an especially elegant, custom-tailored category. The difference is surely because of all the mentioned things put together, but is it possible that each is but a symptom of one underlying thing?

Now look at the laborious climb in culture. Archeologists do it by naming the steps in the refinement of what materials and tools they can find. This is simply a finer division of the phases of which we have spoken. The Paleolithic or Old Stone Age is measured in three levels. The lower and middle levels have tools of earliest man and fit our first phase. Nearly any hard stone with a sharp chipped edge would do to catch, kill, cut, chop, or in any way make available some desirable thing. It was a very obvious, immediate extension of the prehensibility of the hand.

At the upper level the inventive tempo increased. Stones of this second phase were no longer just heavy hand axes. Size and form varied until they derived the beautiful laurel-leaf symmetry of the long, slim Solutrean blade. But this was not enough; prehension was eloiigned by wedging the stone on the end of a stick. These spear-heads were made with back-pointing barbs, the better to hold, to make capture more certain, and their prehensibility was projected with an excellent device, the throwing stick. But the very nicety with which stone chipped to make fine penetrating points was as much an exasperation as a convenience. When a dart hit hard bone, it broke. It fell out, and the larger prey either ran away or, turning on the hunter, became a greater nuisance the other way round.

Responding to this annoyance, a flurry in design and material released many new streamlined models; horn, bone, and ivory, more workable, less brittle, came in vogue. The advance of the hunter to a larger prey which supplied from its own body the very materials for its capture started a reverberating cycle in this sport that brought hunting skill to its peak. Nothing was too big to attack. At that time the northern grasslands were teeming with the strangest assortment of fat, well-fed grass-eaters the world has ever known, so that, scavenging in the garbage dumps of the ancient hunter, one senses the anxious gluttony of this insatiable carnivore—still, he painted beautiful pictures.

After this, for a time, his output waned to less exciting productions. Now he held the animals and no longer hunted them. Pure creative art died, but his weapons were slowly in the refining. Smooth, polished stone edges, thicker and stronger than the old, thin, splintered slivers in their turn gave way to the metal stiletto. This came with greater control of the flame.

The history of the use of fire overlaps the story of the stones. It was learned late in the first phase, long after the first use of stone tools, to be perpetually modified, long since the stones were discarded. The newborn flame was reverently coddled by the great hunter, for he could not make it easily, and he lived by its bright warmth and security. His incessant playing with fire can be laid out in a temporal catalogue of experiments in cultural attainment.

The first fire experiment made meat more digestible. Fire breaks down tough muscle meat and cracks bones. It quickens food assimilation. It makes bigger animals

eatable and makes smoke meat hoardable. When hunting habits shifted to herding and agriculture, the next experiment was in pot-baking—the pots to store grain. This went on in the open fire until the kiln was invented. By the time metal tools came, the fire was confined to roaring ovens where air could be pushed in and heat kept from leaking out, the crucial experiment here being a first try at the control of radiant energy.

But, above all, fire was found an awesome weapon and was ever lightly handled by this puttering little Prometheus. Fire drives were used to stampede and collect animals in cul-de-sacs for the kill. This was an adaptation for seizing on a great scale—mass prehension. With his smoking weapon, man singed the earth's skin, exterminating the lumbering, slow mammoths and mastodons and changing the character of continents. In America, elephants, camels, and long-horned bison are now only fossils; the major explanation of their mass murder is the premeditated use of fire. Even the great expanse of the midwestern prairies came out of the cultural stratagem of fire power so widespread among the aboriginal hunting Indians. Burning first coal, then oil, then gas to drive him and his machines faster and farther, the flame's energy output has been since stepped up, always, with the prided refinements of gunpowder and TNT, keeping its killing power in pacc.

And man himself is a terrible flame. He has oozed over the planet's face, now gradually, now in spurts, steadily increasing in numbers, his own energy burning inexorably through the protein of all the animals he has met, driven by anxiety over new survival fuel. The flame gets hotter. Even now he plays with the hideous dance of



those imagined particles that operate the cosmos, looking to find a fuel that may even fling him somewhere else in space, from which he will, uncontrollably, grope anew.

But this is a story about art. In its turn it is superposed on that of the stone tools and of fire in such a regular imbrication that it looks like a clue to its meaning. How this habit of expression was born is not easy to discover, but certainly from the first it was strung along with the strongest biologic drives. Most clever creatures have an awareness of the physical resemblance between things. Many animals mimic and survive thereby. Of man, all primitives do in drama and dance, copying gesture, posture, cry, and appearance. Stag horns and skins draped over the human predator attract the female red deer in the rutting season, showing a knowing of this resemblance in both the man and the deer. Ostrich feathers and skin attract the curiosity of this bird; a bison disguise allows close approach to the herd. As this is an aid that catches the prey, a conviction of its ghostly power has finally caught the man.

Dramatic art is mime and play. The dancing sorcerer captures the beast's spirit without stirring from camp, whereby the disguise, the mask, becomes more than mere symbol. It is some essence of the depicted itself. Decorative art seems come from this belief. All the Indian art of the American Northwest has been built about the theme of the mask, from the design on trunk to textile to totem pole.

Now the ability to see a sameness between a jagged rock and an animal is really an extraordinary feat. It must have followed closely the use of disguises that were

made of the actual parts of the animal. But the sequence of importance is the transference of meaning from the living thing—animal—to dead body parts of it—horns and skin—to a never animate thing properly shaped—a ragged rock. However, these things still retain a great deal of reality in that they are three-dimensional and so more compatible with habitual encounter in the workable world.

A greater step in the abstraction of transference emerged from the study of spoor. A hunter's obsessive following of footprints always led to a direct descent on the animal, so that the print itself had, to him, an obvious hold on the beast. He gained power from the print, which, being in nature nearly two-dimensional, he could reproduce in pigment on the flat rocks of his home. Many rocks in primitive South Africa are adorned with wandering trails of footprints.

The prints themselves score the origin of mural art, and, along with those of other animals, human hand-prints are found. They were made the same way they are still being made by those lost metachronistic souls still surviving. The hand is stenciled on stone, smearing or blowing pigment around the edges, so that a very accurate negative is recorded. That magic and symbolism were a part of the act is inferred from the fact that so often the stenciled hands are mutilated like those of living Bushmen, Australians, and some northwestern Amerindians, who lop off digits at different joints according to archaic sacred ritual.

Positive prints, both copied silhouette and direct impress of hands wet with clay or pigment, are seen first in the culture called Aurignacian at the opening of the sec-

ond great phase of human history. From these stained hands the art grew in arabesque meanders made by idly trailing greasy or muddy fingertips across a flat surface. These wavy "macaroni lines," as they are called, seem to be the first experimental play in marking cave walls. From accident to intent, it is a simple step to trace a recognizable outline. Copying footprints led easily to very naïve animal silhouettes that were pictured from above, just as the footprints themselves had been actually seen. They look like skins stretched flat before the fireplace.

And art is anxiety. It is obvious that a certain peculiar cerebration was required for the birth of art, but, even if it took a few gifted individuals, the wonder is why they did not crop up here and there wherever groups gathered. The evidence that we have is unequivocal on this point. Only certain groups were addicted to this specialized performance; other groups, though temporally and spatially related, took no part in it.

Tense hunters of the great stag and bull, of the woolly rhinoceros and mammoth, of the horrendous cave bear and the lion, were perpetually exposed to overwhelming visual impressions, to emotional crises where the event of the moment selected, instantaneously, the survivor. Who knew and performed well, only he came back to the cave. To make the portraits we have seen, a close intimacy with the look and feel and the habits of animals was vital, and this comes only from the daily experience of a big-game hunter. Coastal shellfish eaters, scratching for snails and periwinkles, or a stray slug or a cold clam—mud grubbers—though they lived nearby, they were not daily drenched in such shattering stimuli. Nor were the beginning herdsmen and planters. The world's most ag-

gressive carnivore became the creative artist. Where there was no great hunter, there was no great art. From one end of man's terrain to the other, at all times, it was the hunter who originated high art, whether in the early caves of the northern strip of Spain, in the southwestern half of France, or in the later rock shelters of the Sahara or Libyan deserts or on the open cliffs of South Africa.

As art progressed, it became a collective affair, no longer the act only of an individual; it became an orthodoxy, an institution, training the talented and retaining a style. In each period the style is recognizable, so that dating can be done from cave to cave, but it is always an index of the hunter's development, and it grew in parallel with the prehensibility of his tools.

It is usually said that great art flourishes with leisure and security—not so! The magnificent, the significant, art dwindled with the lapse into sedentation at the beginning agricultural third phase. Here decorative fiddling was delightfully indulged, certainly not powerful, striving expression. Of course, the farther from the primal source, the vaguer the connection becomes; but in the big panorama art again grew to reach great heights in the most aggressive, the most presumptuous, the most covetous cultures. Anxiety stands clear in the art of the earliest of these. Certainly at some time most of us have been impressed with the fact that death seemed the only thing early Egypt was capable of contemplating.

At first sight, many modes of behavior seem not only functionless in the utilitarian sense but totally detrimental biologically. But first sight is often in error. Eskimos live constantly right on the survival edge—either they attend today to serious business or tomorrow they will

not be here. Anthropologists consider them a highly efficient, well-adapted, happy people. They practice peculiar rites. On the trail in search of food when it is very scarce, the angokok may call a halt, have an igloo built, and conduct his own special magical mass. His thoroughly debilitating antics induce his own trance, invoke group hypnosis, and conjure up all sorts of frightful hallucinations, even to visions of the quarry. It seems contrary to the theme of natural selection. However, knowing of the hysterics of "snow madness" and other such neuroses as do afflict the Eskimo, this exhausting ritual probably has effective survival value. It purges doubts, synchronizes behavior rhythms, and so, by relieving general anxiety, ultimately unifies group perseverance in the hunt until a seal finally gets stuck with a spear.

To make words about pictures is really sort of silly. It is the most defeating objective imaginable. But art is a biologic affair, and the notion derived here must now be quite obvious. Art is an attempt to attain some distant, vague thing. It is the very act of striving, reaching, groping. And "grobe" is the precise word, akin to the Anglo-Saxon *gripan*, "to grasp, to seize and hold," derived through the Old English *grapian* = *grap* = *grasp*, "to use the hands in feeling, touching, or grasping." "Prehension" is defined as the "act of taking hold, seizing, or grasping." I simply suggest that art is an abstraction of prehension. It is a symptom of the not distant enough, aggressive past. It serves to assuage anxiety.

Music, the newest of the great arts, is the latest layered cultivation, overlapping its predecessors as they did, each one in its turn. In our model of temporal imbrication of cultural accretion, it reaches for peaks of expression

STROKE OF FLAME

perhaps after painting has passed its quintessence. It is effective in similar mystic ways. Maybe it is the next step in abstraction. It has no scene, no object, no fact. The artist may be quite right in thinking he leads the way, always ahead of science, philosophy, and the rest of it. A little lick of flame showed us the beginning of art, but man gave greater illumination to the dark caves with his own desperate anxiety. His life light fears most the darkness and cannot abide any thought of its own extinction. Does the poet know it better?

For who would lose,  
Though full of pain, this intellectual being,  
Those thoughts that wander through Eternity,  
To perish rather, swallow'd up and lost  
In the wide womb of uncreated night.

MILTON, *Paradise Lost*

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