Not so very many years ago, the primary aim of those studying Paleolithic art was to catalogue it, to define different styles, and to arrange them (based on superposition and the “logic” of stylistic evolution) in a developmental sequence (Breuil 1974). Sometimes, artistic depictions were convincingly interpreted as faithful reflections of the external environment (González Echegaray 1974) or, less convincingly, as enigmatic representations of religious symbols (Luquet 1926). From the totally a priori premise that the Paleolithic artist was only rarely capable of conceptualizing multifigure compositions (groups were explained as simple juxtapositions), the isolated individual depiction was ordinarily the datum for investigation (Breuil and Lantier 1959: 245; Hawkes 1963: 197). Most prehistorians recognized that one aim of Paleolithic art was to convey information to the artists’ contemporaries. But it was only belatedly, after the stimulation of Annette Laming-Emperaire (1962) and André Leroi-Gourhan (1964, 1965: 110, 194), that there was any general awareness that Paleolithic figures often occur in meaningful associations, or that information about the complementarity or opposition of meaning might be gleaned from a study of grouping and the spatial relations between figures or compositions. As Leroi-Gourhan himself observed, despite the difficulties in dating parietal art, the
figures on cave walls are still in the places where prehistoric men put them, and their placement and associations imply something about their meaning (Leroi-Gourhan 1964: 8, 82).

Most prehistorians who have tried to get at aspects of the significance of prehistoric art from a firsthand study of its documents will have noticed that certain figures, by virtue of their anomalous treatment, stand out from the rest of the depictions accompanying them. It seems very likely that these figures have been singled out to call particular attention to their special meaning. They may even be foci towards which other information encoded in a set of figures is directed. But, whatever its motivation, the enhancement of particular figures deserves the especial attention of the investigator, even if the analysis does not lead in any obvious way to clearer conclusions about the depictions as a whole.

A discussion of Paleolithic figure enhancement will at least provide a basis for more detailed comparisons of artistic conventions at different times and places. We may even hope that such a study might potentially add to a corpus of evidence of eventual utility in comparing and contrasting the mental processes of particular Paleolithic and modern groups.

To the best of my knowledge, Paleolithic figure enhancement techniques have not before been catalogued, although most interested specialists have a more or less impressionistic feel for them, and certain have been discussed by others in some detail. The most meticulous and thorough treatment of some aspects of the topic to date is contained in André Leroi-Gourhan's *The Dawn of European Art* (1982), though enhancement as such is not specifically discussed in that work.

This chapter presents a rough sketch of some commonly observed devices used by Paleolithic artists to give particular features special impact. Though it enumerates the techniques I am aware of, it must still be incomplete; it is published in the full expectation that it will be criticized, amplified, modified, or rejected by my more knowledgeable colleagues. I hope that in the process we will all be led somewhat closer to an understanding of Paleolithic art.

Figure enhancement is a process that involves both the artistic depiction and the perceptual apparatus of the viewer. It does not exist without the participation of both. Consequently, the recognition and appreciation of particular techniques of figure enhancement can never be entirely objective; an element of subjective judgment is always involved. Provided that the judgmental element is informed, the process is not stigmatized. There are many complex problems of qualitative evaluation and pattern recognition that are more rapidly and effectively done by the human analyst than by the most elaborate “objective” electronic computer in existence. It is interesting to note that the creative aspect of mathematics, too, is the discovery of systems or theorems by plausible reasoning or informed guesswork. Only after the creative phase can one proceed to quantitative proof of the theorem by the objective, rigidly formalized procedures of demonstrative mathematical reasoning (Polya 1973). Pattern recognition and evaluation are among the many areas where the dichotomy between “art” and “science” proves false, where scientist and humanist are one.
Many figure-enhancement procedures are notable only when a single figure or group is examined in the total context of its relationships to other depictions, or to the topography and surface conditions of the walls, ceilings, and floors of the galleries where it is found. Thus, for definition of enhancement techniques, three elements are always involved: the depictions viewed, the surroundings in which they are viewed, and the impact they produce on the viewer. It might reasonably be objected that a depiction would have meant very different things to a Paleolithic observer than it means to a modern one. Animals must have meant something quite different to those who depended on the hunt for their daily survival than they mean to the prehistorian raised and trained in today’s urban industrial world. There is no doubt that some aspects of the meaning of Paleolithic figures can never be recovered. But it is a fact that many Paleolithic animal figures are recognizable and even judged realistic by a modern viewer. What is more, as the student learns more about the depicted animals and their behavior, seemingly irrelevant or inexplicable details of the Paleolithic figures are seen to be reliable indications of coat condition, or stereotyped activity appropriate to a particular season, a temporary phase of development, or cyclic behavioral phenomena.

These observations show that no wide gulf separates the perceptual apparatus of Paleolithic artist and modern viewer. When certain figures stand out strikingly from the ordinary run of depictions in a site, gallery, or composition, from our point of view, we may assume that the artists also recognized their unusual character, whether they consciously intended the figures to stand out or not, and regardless of the deeper symbolic meaning of the enhanced depictions. It is very possible that on occasion the nature and relationships of an enhanced figure and the technique of enhancement might indicate aspects of its symbolic content or directions of further research that would lead to future understandings of its value. For present purposes, however, that possibility is of no immediate concern; my principal aim is the categorization of the techniques, not the elucidation of motives and meanings.

A PRELIMINARY CATALOGUE OF ENHANCEMENT TECHNIQUES

Isolation

No one can fail to have noted that viewing figures that have been hidden away in inaccessible nooks, pits, or galleries, or unexpectedly coming upon figures after passing through long passageways that are completely devoid of art, heightens the viewing experience and our appreciation of the art. It strongly suggests that the figures were intended to be out of the ordinary, even though they may be sketchily rendered or technically and stylistically average for the site. The line drawings in the puits at Lascaux draw our attention by their isolation, reinforcing the impact of their unusual subject matter (Leroi-Gourhan and Allain 1979; Laming 1959). The same may be said of the figures in the cupola at La Pasiega and the narrow scutiform-lined passage at the end of a gallery at the same site (Breuil, Obermaier, and Alcalde del Río 1913). (Many other cases are known, but I intend here simply to give one or a few
illustrative examples of each technique, rather than attempting the kind of exhaustive listing that only someone far more expert in the specialty could provide.)

**Size**

Figures that are either very much larger or much smaller than other depictions nearby attract our interest because of the size contrast. Figures such as the polychrome hind on the ceiling of the Sala Grande at Altamira stand apart from the rest of the polychromes in relative or comparative size; the polychromes contrast in relative size with the smaller outline and monochrome figures on the same ceiling and adjacent wall.

The size of the polychrome figures is also impressive in a more nearly absolute sense, however. They are quite large, and when viewed from the contemporary gallery floor, which brings the viewer’s eye very close to most of the paintings, give an impression of much greater size (Breuil and Obermaier 1935). The viewer can feel almost overwhelmed by their scale. From most observer positions, complete overviews of figures in their integrity are difficult or impossible to attain, since one cannot easily stand back far enough from them to take them in. Some of the human heads at the Cueva de Hoz (Barandiarán et al. 1981) are monumental in scale in an absolute sense; considerably larger than a human viewer, they produce a similar, awesome effect. The disproportionate size of the large bulls in the main hall and axial gallery at Lascaux (Bataille 1955: 50–90; Leroi-Gourhan and Allain 1979) is another obvious example.

**Attitude**

Certain animal figures are arranged in postures or attitudes that contrast notably with other figures in their surroundings or with what the viewer supposes to be the “normal” pose of an animal at rest. Sometimes, as in the case of the “leaping” cow above the frieze of little horses in Lascaux’s axial gallery (Bataille 1955: 85), an animal may be pictured at the height of some exaggerated action, legs violently doubled or stretched and extended. Other examples are the galloping horse at Font de Gaume (Breuil 1974: 82) and the galloping bison, formerly misidentified as a wild boar, on the great ceiling at Altamira (Freeman 1978: 171).

Sometimes animals are shown upside down, feet in the air, or in other unusual postures, suggesting that they are falling. There is such a “falling” horse at Lascaux in the axial gallery (Bataille 1955: 81), and a head-down, vertical bison at Altxerri (Altuna and Apellániz 1976: 63; Leroi-Gourhan 1982: fig. 68). On the other hand, there are depictions of attitudes that are less agitated but nevertheless striking. At San Román de Candamo (Hernández-Pacheco 1919: 61, 62) two stags are shown with necks outstretched, open-mouthed, in the stereotyped “belling” posture of the rut. One (perhaps both) is shown transfixed by spears. Another stag, apparently riddled by wounds, turns his head to look back, possibly at his pursuers (Hernández-Pacheco 1919: 64). At Covalanas, a group of does is shown with heads raised and ears pricked.
up expectantly. One turns her head to look behind her (Alcalde del Río, Breuil, and Sierra 1912; Apellániz 1982: 72). Although there is no indication of agitation in these figures, an attitude of tense vigilance prior to flight is perfectly conveyed.

In the case of the stags from San Román, just mentioned, the mooing polychrome bison cow on the ceiling of the Great Hall of Altamira, shown with back arched and tail upraised (Breuil and Obermaier 1935), or the engraving of a female bison mounting a male in the final gallery at the same site (Freeman 1978: 175), the attitudes depicted are stereotypical postures that characterize animals in breeding condition. In this case, the “enhancement” of the animal figures conveys information to the viewer about their condition. Since they are seasonal breeders, one aspect of this information has implications about seasonality, suggesting that the artist was concerned with, and particularly intended reference to, a specific temporal period. Of course, the season depicted need not necessarily have been the season when the work was executed.

**Omission**

Some figures are made more noticeable by the omission of part of the body. Jordá has described a composition of headless deer and bovids from Los Pedroses in Asturias (1977: 75, 124–26), unusual in that it includes so many figures subjected to this treatment. Several other painted caves contain one or a few headless animals. Bodiless heads are also well represented: the small black outline horse’s head from Las Chimeneas in the Castillo complex in Santander, the finger-engraved heads of deer and bovids on other panels at the same site, are familiar examples (González Echegaray 1963). Sometimes, just the forequarters or hindquarters of an animal are depicted; the former technique is also represented at Las Chimeneas as well as elsewhere.

We must distinguish between three kinds of incomplete figures, however. Deliberate omissions, such as those just discussed, must be separated from figures which were originally complete, only to lose parts by fading, leaching, or surface alteration of the rock; they should also be differentiated from figures produced by the following technique.

**Shadow Completion**

In this case, the figure of an animal is incompletely indicated by painting or engraving. The missing parts are supplied, or better suggested, by shadows from irregularities of the natural rock surface, under appropriate illumination. The technique is more common than is usually supposed. The dorsal line and hindquarters of a large deer or bovid at Covalanas are shown in this way (Alcalde del Río, Breuil, and Sierra 1912: plates 13 and 14). At Castillo, a fissure forms the back of a black outline bison and irregularities on a stalagmitic column form the hump, back, tail, and hindquarters of another almost sculptural bison, partly engraved and partly painted, and depicted in a strange vertical attitude (Alcalde del Río, Breuil, and Sierra 1912: plates 84–86). A bison at Tito Bustillo is formed in this way. Virtually its whole outline is
suggested by the shape of the natural rock surface, and decoration serves only to fill in detail (de Balbin and Moure 1981: plate 1). The dorsal line of a bison at Ekain is suggested by the same technique (Altuna and Apellániz 1978: photo 14B). The beak, eye, and chest of a bird at La Pasiega are also suggested in like fashion.

Sometimes, irregular projections from cave walls or ceiling suggest animal heads or grotesque “masks,” like those at Castillo and Altamira (Alcalde del Río, Breuil, and Sierra 1912: plates 85 and 86; Breuil and Obermaier 1935). At Niaux, three cup-shaped natural depressions suggest wounds on a bison’s flanks (Breuil 1974 [1952]: 192), and a cavity, “completed” with black antlers, suggests the head of a deer (Leroi-Gourhan 1982: fig. 37). Perhaps the use of rounded bosses to give a three-dimensional quality to the polychrome bison at Altamira should be considered a variant of this procedure.

The technique, wherever it occurs, couples a mastery of form and the media of execution with an admirable economy of means. Its use was extremely widespread, as I have already noted.

Caprice

This is the first of three categories of deformed figures. Under this rubric I include deformations that produce unrecognizable animals or nonexistent monsters of all kinds and hybrids. To be judged a caprice, an unrecognizable animal has to be shown in sufficient detail to permit its recognition were it a real, living creature, so its ambiguity springs not from omission of relevant detail but from distortion. The “Licorne” at Lascaux is doubtless the best-known example (Breuil 1974 [1952]: fig. 89; Bataille 1955: 30, 49, 62). I find the suggestion that this is actually intended to be a Tibetan antelope totally unconvincing—its horns project forward, not backward as in *Pantholops*, body shape and coat color are all wrong, and the chunky, square snout is totally unlike the graceful, elongated muzzle of the antelope (see Walker 1964: 1464 for an illustration of *Pantholops*).

Hybrids combine in one depiction the features of two or more recognizable animals. The most familiar of these are anthropomorphic bodies with animal-like heads, such as the so-called sorcerers at Les Trois Frères (Breuil 1974 [1952]: 164, 166) and Gabillou (Leroi-Gourhan 1965: plate 58). The three published “masks” of Altamira apparently depict bison, but each is ambiguous enough to suggest human features at the same time (Breuil and Obermaier 1935: fig. 32, plate L; Ripoll 1980: 48; Leroi-Gourhan 1965: plates 402–4). The recently discovered stone face at el Juyo (González Echegaray and Freeman 1981, 1982; Freeman and González Echegaray 1981) is a human-feline hybrid, interesting in that its two natures are laterally differentiated. The so-called ornithocephalic anthropomorphic figures that appear with relative frequency in Paleolithic art should be included in this category if they are convincingly bird-headed, but the beaked appearance of at least some of the figures, like those at Addaura (Leroi-Gourhan 1965: plate 710), may simply result from a desire to make human features unrecognizable by summary rendition of the face. The head of the anthropomorph from the pit at Lascaux is so similar to the head of the...
bird on the staff or spear-thrower beside him that he, at least, must be classed with the hybrids (Bataille 1955).

**Caricature**

This second category includes those figures which, though deformed, are neither hybrids nor anamorphoses (see below) and remain generally recognizable though distorted. It is often hard or impossible to tell, when considering a distorted figure, whether it was simply clumsily executed or really intentionally distorted. If the latter, it may be difficult to tell whether the distortion is a manifestation of a widespread stylistic convention or a means of singling out specific figures for emphasis.

There are, however, two rules of thumb for recognizing stylistic conventions that are valid for more recent artistic products, and might be expected to have validity for Paleolithic products as well. First, a stylistic convention for the depiction of a particular creature should be similarly represented each time that creature is portrayed by artists sharing the convention. So, one might expect that when distortion is used as a stylistic convention one would find that several animals of the same sort in a site are distorted in the same ways. If that is not the case, stylistic convention cannot be absolutely ruled out, but seems a less probable explanation. Secondly, while stylistic conventions unify the members of the artistic community sharing them, they simultaneously serve to differentiate that group from others. Any artistic phenomenon that has near-universal distribution and extreme longevity is not likely to be a stylistic convention.

The frequency with which the facial features are distorted in Paleolithic depictions of humans (Abramova 1966) strongly suggests a conscious or unconscious resistance to “naturalistic” rendition of those features. Despite claims to the contrary, there is no convincing portraiture in Paleolithic art. All human depictions of the time are noticeably distorted. Human depictions thus form the clearest, most convincing set of caricatures.

The frontal view of a human face from Marsoulas (Leroi-Gourhan 1964: plate 59) is an evident caricature. Features sketchy, malformed, and “cartoon”-like, it is nonetheless perfectly evident that a human visage was intended. Certain human faces from La Marche (Pales and Tassin de Saint-Péreuse 1976: plates 5–6) and Trois Frères (Breuil 1974 [1952]) are caricatures in similar fashion, as are the human heads from Fontanet (Delteil, Durbas, and Wahl 1972).

Convincing examples of caricatured animals are not difficult to find. But, the near-universality of caricature in rendering human features makes anthropomorphic figures the clearest and most obvious manifestations of caricature as a figure-enhancement device.

**Anamorphosis**

This is a most interesting and potentially informative category of deformations. Anamorphosis is the systematic distortion of a figure to make it appear either unrec-
ognizable or extremely deformed, but is different from other deformations in that when examined from one particular angle or when viewed with the appropriate apparatus, such as a curved mirror, the distortion disappears and the figures resume a more naturalistic appearance (Baltrusaitis 1969; Leeman 1976; Lanners 1977: 52–55).

For present purposes, cylindrical anamorphoses and others intended to be viewed with mirrors may be ignored, since there are no known examples in Paleolithic art, nor are there Paleolithic mirrors.

Two-dimensional linear anamorphoses may be regular or progressive. In regular linear anamorphosis, measurements of the figure depicted are greatly exaggerated in one dimension, compared to the other. When the depiction is tilted, to bring it more closely parallel with the line of sight, and viewed along the exaggerated dimension, the distortion apparently vanishes. In progressive anamorphosis, distortion progressively increases in parts of the depiction that are further away from the intended viewpoint. Regular linear anamorphoses will appear normal from either of two opposite viewpoints, but a progressive anamorphosis is designed to be viewed from just one position and in one direction only. The polychrome hind on the ceiling of the Great Hall at Altamira (Leroi-Gourhan 1964: plate 109) seems to be a progressive anamorphosis. The degree of distortion in the figure is relatively small, but the hind looks much more naturalistic when viewed from a position in front of and below her elongated muzzle. Among the anthropomorphic figures engraved on small objects from La Madeleine are at least two that seem anamorphic (Capitan and Peyrony 1928: fig. 30, no. 3, fig. 30 bis; Leroi-Gourhan 1964: plates 440 and 442). Several of the human heads from La Marche are convincing anamorphoses (Pales and Tassin de Saint-Péreuse 1976).

Some years ago, in a conversation with John Pfeiffer, I mentioned that I thought these La Marche faces and the Altamira hind were anamorphoses, and in his recent book The Creative Explosion (1982: 42), Pfeiffer extends that interpretation to the figure of a horse at Tito Bustillo and the head of a bull at Lascaux. In fact, several of the Lascaux paintings seem anamorphic, particularly the black-headed red cow in the axial gallery and the black horse with engraved outline in the nave (Bataille 1955: 73, 97). There is some justification for suspecting anamorphism whenever an animal is depicted with anomalously small or excessively elongated body parts, particularly if the body and the hindquarters are very large and robust while head and neck are elongated and small.

The recognition of anamorphoses in Paleolithic art came to me as a shock, since I had been taught that, like recognition of the vanishing point and the discovery of linear perspective, anamorphosis was an artistic innovation of the Renaissance and that the oldest preserved examples are Leonardo da Vinci’s sketches of an eye and a child’s face from the Codex Atlanticus (ca. AD 1480). There are, of course, differences between Paleolithic and Renaissance anamorphoses. Da Vinci and his successors apparently constructed their anamorphoses with a proportional grid, developed from an understanding of regular geometric constructional principles, incorporating precise mathematical rules for perspective depiction. No such rigorous system was utilized by Paleolithic artists, nor was one needed. Perfectly effective anamorphoses can
be constructed entirely by eye, by a lone artist if the decorated space is small enough, or by an artist and an assistant if it is larger. In the latter case the artist, occupying the position that the viewer will later be obliged to take, simply projects his vision of the figure against the background, and has an assistant mark a number of points that when united will determine the outline. Small, handheld slabs can be poised vertically, nearly parallel to, rather than perpendicular to, the line of sight, and kept in this position while they are decorated with a depiction that seems naturalistic from that perspective. When such decorations are viewed normally, they will prove to be anamorphoses.

Renaissance anamorphoses often distort the subject so as to render it completely unrecognizable from any viewpoint other than the correct one, while figures anamorphosed by Paleolithic peoples are always recognizable, though distorted. Nonetheless, the principle of anamorphosis, as a perspective distortion that can be normalized by the perceptual apparatus under specifiable conditions, remains the same, whether we are concerned with Paleolithic or Renaissance examples.

Pfeiffer’s summary mention of anamorphosis as an odd diversion in Paleolithic art misses the point. It is more than an exotic kind of visual punning. It is an ingenious technique of figure enhancement, for a properly constructed and viewed anamorphosis seems to float free in space, at right angles to the decorated surface. Since proper viewing places the spectator in a specific position, anamorphosis is also direct evidence about the direction from which a figure was intended to be approached, and in combination with other clues provided by fixed depictions and their surroundings, may permit the reconstruction of the Paleolithic “itinerary” for viewing a series of figures. Once direction of approach is determined, the order of viewing of a sequence of figures may also be established. Last, because the figure is viewed at an acute angle, it is always presented to one side of the visual midline. This fact may tell us much about lateralization of function in the two cerebral hemispheres of Paleolithic artists and their audiences, about the kinds of “meaning” the figures were intended to convey, and about the ways in which the information they contained was processed in the cerebral cortex (Springer and Deutsch 1981: 30, 64). Anamorphosis is potentially one of the most informative techniques in Paleolithic art.

**Positioning**

A figure may gain in impact by being displayed in a position that dominates the spectator’s viewpoint. Depictions on cave ceilings, such as the polychrome figures at Altamira, may overwhelm the spectator by their relatively large size, as mentioned above, but this effect is exaggerated by the fact that they are executed on the ceiling and force the viewer to take an awkward position, concentrating his attention on the polychromes and excluding other stimuli from the surroundings. Sometimes the viewer is “anchored” in a particular spot to view a depiction. In the so-called throne room at La Pasiega, a natural rock formation, polished by use, forms a seat. When used, this almost automatically directs the spectator’s gaze to a large painted bison.
Viewing the animal figures in the cupola, or the tectiforms in the narrow fissure ending Gallery A at Pasiega (Leroi-Gourhan 1964: fig. 134), similarly fixes the spectator’s viewpoint.

**Framing**

Some figures, even some groups of depictions, are enhanced by enclosure within a natural frame. They are thus separated from other figures and, when illuminated properly, stand out from their surroundings with striking clarity. Perhaps the best known example of this technique in Spain is to be seen in the “Camarín” in the Peña de Candamo. The Camarín is a cavity with an ashy bluish background bordered by stalactic formations. Several figures populate the cavity, but most impressive is a horse, in sienna, that contrasts markedly in color with the background. When the Camarín is illuminated from inside, its figures suddenly, magically appear “outside” the dark cave environment as though one were looking out to a sunlit exterior, and the horse almost seems to come alive (Hernández-Pacheco 1919: 51, 52, plate 10; Gómez Tabanera 1975). The effect must be seen to be believed.

**Discovery**

The sudden discovery of a depiction which is hidden by obstacles from all but one particular point of view can greatly augment the impact the figure causes. The final corridor in Altamira is so narrow, tortuous, and low that the visitor must shuffle along, often bent nearly double, continually glancing from the ceiling and walls of the gallery to its floor to avoid blundering into a projecting rock, slipping, or stumbling. At one point he must pick his way over and around several large fallen blocks, as the tunnel veers left. Suddenly, within inches of his face, a grotesque mask, half-animal, half-human (Leroi-Gourhan 1964: plate 403), pops into view at eye level on the left. The experience even startles those who are intimately familiar with the gallery, if they come upon the mask while distracted. To the neophyte, it can be nearly heart-stopping. The trick is obviously intentional—it is repeated in similar fashion several times in the final gallery.

**Counterpoise (Counterposition)**

Any of the techniques listed earlier could serve perfectly well as a means of adding impact to a single isolated figure. Counterpoise and all the techniques that follow require multiple figures or a combination of a figure and a scenic ground for their execution.

In counterposed depictions, similar figures are opposed to one another in a balanced composition. The similarity displayed may be one of color, size, “style,” or kind of animal represented. This technique is treated somewhat differently by Leroi-Gourhan (1982) in his discussions of “symmetry” and “partial overlapping.” The red-brown cattle on opposite sides of the axial gallery at Lascaux (Bataille 1955: 76)
are a fine example of counterposed figures, one of which is further counterposed, head to head, to another red bovine on its own side of the gallery. In the main hall at the same site, the opposition of two large black and white bulls on the “left” wall and the two bison shown tail to tail in the nave are similar cases (Bataille 1955: 46, 50–52, 105), as is the pair of polka-dot horses on the large panel at Pech-Merle (Lemozi 1929; Breuil 1974 [1952]: 270–71). At Le Portel, a pair of bison confront each other in such a counterposed composition (Breuil 1974 [1952]: fig. 216). The number of other similar cases is too numerous for detailed discussion of this point.

The spatial symmetry of a counterposed composition need not, of course, be absolutely perfect, nor do the animals or signs depicted need to be absolutely identical.

**Complementarity**

This technique is similar in some respects to that of counterpoise, except that here, instead of having a spatially symmetrical repetition of figures, an element of dissimilarity is injected. Moreover, the spatial arrangement of complementary figures need not be symmetrical at all; the figures need only be close enough to one another to be grasped by the viewer as related, though their complementarity need not be immediately perceived. In some cases, complementary figures are united by a relatively evident theme—that is to say, a theme that would have been recognized by prehistoric hunters familiar with the behavior and stereotyped attitudes of the wild animals they pursued. Though rare, there are some Paleolithic depictions of sexual complementarity—males and females are occasionally shown together, in stereotyped courtship postures. One convincing example is the pair of bison from the final gallery at Altamira, mistakenly identified by Breuil as a paired mammoth and bison (Breuil and Obermaier 1935: 85; Freeman 1978: fig. 4). Denise de Sonneville-Bordes reports an example in the frieze of horses from la Chaire-à-Calvin (1963: 187–90, plate 9). Several decorated bone and stone objects from La Madeleine and one from Abri Morin depict paired animals or heads, sometimes different enough in size to suggest sexual dimorphism (Capitan and Peyrony 1928: figs. 20, 38, 54, plate 15; de Sonneville-Bordes 1975: figs. 27 and 28). In the Morin case, a bison family of male/female and calf seems to be depicted.

Annette Laming-Emperaire (1962) and André Leroi-Gourhan (1964, 1965, 1982) are to be credited for having called attention to another kind of complementarity in Paleolithic art. This is the statistically detectable relationship between different animal species and between specific animals and specific “signs,” more particularly the complementary opposition of horses on the one hand and wild cattle or bison on the other. Leroi-Gourhan notes that this opposition may be underlined by the relative size and number of depictions of the kinds of animals involved, the dominant type of creature in a panel being stressed by the average size or abundance of its representations (1982: 60). Other kinds of animals are often shown in marginal positions near groups of these fundamental species and still others are often hidden away near the ends of assemblages or in nearly inaccessible interior corridors, in even more...
peripheral situations. Such observations as these have made Leroi-Gourhan’s work the central stimulus to the study of spatial and numerical relationships of Paleolithic parietal figures in recent years (this chapter is, of course, just one more in the series of offshoots from that trunk). Leroi-Gourhan’s thesis, and the documentation provided by his sketch-maps and the superb photography of Jean Vertut, are too well-known to need further discussion here.

**Repetition**

There are a number of cases in Paleolithic art of the repeated depiction of figures of the same “kind” (whether animals, anthromorphs, or geometrics) in close propinquity on a single panel. The fact that the polychrome figures on the ceiling of the Great Hall at Altamira are broadly similar in style and technique of rendition (though certainly executed by several artists) as well as size (between one and a half and two meters in maximum diameter), position, and orientation (the reclining figures all with heads in the same direction, backs more or less perpendicular to the backs of the standing bison nearest them, the ground line for the standing figures more or less in the same general direction, rather than random, and never completely opposed), and the lack of overlap or superimposition of adjacent figures are the strongest possible arguments that the Paleolithic artists intended them to represent a single integrated composition whose impact would be reinforced by sheer repetition. I have argued that at least two of the so-called wild boars in this group are mistaken identifications of other bison (Freeman 1978: 168–71), and that opinion has been accepted by others including Moure (1981) and Apellániz (1982: 55). The reclassification of these figures makes repetition even more important to the composition, of course.

In this case, repetition is an incentive to the viewer to search further for a unifying meaning of the figures. The makeup of the group of bison, incorporating as it does both adult males and females, indicates that the artist intended to depict a herd of bison at the season of the rut (Freeman 1978). This meaning has been overlooked by scholars who have treated the animals as so many unrelated individual depictions.

Some examples of repetition in Paleolithic art are even more obvious. The line of little horses on the right wall of Lascaux’s axial gallery or the five stags’ heads along the right wall of the nave, postures suggesting they are swimming in a stream indicated by a linear discolored patch on the wall into which their necks merge (Bataille 1955: 69, 95); the sculpted friezes of horses at la Chaire-à-Calvin (de Sonneville–Bordes 1963) and Cap-Blanc (Roussot 1965, 1972); the painted friezes of mammoth and rhinoceros in the Breuil Gallery at Rouffignac (Nougier and Robert 1959; Leroi-Gourhan 1965: figs. 535 and 536); that of bison at Font-de-Gaume (Breuil 1974 [1952]: fig. 39; Leroi-Gourhan 1965: fig. 527); and the economically depicted herds of reindeer and horses on small bone objects from Chaffaud and the Grotte de la Mairie at Teyjat (Barandiarán 1972: 345) sufficiently illustrate the popularity of repetition as a figure-enhancement device.
techniques of figure enhancement in paleolithic cave art

Such scenes are so widespread and so clearly compositional that one wonders how so many authorities before Leroi-Gourhan could have glibly and totally denied the existence of true compositions in Paleolithic art (Hoernes and Behn 1928: 44; Pittioni 1949: 60; Clark 1961: 56; Clark and Piggot 1965: 92; Hawkes 1963: 197).

Outlines of human hands are also frequently massed together, as, for example, at Castillo (Alcalde del Río, Breuil, and Sierra 1912: plate 65). At Pindal, sticklike figures, some ending in hand shapes, are arranged in two groups, one above the other (Alcalde del Río, Breuil, and Sierra 1912: plates 24 and 27). The occurrence of other kinds of geometric signs in masses of repeated shapes, as in the gallery of discs at Castillo, the dots at Trois Frères, the group of teardrop shapes before a fish at Pindal, the series of six claviforms beneath a bison at the same site, or the repeated tectiforms at Pasiega and Castillo, is more the rule than the exception (Breuil 1974 [1952]: fig. 124; Alcalde del Río, Breuil, and Sierra 1912: plates 39, 43, 69, 77, and 78).

In some cases, figures are repeated over such a large area that the grouping cannot be viewed as a whole from any single place; such series more properly exemplify the next technique.

Progression

Progression also involves the repetition of similar depictions, but ordinarily the repeated figures are separated from one another by some distance, so that instead of being grasped nearly at once, the series of similar figures is revealed by degrees. Recognition of the similarity of separated figures sharpens the viewer’s attention, arouses the anticipation of other related depictions, stimulates a more active scanning of the visual environment, and creates suspense. It is the same device used in so many horror films, to such effect.

The masks in the final gallery at Altamira are a superb example of the successful application of the technique; the discovery of six previously unreported masks in 1981 brings the total of these figures to nine. The first examples encountered after entering the gallery are a pair of masks that confront each other across the narrow corridor. However, the left-hand mask is hidden from the entering visitor’s view. After negotiating a hairpin bend and some meters of undecorated corridor, another mask springs into view on the visitor’s right. A few meters further on, another hybrid visage peers out on our left. Then one comes to a widening in the corridor, where two masks are visible on the left (though, like the last, these are better seen on the return). As the passageway narrows again, another mask is seen on the right. On exiting through the wide chamber, the visitor sees two more masks that were previously hidden and, just before leaving the corridor entirely, he finds the formerly invisible member of the opposed pair before him. The mysterious quality of these three-dimensional faces, half-animal but still eerily human, is sufficient by itself to awe the viewer.

Combined with the technique of discovery, the masks appear as startling and monstrous apparitions. Suspense built by the use of progression can make a visit to this gallery a not-to-be-forgotten adventure. On leaving the constrained environment
of the final gallery, one continues to fancy that still more visages lurk among the irregularities of the cave in other areas (in fact, some probably do).

In the preceding section I mentioned that some continuous (or discontinuous) repetitions of signs extend for very long distances, as at the gallery of discs at Castillo (Alcalde del Río, Breuil, and Sierra 1912: figs. 109 and 110, plate 69). Sometimes, similar geometric forms are repeated where there are important projections (as at Pindal), or at the entries of narrow, or dangerous, or important passageways (Alcalde del Río, Breuil, and Sierra 1912: 69). Such uses of progression seem to me different from the cases discussed earlier. One wonders whether these may not be “indexical” signs, like danger signs or direction indicators along a highway. (That interpretation has been suggested independently by other authorities.) Only a small amount of additional research would be needed to establish or reject the suggestion for particular caves on empirical grounds.

“Landscaping” (Use of Natural Formations as Scenic Supports)

Natural formations on cave walls and ceilings are frequently incorporated into compositions as scenic devices. The case of the San Román “Camarín” has already been discussed. Probably the commonest device of the type is the use of a natural ledge, crack, concavity, or discoloration to suggest a ground line, along which animal figures walk. The technique is used at Font-de-Gaume, Lascaux, Rouffignac, and elsewhere (Leroi-Gourhan 1982: 27–28, plate 69). Sometimes the naturally suggested ground line is tilted rather than horizontal, and the animals are tipped to follow the slope—as, for example, at Las Monedas and Le Portel (Ripoll 1980; Leroi-Gourhan 1965: plates 64 and 66).

More unusual and more striking is the use of the edges of voids produced by cracks, hollows, and corners to suggest cliffs over which animals fall, or pits into which they tumble. A bison at Monedas slips into a crack (Ripoll 1980: plate 10). At Lascaux, a horse at the far end of the axial gallery seems to fall hindquarters first into a concavity suggesting a cliff edge (Bataille 1955: 81, 89), and in this case the part of the figure that disappears over the edge was never completed. The technique adds considerable tension and movement to compositions.

Sometimes, a negative, empty space is inventively used to suggest a positive obstruction from behind which a figure emerges. At Las Chimeneas, this is suggested by a horse’s head that appears as though from behind a shadowy rock (González Echegaray 1974: plate 22). There is a very similar interplay of isolated horse’s head and void at Rouffignac (Nougier 1966: plate 15).

Concavities and voids formed by irregular limestone surfaces also seem to have been an inordinately frequent stimulus to cave occupants to execute other kinds of manipulative activities. At Niaux and Chufin, cavities have been outlined with red coloring material (Leroi-Gourhan 1982: plate 112; Almagro 1973). In the final gallery at Altamira, some fissures have been packed with gobs of clay, and more clay smeared around them. This enigmatic behavior would suggest rather obvious interpretations to a psychoanalyst of the Freudian school. Though they would probably
recoil from being called Freudians, many prehistorians agree that a sexual interpretation is appropriate for these phenomena. The behavior responsible is not related to the "scenic" use of voids.

**Embedment**

Suitable limestone surfaces in caves have sometimes served as the canvas for generations of artists. Decorated panels may be palimpsests of layer upon layer of superimposed figures. Prehistorians often assume that much time must have elapsed between successive superimpositions. But that need not be the case. In portable art objects, we know of the existence of engraved cobbles, stone slabs, or bones with many intricately superimposed figures, that most would agree were probably produced over a short period of time: cobbles from Colombière, slabs from La Marche and Parpallò, scapulae from Castillo, to cite just a few examples (Leroi-Gourhan 1965: plates 480–85; Pales and Tassin de Saint-Péreuse 1976; Almagro 1976). In these cases, to see a particular figure the viewer must often work through an elaborate visual puzzle of crossing, interpenetrating lines and unrelated depictions in which the figure is concealed and embedded.

The modern human brain seems to be stimulated positively by such exercises: the search for and eventual recognition of isolated depictions is rewarding in itself; the perceptual game is self-motivating. There is no reason to believe that such activity was beyond the mental capacity of the skeletally modern Upper Paleolithic populations who are our near ancestors or close relatives. To the contrary, Upper Paleolithic palimpsests would seem to show that those populations enjoyed the perceptual exercise as we do.

The cave walls contain wonderful examples of apparently chaotic masses of interwoven lines that conceal individual figures of animals, humans, and hybrids. The viewer may stand for hours, enthralled by some of the more labyrinthine entanglements, working to disengage individual figures from the background of overlain webwork that hides them. There are fascinating panels of this sort at Trois Frères, Gargas, Pech-Merle, and Lascaux (Breuil 1974 [1952]: 160–77, 254–57, 273; Vialou 1979). Such exuberant panels are quite common. Enigmatic panels like that at Las Monedas, containing no recognizable depictions, nevertheless stimulate the viewer to project imagined forms into the disordered array (Ripoll 1980: plate 25). While it is generally supposed that such palimpsests as those from Trois Frères resulted from the repeated redecoration of a single panel at widely separated intervals in time, there is absolutely no proof of the assumption, and no inherent reason why the delineations could not have been produced over a very short time instead, pace Marshack. Whatever the history of their accumulation, their effect on the viewer is in any case the same.

**DISCUSSION**

I have identified and discussed a list of 17 special conventions in this chapter. I have no doubt that aspects of my list are not completely satisfactory, nor do I doubt that
many other conventions like these may exist. I hope that the study will provoke further discussion and investigation of these techniques, and will stimulate the refinement of the list or its entire substitution by other, more appropriate, formulations.

Ucko and Rosenfeld’s thorough, scholarly treatment of cave art (1967) largely demolished facile and simplistic notions about its motivations, and dampened the ardor of armchair theorists for universalistic explanations for its production. At the same time, though I am sure this was as unintended as it is unfortunate, their work seems to have slowed the search for empirical information about more concrete and particularistic meanings and motives of specific artistic assemblages. There is nothing in their book that compels such reluctance, and in fact Ucko himself did not abandon the quest. True, we may never thoroughly understand any artistic assemblage or why it was produced, but the careful and objective search for such understanding is incumbent on any prehistorian who deals with Paleolithic art. To conduct a responsible search for particular motives and meanings, we must examine the depictions and their settings and relationships more thoroughly than ever. That requires a more complete and rigorous analysis of themes depicted, materials utilized, techniques of execution, artistic conventions, and styles than has been produced heretofore.

The special conventions just discussed single themselves out for our particular attention. Where they occur we cannot help but be struck by the fact that the figures involved have somehow been elevated above the common level of the mass, as underlined or italicized words stand out from a text. The special stress placed on these figures may indicate that they bear a central part of the meaning of the panel or assemblage, that they recapitulate it or condense it. Of course, they may prove to have no such focal importance, but it would be irresponsible not to consider that possibility at all. The soon-to-be-published results of new research at Altamira suggest that there, at least, the techniques of isolation, size contrast, attitude, omission, shadow completion, caprice, anamorphosis, positioning, framing, discovery, counterpoise, repetition, complementarity, and progression are all used (often in combination) to enhance figures with special relevance to a set of interrelated themes that pervade the cave, that may now be recognized as central aspects of “meaning” of the art at Altamira. Since the conventions for figure enhancement are so many and varied, it may be suspected that the conventions themselves may have differed in their meaning to the artists and their contemporaries, and that the choice of one set instead of another equally practicable set is a significant datum.

There is no doubt that specific conventions convey particular kinds of information to the modern analyst. The study of unusual attitudes has already suggested that depictions in certain sites have seasonal significance, and reflect an interest in the reproductive condition of selected species (Freeman 1978). The techniques of omission and shadow completion and the use of natural formations as scenic support show the extent to which Upper Paleolithic people’s mental processes, like our own, tended to supply the missing parts of familiar percepts, simplifying and reshaping complex or irregular forms to construct recognizable figures. In both anamorphosis and discovery, the figure is first presented or presented in most recognizable
form to a particular portion of the visual field. Examples of such figures designed to be presented to the left side of the visual midline seem to me to be more common than others presented to the right of the midline, though I have still made no attempt outside Altamira at the systematic collection of empirical data needed to verify this impression. Among living peoples, where information is presented directly to the cerebral hemisphere best specialized to process it, response is quicker and more accurate than otherwise. Holistic recognition of complex visual stimuli is accomplished most rapidly and efficiently when the data are presented on the left of the visual midline, directly to the right hemisphere. Where a startling effect was desired, grotesque hidden figures popped into sight on the viewer’s left, so that the complex visual data they presented would be channeled directly to the right hemisphere for immediate holistic processing. On the other hand, presentation from the viewer’s right to the left hemisphere should facilitate logical consideration of symbolic content. If the stimuli of the depictions in particular caves were predominantly designed to fall on one side or the other of the visual midline, it would tend to suggest that cerebral hemisphere function among Upper Paleolithic artists and their audiences was differentiated as it is among living peoples. (Even placement that simply reflects handedness would bear on the subject.) Sets of symbols and whole sites could be compared and contrasted on this axis. The potential behavioral information provided by such data is absolutely fundamental to any reconstruction of the evolution of mental processes. Art is almost alone as a domain where durable products of prehistoric human behavior have immediate and unequivocal relevance to studies of psychological development.

Attitude, anamorphism, discovery, complementarity, and progression are among the techniques whose study can lead to the recognition of sequences of figures that can only be properly viewed in a particular order. In rare favorable cases, such as the narrow gallery at Altamira, it may even be possible to reconstruct the itinerary Paleolithic visitors must have followed to traverse a gallery while viewing its decorations. When a long viewing sequence is established, the order of the figures may provide other clues to the meaning of the series as a whole. Certainly the series in its interrelated entirety offers more information to the analyst than the individual figure considered alone.

Other aspects of the use of enhancement techniques deserve further study. The details of the application of particular techniques to particular kinds of figures need to be thoroughly analyzed. For example, while bird/human hybrids are apparently common, I know of no bird/mammal hybrids in Paleolithic art, a fact also remarked by S. Giedion (1981: 61). Relationships between species, their complementarity, opposition, or equivalence, all factors fundamental to the theories of Leroi-Gourhan and others, might be manifest in the merging of particular animals in hybrid forms. Further study might also show that particular techniques of figure enhancement were only applied to specific kinds of figures—one or a few animal species or some set of geometrics—rather than to all indiscriminately. Relationships between sites or galleries within a site might be indicated by similarity in enhancement techniques and their application. Sites, periods, panels, or galleries might be classified and compared...
on the basis of the categories of figure-enhancement devices represented, their applications, and frequencies.

One final illustrative example of the utility of this approach may be given. At Altamira, engravings in the final gallery can be seen to be related to the polychromes on the Great Ceiling, with respect to species represented and the ways in which size contrast, omission, positioning, counterpoise, repetition, and complementarity are employed. But, enhancement techniques are not used in the same ways in the two galleries. In fact, size, counterpoise, frequencies of repeated figures, complementarity, positioning, and omission are applied to the final gallery in ways just the opposite or inverse of their application on the Great Ceiling. Here, relatedness seems to be indicated by complementary opposition rather than identity.

Enough has been said to indicate the potential of the study of this material. Perhaps it is not the most fundamental substance we might examine. It may prove to be the case that more basic aspects of meaning, at least at the iconic level, are borne by the choice of animals or forms represented. But, the enhancement techniques described undeniably serve to stress and structure that meaning. The study of structure and stress can clarify systems of meaning in ways that the study of single meaning-bearing elements cannot.

Meaning in Paleolithic depictions probably always exists at several levels, of which some (the levels of more arbitrary meaning) may be completely closed to, and others very difficult of access to, the modern analyst. I suspect that for the most symbolic levels of meaning, we are constrained to recover only evanescent glimpses of the information encoded in Paleolithic art. However, it seems clear that if any reception or decipherment is ever to be possible, all relevant aspects of the information-bearing attributes of the data must be taken into account. Enhancement techniques are surely an important and neglected part of the message, and one that merits much closer and more critical study.

REFERENCES


Techniques of figure enhancement in Paleolithic cave art