

Semiotics of Culture



Approaches to Semiotics

53

Editorial Committee

Thomas A. Sebeok

Roland Posner

Alain Rey

Semiotics of Culture

Edited by

Irene Portis Winner
Jean Umiker-Sebeok

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Introductory Note

The bulk of the essays in this collection were presented, in condensed form, at a symposium on the *Semiotics of Culture: Towards a New Synthesis in World Anthropology*, held during the annual meeting of the American Anthropological Association, in Houston, on December 1, 1977. The focus of the symposium was the consideration of common perspectives as well as significant differences underlying the renewed interest, in the East and West, in the rethinking, from a semiotic point of view, of such pairs of fundamental distinctions as Culture *vs.* Society, Natural Semiotics *vs.* Cultural Semiotics.

Contributions to this volume, originally published as a special triple issue of *Semiotica* (27-1/3, 1979), represent a wide range of attempts to transcend the fragmentary paradigms received from previous generations. The opening up of new avenues of research is accomplished in several ways: (1) by the juxtaposition of the semiotics of nature with certain so-called distinctively human, or cultural, semiotic processes; (2) by the historical or theoretical comparison of traditions of cultural semiotics emanating from Eastern and Western Europe and from North America; (3) by consideration of the semiotic implications of some of the central methodological issues with which the ethnosemiotician is concerned; and (4) by direct applications of a particular semiotic approach to specific cultural texts from both primitive and modern societies.

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organization of the symposium and the distribution of this volume to colleagues in Eastern Europe and the Soviet Union.

IRENE PORTIS WINNER
JEAN UMIKER-SEBEOK

THOMAS A. SEBEOK

Prefigurements of Art

“In our own day the philosopher neither minimises nor unduly magnifies the mechanical aspect of the Cosmos; nor need the naturalist either exaggerate or belittle the mechanical phenomena which are profoundly associated with Life, and inseparable from our understanding of Growth and Form” (Thompson 1945:7).

“To the biologist ... and to the painter, improvement is a perfectly valid notion, proof against any attacks philosophers may make on it. ... And the point I want to make is that in the biological process of evolution, chance processes are among the essentials on which improvement depends. They are not the only essential. The other main one is the occurrence of selection; some of the novelties produced by chance are preserved, others are rejected and allowed to disappear. ... And the practice of modern painters shows that they have accepted chance as a potentially valuable component of the creative process” (Waddington 1969:107-108).

0. PRELIMINARIES

That language is a biotic property specific to man is true — a truism even — in the sense that no other species encountered so far is, in the

technical acceptance of this term, language-endowed. Language is a cognitive structure which, like the behavioral extension of any organ of man's body, may be studied along several more or less agreed upon semiotic/ethological dimensions (Sebeok 1979, Ch. 2) including the characters of its initial state (ontogenesis), mature state, and end-state (gradual breakdown, partial reconstitution, and eventual termination) (*ibid.*, Ch. 4). With regard to the phylogenesis of language, there has been much random conjecture and some empirical stumbling, but scarcely even translucent enlightenment so far. Verbal sign configurations have been elaborated throughout history into many complex forms of message oriented constructs, encompassing both spoken and literary genres, which are best called jointly – as I had suggested nearly a quarter of a century ago (Bascom 1955:246, fn. 9; Bauman 1977:4, 49, n. 2) – the 'verbal art'. Furthermore, language, being "absolutely distinct from any system of communication in other animals", and thus "also the most diagnostic single trait of man" (Simpson 1966:476), has as its corollary, by definition as it were, the tautologic proposition that man has a monopoly on all manifestations of the verbal art. These statements and their implication, while hardly contestable, are surely trivial, owing to the equally unchallengeable fact that the communication system of every *other* species stamps it with a unique hallmark, much as language conspicuously segregates out our humanity (Sebeok 1978a). They do, however, suggest one interesting question which I propose to explore, if tentatively, in what follows, namely, whether the optimal design of certain animal communication systems can allow, given certain contextual conditions, for a superimposed aesthetic function. In other words, how reasonable is it to search for prefigurements of aesthetically charged aversive sign configurations in man's animal ancestry? What, for instance, could Julian Huxley have meant when he asserted

Fig. 1. Male Satinbird building his bower. After Frisch 1974:235, Plate 97.

Fig. 2. Bower of the orange-crested gardener in the rain forest of New Guinea. The two openings in front of the hut are connected inside by a semicircular passage. The bird has covered column between the two openings with dark moss. It is decorated on one side with blue iridescent beetles, in the middle with yellow flowers, and on the other side with broken shells. In front of the bower is a fence plaited from twigs and decorated with brightly colored fruits (sometimes with flowers as well), which forms boundary of the 'garden'. The male (left) has just rushed out of tunnel and greets the female by displaying his nuchal crest. After Frisch 1974:236, Plate 99.

Both plates are based on color photographs and descriptions by Heinz Seilmann and Max Renner. Reproduced with the permission of Karl von Frisch.



Fig. 1.



Fig. 2.

in passing, during a Darwin Centennial panel discussion, that in the behavior of the Satinbird (*Ptilonorhynchus violaceus*) – a remarkable bowerbird living in the coastal forests of Eastern Australia, and a species certain members of which paint the inside of their bower efficiently, even, to echo Huxley's word, "deliberately" – there is "definitely the beginning of aesthetics" (Tax and Callender 1960: 195)? A pioneer ornithologist, Stonor (1940:96-97), had commented on this painting behavior in a similar vein: "Exactly what the motive is behind this painting is obscure; presumably it is an expression of the bird's love of decoration. It has been suggested that it is connected with its liking for dark colours ...". This seemingly bizarre habit, Marshall (1954:65) later likewise surmised, "may be an aesthetic extension of a basic drive", namely, the birds' courtship feeding phenomenon – or just the sort of displacement activity of sexual behavior that some Freudians have posited in men. Gannon (1930:39), the discoverer of bower painting in this species, also observed that the male appeared to employ a tool – a wad of bark, like a brush or sponge, held in the tip of the bill – to apply the paint, which is composed of saliva mixed by the bird with charcoal dust, dark berries, or wood-pulp. It was subsequently noted that the paint, washed away by the heavy tropical rains, is replaced daily during the height of the sexual season and fibrous bark, often still saturated with charcoal and saliva, is commonly to be found on the avenue floor between the two painted walls and where fallen leaves are always quickly removed. This bird, when constructing its social signals, exhibits a decided preference for blue, less so for yellowish-green, shunning red altogether, a bias manifested, moreover, in such like-colored ornamental objects as feathers, flowers, leaves, berries, snail shells, cicada integument, and, near human habitations, pieces of blue-colored glass beads, strands of wool and tinsel (Frisch 1974: 238-39). Generalizing about the entire family *Ptilorhynchidae*, of which about nineteen species occur, Dobzhansky (1962:215) remarks that "it is impossible to deny that a well-adorned bower may give the bird a pleasure which can only be called aesthetic". Recall in this context Nicolas Poussin's maxim – a 17th century evocation of the mediaeval doctrine of *delectatio* as a sign – that "la fin de l'art est la délectation", apropos of which Panofsky (1955:10-11) insists that "a work of art always *has* aesthetic significance", regardless of whether it serves some practical – let me qualify: biological – purpose at bottom. We must likewise concede the possibility that "animals perform some of the behavior patterns we observe because they enjoy the resulting experience" (Griffin 1976:78), regardless of whether

such patterns are adaptive, or virtually so, "but result in a pleasantly satisfying feeling" on the animals' part. Whether or not bowers are built, painted, and decorated for the maker's pleasure, the fact remains that the constructions take place, as a rule, during the breeding season and serve as the sites where territorial displays are performed. The key issue, what the differential effect of the bowers may be on the females, remains unresolved, because this has not been systematically tested.¹

Contrary to Barthes' (1957:222) contention, that the semiotician is entitled to treat writing and pictures in the same way because what he retains from them both is "*qu'elles sont toutes deux des signes*", in all living systems that I know of the characteristics of the signs employed are inseparably joined to the kind of information they carry. Similarly, the concept of "secondary modeling system" (Lotman 1967:130-31), which is assuredly among the more salient features of Soviet semiotics, posits a superstructure that persistently confounds two diverse artistic realizations which, I would argue, demand radically different treatment: on the one side, the products of the verbal art and its derivatives, being inescapably built up from signs that are the operands of a natural language, plus certain traditional or newly invented rules for combining them in possible, impossible, contingent, or imperative ways to advance human cognition and communication; and, on the other side, the artistic products of a verbal semiotic system into which verbal signs may, to be sure, encroach in varying degree. The performances we call the verbal art and those that we call the a verbal arts generate, respectively, in the dominant and the minor hemisphere, although the specializations normally have a complementary relationship. As Eccles (Popper and Eccles 1977:351-52) has recently pointed out, "the minor hemisphere is specialized in relationship to pictures and patterns, and it is musical". This separation of hemispheric functions, by the evidence to date, is genetically coded. The minor hemisphere is best envisaged as "a very superior animal brain" (Sebeok 1977:1070), a conception which points precisely in the direction in which future researches are most likely to prove fruitful. The two repertoires of signs may, and often doubtless do, "enter into subtle semantic relationships", as Veltruský emphasizes (Matejka and Titunik 1976:254), the resulting meaning being compounded by a process called codified contiguity. This is achieved by the immense and incessant traffic in the corpus callosum linking the two cerebral hemispheres of the intact human brain, for "probably everything that happens in the minor hemisphere leads to a kind of reverberation in the major hemisphere" (Popper, in Popper

and Eccles 1977:482). There is, however, no ground that I know of for belief that would compel the conclusion that the interpretant of every artistic sign must have a verbal component; and should a semiotic system of the second kind be identified in the infrahuman biosphere, it would certainly be altogether delusive to postulate a verbal infrastructure for the sort of hemispheric specialization intimated is, after all, "unique to man" (*ibid.* 353).

The authentic singularity of man consists of this, that he alone disposes over a *pair* of communicative codes: "along with our wholly new and wholly distinct system of true language" (Simpson, *ibid.*), the verbal code, we retain an older system that, for want of a better name (Sebeok 1976:156-62, 1977:1063-67), is frequently, contrastively, and hence negatively designated as a human manifestation of a cross-specific averbal code. The latter comprehends a trio of subcodes recently differentiated into separate categories by Uexküll (forthcoming): first, endosemiotic averbal sign systems, or the metabolic code (Sebeok 1979, Ch. 1), involving humoral and nervous factors that convey information within the bodies of all animals, including man (cf. Autrum 1972); second, somatosemiotic averbal sign systems, that function to compact the unity of every organism (cf. *ibid.*, Appendix I), a notion kindred to Leibniz's concept of apperception (as expressed in his c. 1714 paper, *Principes de la nature et de la grâce, fondés en raison*), which is our conscious reflection of the inner state of the monad; and third, outspreading averbal sign systems, such as are used for communication between organisms and between any organism and its external environment. In man, the output of this entire array of subcodes, but particularly of the third kind, is exquisitely harmonized in performing with his outpouring of verbal messages, although the diverse repertoires each serve separate ends substantially at variance one from the other — a point worth reemphasizing with Bateson (1968:615), who rather clearly saw how wrong it is to assume that, in hominid evolution, verbal semiosis has, in any sense, replaced "the cruder systems of the other animals" (*ibid.* 614), that is, averbal semiosis. Had this been the case, our averbal skills and the organs that execute them would inevitably have undergone conspicuous decay. Obviously, they have not; on the contrary, while the verbal art flourished, we have perfected our averbal arts as well — they too "have been elaborated into complex forms of art, music, ballet ... and the like, and, even in everyday life, the intricacies of human kinesic communication, facial expression and vocal intonation far exceed anything that any other animal is known to produce" (*ibid.*).

The ideal of semiotic analysis is to combine causal with functional explanation – to show how sign form interrelates dynamically with sign function, both in synchrony and in diachrony. But an evolutionary sequence is hard to come by in an area so complex and multiply amphibological as art. Instances may be temporally ordered but are not necessarily in linked sequence. Guthrie (1976, Ch. 9) offers some interesting ideas, in a semiotic frame, “about how some aspects of our aesthetic sense evolved” (*ibid.* 73), but the part he was concerned with was that which underlies our appreciation of human physical beauty, the valuation of which he traced to two major elements, copulatory lures and status badges. One perhaps insuperable difficulty all investigators have to face is to identify ineffable “signs of artistic enjoyment” in other species (*ibid.*), all of them being creatures that are speechless.

The only general survey I can find in the entire literature of the life sciences of basic aesthetic principles possibly shared by man with at least the higher animals was drafted in the late 1960s by another ethologist, Rensch, in an essay that was published only much later in the U.S. (1974) and Great Britain (1976). This authoritative but still, unfortunately, all too inconclusive review, based in large part on the author’s well-known experiments aimed to demonstrate the reality of protoaesthetic phenomena, the results of which were found to be in good conformity with those of psychologists (cf. Arnheim 1954) who studied the elements of aesthetic preferences in human subjects, is devoted in the main to scribblings and paintings by monkeys and apes, with but a laconic page (*ibid.* 345) on “auditive aesthetic sensations”. In 1958, Rensch had investigated the efficacy of aesthetic factors in vertebrates, testing preferences for different patterns in a jackdaw, a carrion crow, and six fishes. He showed that, while the fishes always preferred irregular patterns, both species of birds preferred the more regular, more symmetrical, and more rhythmical patterns, doing so in statistically significant numbers. In a color choice test, these birds exhibited a preference for gray and black, being the colors of their own plumage. However, “they preferred patterns with two or four different colours to simpler patterns of one colour or two colours respectively” (Rensch 1958: 461). A student of his, Tigges (1963), later found that jackdaws preferred pure colors (red, blue, yellow, green) to equally bright mixed ones (orange, brown, violet, lilac).

Although painting experiments were conducted by N. N. Ladygin Kohts with a chimpanzee named Joni, in Moscow, as far back as 1913, and Shepherd (1915) reported that a chimpanzee drew lines

with a pencil, and many an anecdotal story found its way into the literature since then, there are only three serious studies of primate aesthetics: the series of papers by Rensch (see especially 1961, on drawings and paintings as perhaps prestages of copying), a posthumous publication by Schiller (1951), and the engaging book by Morris (1962), especially showing, on the basis of a detailed analysis of one young chimpanzee, Congo, that the splashes of paint or the pencil marks made by apes are not at all random. The immature Congo, given an incomplete pattern, often made marks which tended to complete it. Alpha, the first-born chimpanzee of the Yerkes Colony, if given a piece of paper, with a cross placed on three of the corners, would put a cross in the fourth corner: "she would also in her crude way try to complete designs and pictures which had been given to her deliberately unfinished or unbalanced" (Bourne 1971: 216). One is thus forced to assume the presence, in advance, of a representation in the animal's nervous system that corresponds to the picture displayed.

The most recent survey of ape creativity may be found in the psychologist Andrew Whiten's excellent account (in Brothwell 1976:18-40). Rensch, who had worked with a capuchin monkey and a green monkey as well as chimpanzees, observing their drawing or painting with pencil, colored chalk, or brush, professes to have been astonished "to find also aesthetic factors having a positive effect with apes, monkeys and [even] crows comparable with the effect in man" (1972:90). He believes that our feelings of aesthetic pleasure, as we look at different black and white patterns, are, in the main, attributable to three basic conditions: symmetry, rhythmic repetition of similar component parts, and consistency of curvatures. His results demonstrate that, with these animals, as with man, "the greater facility to apprehend a design, the details of which are rhythmically repeated or otherwise more easily apprehended, the 'complexibility' is connected with positive feelings and arouses aesthetic pleasure" (*ibid.* 91). Rensch (1976:342) tells of incidents where "competent art experts, on being shown monkeys' paintings without being told who had painted them, sometimes enthusiastically praised the dynamism, rhythm, and sense of balance. In so doing they have not made fools of themselves, but simply confirmed what the experimental biologists had already also established. Of course, when the art historians, museum directors, or architects who had thus been led into pronouncing opinions on such paintings were afterwards told who the 'artists' were, they were always rather put out and sometimes even offended at the deception that had been practiced upon

them. ... In view of this it is hardly surprising that in cases where, at modern art exhibitions, a surreptitiously included monkey's painting has received acclaim from the critics, subsequent disclosure of the deception has produced something of a scandal, as has occurred in Sweden, for example". (I intend to return to pongid painting in more detail in Section 3 of this paper).

Rensch further supposes that the tendency of apes, including orangutans, and capuchin monkeys to put scarves, ribbons, chains, and the like, around their neck, and to romp about with them on, is to be interpreted as enjoyment of dressing up; hence, in his view, aesthetic factors would be involved in this behavior as well. "It is even more likely", he adds (1972:91), "that birds find aesthetic pleasure in repeating tunes they hear from other birds or from humans, and in 'composing' new melodies from phrases either learned or already known".

Following these brief prefatory observations, I would like to reexamine in some detail the question of the putative aesthetic propensity of animals, with specific (although uneven) attention to four semiotic spheres: (1) kinesthetic signs, (2) musical signs, (3) pictorial signs, and (4) architectural signs. Sketchy as such a review must be, no such comprehensive literature survey has been attempted before, probably for several reasons. One of these may be due to the fact that cultural anthropologists who have sought to inquire into the biological roots of art have typically set out to do so with a preconception common to many members of the profession. Alland (1977, Ch. 2), for one, opens his chapter on "The Evolution of Art" with this uncompromising sentence: "The creation and appreciation of art in its many forms are uniquely human activities", adding, a few pages later (*ibid.* 24): "True [*sic*] artistic behavior is seen in no species other than *Homo sapiens*. Not even a hint of it occurs in the natural behavior of other species". His brief exploration of its origins, sensitive as it is, suggests that this lies in play as a biological property, leading him to a debatable definition of art as "play involving rules" (*ibid.* 30) (for a semiotic interpretation of play in vertebrates, cf. Sebeok 1976:139). This same notion was earlier advanced by Ellen Eisenberg (cf. Pfeiffer 1969:434), subsuming art in a more inclusive class of behavior patterns, one which includes all forms of exploration; and, earlier still, by Dobzhansky (1962:217), who felt that at least some forms of art "are related to play". (The union of the play-impulse with aesthetic feelings and sentiments, as linked with superfluous activities and corresponding pleasures, was first propagated by

Spencer [1897:2:627, 647] eighty years ago; he argued that the aesthetic sphere in general may be expected to occupy an increasing part in human life owing to greater economization of energy resulting from superiority of organization bringing a growing proportion of the aesthetic activities and gratifications). Dobzhansky, however, perceived even in artistic activity an adaptive value, for he saw in it a wellspring of social cohesion, thus raising once again a utilitarian interpretation of the role of art. This viewpoint is most fruitfully developed by Jenkins (1958:14 and *passim*), a thoroughgoing evolutionist, for whom art has its "ultimate source in the human effort to adapt to the environment", and who insists, more generally, that any inquiry into the origins of art must move, as he emphatically puts it, "*toward an analysis of the adaptive situation*". Klopfer (1970:399), who means by aesthetic preferences simply "a liking for objects or activities because they produce or induce particular neural inputs or emotional states, independently of overt reinforcers", answers his own question, whether we can attribute aesthetic impulses to animals other than man, in the affirmative. The inquiry entails the belief that there must be a biological basis to aesthetics, and thus shifts to a search into the basis thereof: "what are the historical or ultimate reasons for the development of an esthetic sense; by what mechanisms is the development of the species-characteristic preferences assumed?" Klopfer (*ibid.* 400), too, comes up against the predicament posed by the traditional view that aesthetic preferences are those for which no immediate functional advantage can be perceived; consequently, he strikes out in a different direction, seeking for guidance from sensory physiology, while also redefining play as a kind of exploratory activity by which the organism 'tests' different proprioceptive patterns for the goodness of fit.

When ethnologists search for the sources of art, they more often than not mean the verbal art; play thus comes to mean wordplay, which Alland (1977:27), for one, connects with poetry, and which must then be excluded *per definitionem* from the rest of the animal kingdom. Archeologists tend especially to dwell on representative art; as Marshack (1972:275) puts it, "art and symbol are products that visualize and objectify aspects of culture ...". Although, on balance, the neuroanatomist Young (1971:519) is undoubtedly right when he says, in the course of his synthesis tracing the sources of human activity from their biochemical basis to the highest levels of consciousness, that "there is no body of facts that yet enables us to understand the origins of aesthetic creation ...", the issue remains a tantalizing one, for, as another distinguished biologist put it, "in

some situations it becomes really difficult not to impute to animals some sort of aesthetics" (Dobzhansky 1962:215). The dialectic seems to have begun between Darwin, whose theory of sexual selection is based on the assumption that female birds, for example, are able to appreciate the beauty of male plumage (cf. Romanes 1892:380-85), and his contemporary, Wallace, who disputed this view precisely in semiotic terms. Wallace argued that what is involved here is an instinctive interpretation of certain strings of signs emitted by the male. However this may be, it would be unreasonable to expect a perfunctory and iterative scrutiny of the literature of animal behavior to shed much illumination; a deeper search, on the other hand, might at least highlight some fundamental issues – such as the often misunderstood dichotomy of analogy *vs.* homology, and the even less understood distinction between phyletic homologies and homologies of tradition.

1. KINESTHETIC SIGNS

The kinesthetic art – as the multisensory dance when viewed in a semiotic frame is sometimes reductively termed after its most distinctive feature, because in dance (contrasted, particularly, with mime) "movement is often an end in itself" (Royce 1977:197) – is seldom alluded to in the context of animal behavior. Sachs (1937: 10) adduced several striking cases of bird displays he and others in his field, including recently Royce (*ibid.* 3-4), explicitly dubbed "dancing". One of his examples is cited after Maclaren (1926), who witnessed this dance of the stilt birds, or cranes, in Cape York in Northeastern Australia:

The birds ... were long-legged creatures, tall almost as storks, and white and gray of feather; and the dance took place in the center of a broad, dry swamp. ... There were some hundreds of them, and their dance was in the manner of a quadrille, but in the matter of rhythm and grace excelling any quadrille that ever was. In groups of a score or more they advanced and retreated, lifting high their long legs and standing on their toes, now and then bowing gracefully to one another, now and then one pair encircling with prancing daintiness a group whose heads moved upwards and downwards and sideways in time to the stepping of the pair. At times they formed into one great prancing mass, with their long necks thrust upward; and the wide swaying of their backs was like unto the swaying of the sea. Then, suddenly, as in response to an imperative command, they would sway apart, some of them to rise in low, encircling flight, and some to stand as in little gossiping groups; and presently they would form in

pairs or sets of pairs, and the prancing and bowing, and advancing and retreating would begin all over again.

His second example, which comes from British Guiana, cited after Appun (1871:468-69), is, as Royce (*ibid.* 4) underlines, “even more interesting since it describes what is essentially a performer-spectator situation”:

[A] group of some twenty mountain chickens of a brilliant orange-yellow color, gathered together in a kind of dance characteristic of these beautiful birds. In the center one of the cocks executed the dance-like movements, as he hopped about the open place with wings extended and tail outspread. On the branches of the bushes round about, the others sat and expressed their admiration of the dancer with the strangest sounds. As soon as one cock was exhausted, he joined the spectators, uttering a peculiar cry, and another took his place.

These parallels immediately raise several problems, the most obvious being whether the animal's behavior is “merely” analogous to man's, whether, that is, shifting to a more familiar parlance, the label “dance” is “just” a colorful and suggestive metaphor – as it must surely be in Frisch's designation (1954, 1967) of the kinetic component of the communication system of the honeybee as a “dance” – or whether something deeper is implied, perhaps indeed a remote phyletic homology.² Even if only an analogy is meant, this is far from valueless, since its study would throw light upon “the laws of function that rule the evolution of a behavior pattern” (Eibl-Eibesfeldt 1975:233). It is, in fact, highly productive to compare biological constructs with cultural ones if only to ascertain whether seemingly similar signifiers trigger comparable interpretants, in the sense that the wing of an insect (developed from an epidermal fold), the wing of a bird (developed from a vertebrate extremity), and a wing of an airplane (manufactured, say, of metal), are all shaped in response to the universal laws of aerodynamics. Armstrong (1963, Ch. 15), who devoted an entire chapter to drawing parallels between the dances of birds and men, feels that he is justified in employing the identical label for both sets of motor signs because of “a natural recognition of the remarkable similarities which actually exist between the dances of birds and men and the identity of the emotional sources from which both take their origin. The resemblances between avian and human dancing”, he claims, “are the outcome of emotional drives which underlie the behaviour of all the higher animals; and the natural corollary is that we can use the terpsichorean activities of men to interpret those of birds, and vice versa. Let us not be scared”,

he concludes, "by the bogey of anthropomorphism into the arms of the spectre of Cartesian mechanism. It is not anthropomorphism to believe that man and the higher animals have much in common so far as instinct and emotion are concerned, but an acknowledgment of truth scientifically demonstrated" (*ibid.* 195).

Sachs questions, by distinguishing — to recast in modern ethological terminology what he says — phyletic homologies, or those that are transmitted via the genome, from homologies of tradition, that is, those that are passed on via memory, whether animals in fact do dance as man does. The traditional distinction between innate *vs.* acquired characteristics is not at all as clearcut as Sachs implies, however, and becomes increasingly inappropriate when one considers the alloprimates. One reason for this is that, for research dealing with homologies, "it is only necessary that information emanating from one common source is passed on. It is not necessary for reproductive relationships to be involved" (Eibl-Eibesfeldt, *loc. cit.*). What we know about dancing in apes is, while doubtless fascinating, unfortunately far from abundant, and even here a further discrimination demands to be promptly introduced, namely, as between studies of animals in captivity, some of which Sachs knew of, and observations of groups in the wild, which are of much more recent vintage. Both sets of data concern chimpanzees — the latter all but exclusively from the popular writings of Lawick-Goodall (for her dramatic descriptions, see, e.g., 1967:75-77, 1971:52-54; Nissen 1932, whose fieldwork was conducted during the dry season, occasionally alludes, nevertheless, to wild chimpanzees performing in parties).

Lawick-Goodall repeatedly refers to a display, which she reports having seen but three times in years, as a "rain dance". These group performances lasting almost half an hour, involved adult males — with females and youngsters in watchful attendance — although often individual males were also observed to "react to the start of heavy rain by performing a rain dance" (*id.* 1971:54). It is not at all clear from Lawick-Goodall's description of these spectacles what the chimpanzees' behavior pattern could possibly signify. In the human context, what is commonly called a rain dance is performed in many societies as a fertility rite in order to produce rain; it belongs to a class Royce (1977:207) calls metaphorical dances. By contrast, feral chimpanzees, to all appearances, "dislike the rain", reminding the observer of "primitive men ... defying the elements" (Lawick-Goodall 1967:74, 77). Their carnival display is in reaction to a sudden downpour. What we have here is a striking resemblance in form — sufficiently so, it seems, to account for the labeling — but a dearth of



Fig. 3. Chimpanzee rain dance. Copyright National Geographic Society, from the Special Publication of *My Friends the Wild Chimpanzees*. Lawick-Goodall 1967: 82-83.

information about referential sign function, and therefore a gnawing question mark about the meaning of the convergence between man and chimpanzee in this arena of expressive movement.

Reports of chimpanzees dancing in the laboratory – including what Sachs (1937:10) claimed to be the “most valuable document” – come from the psychologist Köhler (1922:33-35; cf. *id.* 1925:314-15), who was for six years in charge of a research establishment in Tenerife. Köhler frequently observed couples moving in dance-like fashion. He depicted a particular configuration about which he remarked (*ibid.* 33) that “Die Ähnlichkeit mit einem Tanz war besonders gross”, a characterization Sachs wholly concurred with. Nor was this all. Stylized group dances took place, such as the following, which Sachs (*ibid.*) insisted “was a genuine round dance”:

In mock fighting two of them drag each other about on the ground until they come near a post. Their frolicking and romping quiets down as they begin to circle about, using the post as a pivot. One after another the rest of the animals appear, join the circle, and finally the whole group, one behind another, is marching in orderly fashion around the post. Now their movements change

quickly. They are no longer walking but trotting. Stamping with one foot and putting the other down lightly, they beat out what approaches a distinct rhythm, with each of them tending to keep step with the rest. When two posts or boxes stand close to each other, they like to use these as a center, and in this case the ring dance around both takes the form of an ellipse. In these dances the chimpanzee likes to bedeck his body with all sorts of things, especially strings, vines, and rags that dangle and swing in the air as he moves about.

Sachs (1937:11) identifies here the prefigurements of a series of basic human dance motifs: "as forms, the circle and ellipse around the post, the forward and backward pace; as movements, hopping, rhythmical stamping, whirling, and even ornamentation for the dance". Köhler (1922:34) further tells us that the sympathetic observer would gladly join in this dance, and that when he initiated the movement around the post "in der besonderen Schrittart, welche für die Tiere dazugehörte", he was immediately followed by a couple of chimpanzees; but when he quit, because of fatigue, his dancing companions would squat and sulk. What Sachs (*ibid.* 12) is concerned with here ought to be taken very seriously, but remains as yet unresolved, for, as he summarizes: "If the dance, inherited from brutish ancestors, lives in all mankind as a necessary motor-rhythmic expression of excess energy and of the joy of living, then it is only of slight importance for anthropologists and social historians. If it is established, however, that an inherited predisposition develops in many ways in the different groups of man and in its force and direction is related to other phenomena of civilization, the history of the dance will then be of great importance for the study of mankind".

If one defines dance, in the stark fashion of Boas (1955:344), as "the rhythmic movements of any part of the body, swinging of the arms, movement of the trunk or head, or movements of the legs and feet", then clearly the chimpanzees' behavior can legitimately be bracketed with ours. It is plausible, moreover, to regard both underlying structures homologous, implying that they owe their similarity to a common origin, much as laughter and smiling fit into the phyletic scale (cf. Sebeok 1979, Ch. 1). The postulation of a homologous relationship does not, however, necessarily imply a distinction between characteristics that are innate *vs.* those that may be acquired, for homologies may be passed on either via the genome or via memory, that is, by cultural or quasi-cultural mechanisms, in the manner, say, of song traditions in the parasitic weaver finches (*Viduinæ*), which were discovered to even transgress species boundaries: these birds learn not only the songs but also the calls of their host species, and close mimicry of the vocalizations of the step-father results in parallel

development which may, in turn, lead to eventual species genesis. Whether dance behavior is innate or acquired is not known, but it is important to be mindful that information may be communicated to a succeeding generation in several different ways, and therefore, since form depends on the function, convergence can hardly be excluded. In studies of expressive movements, the investigation is particularly complicated by the fact that the specific adaptations are not simply responsive to the environment, but involve subtle selective pressures which cannot yet be formulated in terms of physiological or biochemical correlates – for instance, a concept such as ‘aesthetic pleasure’. Nonetheless, I find myself concurring with Griffin (1976:78), when he exclaims that “this does not seem to [him] to be a sufficient reason for avoiding the concepts themselves, as though they were a dangerous plague”. This view, moreover, accords, I think, with the line taken by such specialists in the dance as Hanna (1977:211), who, while she feels “that the configuration of human behaviour that is called dance is significantly different from the behaviour of other animals, including that which has also been labelled dance”, at the same time affirms “that human dance has its roots in phylogenetic and ontogenetic evolution, firstly in predisposing psychobiological processes and secondly in social experience”.

2. MUSICAL SIGNS

“Music”, Merriam (1964:27) tells his readers, “is a uniquely human phenomenon ...” – but his generalization begs the very question that needs exploring. I would therefore prefer to start journeying backward in time from the Janus-like portal that is the sole rational means of access from nature to culture that Lévi-Strauss (1964:24) sagaciously threw upon when befittingly noting that “la musique opère au moyen de deux grilles. L’une est physiologique, donc naturelle; son existence tient au fait que la musique exploite les rythmes organiques, et qu’elle rend ainsi pertinentes des discontinuités qui resteraient autrement à l’état latent, et comme noyées dans la durée. L’autre grille est culturelle; elle consiste dans une échelle de sons musicaux, dont le nombre et les écarts varient selon les cultures”.

Boas (1955:340) made two fundamental observations concerning music: first, that the only kind of music that occurs universally is song, “and the source of music must therefore be sought here”; and,

second, that two elements, and only two, are common to all song: rhythm and fixed intervals. It is in the class of birds that the root-stock lies to which these remarks must inevitably lead the unprejudiced investigator, fortified by the opinion of so experienced an ornithologist as Thorpe (1974:307), who, in repudiation of a typically naive remark of Suzanne Langer's,³ proclaims his own stand: "... increased familiarity, from long study, certainly for me, increases my conviction that our judgment that bird songs, in some instances and in some degree, represent music is not mistaken".

Within the last decade, several competent and thoughtful studies have appeared appraising a field that in the course of its recent development has even won a name of its own: ornithomusicology (Szöke 1963). One such survey, on the aesthetic content of bird song, was compiled by Hall-Craggs (1969), a British ornithologist. Another, a book-length global reinterpretation of bird song, was undertaken by Hartshorne (1973), a prominent philosopher (perhaps best known to this readership as the senior editor of the *Collected Papers* of C. S. Peirce). As for the controversial but hardly verifiable central thesis of ornithomusicology – an idea first articulated, I believe, by Montaigne – it is argued that birds evolved elaborate musical utterances long before the appearance of man, who may be supposed to have derived his primitive music under the instigation or, at any rate, influence of their song: men certainly heard it and some may have imitated it. (It should be mentioned here that man often mimics different aspects of animal behavior,⁴ and particularly that the imitation of bird dances is quite widespread. One example from Europe is the incorporation of a figure, the *Nachsteigen*, from the behavior of the mountain cock, into the Bavarian *Schuhplatter*; see further Armstrong 1965:209ff.) The process of adoption would have been facilitated by the undeniable fact that man and bird share certain requisite physiological foundations: both of us sense the world most consequentially by optical means, and both of us address it most saliently by acoustic means.⁵ Indeed, in a number of crucial respects, and particularly as to the predisposition of some song birds, manifesting critical periods in their lives for song-learning, to master certain sounds rather than others in a manner reminiscent of the kind of constraints on first language acquisition detectable in human children, and in several other important respects, "these birds are closer to man than any nonhuman primate ..." (Marler and Gordon 1968:128).⁶

Were the ornithomusicologist's contentions demonstrable, then one could postulate a true homology of tradition, if not a phyletic

one: human song would thus be as homologous to bird song as, say, a genetically unrelated second language acquired by a foreign speaker is homologous to the first language learned by a native speaker of that same language. Failing that, we must fall back on the principle of convergent evolution, justified by adequate evidence for formal correspondence. But Szóke's line of argumentation is by no means abrogated or contradicted by the prodigiously erudite Armstrong's (1963) chapter on "Bird Song as Art and Play", where this English life-long student of bird behavior repeatedly remarks that "As evidence increases it becomes more difficult to deny that birds possess some aesthetic sensitivity" (*ibid.* 267), that "we are justified in postulating the existence of aesthetic appreciation on a lower level among animals" (*ibid.* 235), and that, "whatever else our aesthetic taste may be, it is an extension and refinement of animal abilities" (*ibid.*). He quotes an apt observation by Paracelsus, the early 16th century physician and alchemist, who admonished: "Man need not be surprised that animals have animal instincts that are so much like his own. ... Man may learn from the animals, for they are his parents".⁷

The most elusive problem in demonstrating "that birds have aesthetic taste is the difficulty of proving that any characteristic of bird song is non-utilitarian" (Armstrong 1963:244). Hartshorne's book (1973, esp. Chs. 2 and 3) is in part addressed to this predicament, which he formulates thus: "To say 'aesthetic' is to say 'not merely or too directly utilitarian'. But we must be careful to balance this consideration against the seemingly contradictory one that unless an aesthetic activity has some connection with utility it will be unlikely to survive evolutionary change" (*ibid.* 53). Hartshorne speculates that there may be an optimum here between irrelevance to survival needs of the species – notably, as an expression of its territorial requirements (the birds with the 'best' songs are usually the ones with the most marked territorial behavior) – and too close or immediate a connection with such needs, as represented by the individual singer in a given context. He postulates "a safety factor", a sort of emergency valve for the outlet of surplus energy, a luxury activity that can always be nullified in exigent circumstances.

Rhythm is the basis of form in bird song, as in all music, much as symmetry is in space or equilibrium in matter. Hall-Craggs (1969: 311ff.) discusses its prevalence in some detail, as well as of the transposition of fixed intervals that Boas deemed the second all-important element of music, comparable with melody. Armstrong (1963:244) remarked earlier that "it can hardly be fortuitous that some birds do sing and transpose in accordance with our musical

scale". An important series of experiments bearing on this point was carried out by Reinert (1965) with jackdaws (*Corvus monedula*). After being conditioned to distinguish certain rhythmic acoustic signals, the jackdaws were able to identify them even when played by different instruments, that is, with a different timbre, or when the tempo, pitch, or interval are transposed. They could also distinguish between two-four time and three-four time. The birds could perceive acoustical patterns differing in intensity and duration of tone, and recognized a great many variations. In sum, they did not depend on absolute clues only but, as we ourselves do in the perception of phonemes, on relative ones. Ultimately, I suppose, this is a mathematical matter, and eventually Nelson (1973), in fact, undertook a sophisticated quantitative comparative study of this kind, showing similarities of structuring in several taxa, including behavioral organization in bird and man, with respect to acoustic signals.

Many birds, moreover, possess the ability to follow a train of changing pitches, as a scale, and to distinguish it from another train proceeding simultaneously but at a different speed or in a different direction. In other words, these birds appear to have solved what Cherry (1978:279-282) had designated in man as the "cocktail party problem", the essence of which I take to consist in the capacity to select one particular acoustic string, viz., a tune, out from its accompaniment or to distinguish it from another string proceeding at the same time (polyphony). A single individual veery (*Hylocichla fuscescens*) is, for example, able to produce complex polyphonic patternings; nor need there be, in this species, an interval between primary patterns, although it may be present in one voice but not in the other. "At the end of most songs, the two voices come together to cooperate in a characteristic extended trill of *overlapping arpeggios* (song A); sometimes this 'cadence' appears to be left to the lower voice alone (song B)" (Nelson 1973:288-89). Thorpe, on the basis of his distinguished fieldwork, supplemented by laboratory studies, has clearly confirmed the existence of "something like musical appreciation, albeit on an elementary scale, existing in a good many birds" (1974:205), derived, in part, from discoveries of antiphonal singing, especially in the compulsively duetting African shrike (*Laniarius aethiopicus*) (Thorpe 1972). The notes of the duet constitute polyphonic singing, such that the pitch, timing, and phrasing can, to a large extent, be controlled very exactly, but can also be varied by the singers. Either sex can start and the other finish, either bird can sing the whole pattern alone if the partner is absent, and, when the partner returns, the two birds can either duplicate in perfect time or resume antiphonal singing.

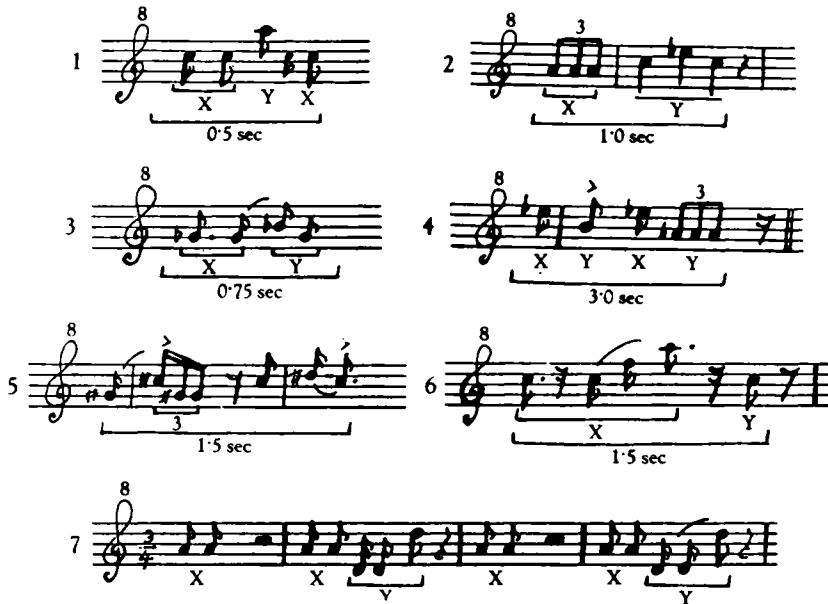


Fig. 4. These seven segments display a characteristic selection of *Laniarius aethiopicus* duet patterns, proceeding from the rather simple to the more complex. Thorpe and North (1965:222) remark that "The 'musicality' of these songs strikes all who hear them". After Thorpe and North 1965. Reproduced by permission of William H. Thorpe.

The organized singing patterns of birds have long attracted our attention. In some, the singing is organized to conform with strict sequencing rules; the structure is hierarchical, the levels comparable with the build-up of the human mode of vocal display. Ethologists tend to interpret bird song in terms of the adaptive advantages it confers on the performers and their conspecific audience, while keeping an open mind on the ramifying consequences of the display, which may well surpass a single function and come to encompass the aesthetic dimension. To summarize: "That birds 'sing' is a notion applied popularly to vocal performances that people find aesthetically pleasing, but singing lacks a fully accepted and rigorous descriptive meaning in ethology" (Smith 1977:56).

The ornithomusicological hypothesis becomes muddled when one considers that other animals than birds have variously been alleged to 'sing': "Cicadas [i.e., locusts] are noisy, daytime musicians, the male alone singing. The sound is produced by snapping a special structure, the tymbal, with a muscle" (Frings and Frings 1977:79). As with



Fig. 5. These separate figures show seventeen different duet patterns produced by a single pair of tropical bou-bou shrikes during the course of one day. After Thorpe and North 1965:221. Reproduced by permission of William H. Thorpe.

birds, singing is emulative, and this, as Darwin (1901:434) had noted, sometimes gives rise to antiphonic duets or trios. This application of 'song' is, however, likely to be metaphorical just as 'dance' is in application to the honeybee. Then there is the California singing fish (*Porichthys notatus*), whose song, which varies in tone pitch and quality from specimen to specimen, produced under conditions of colonial activity, was carefully described by Greene (1924). The striking vocalizations of frogs and toads have also been termed 'songs' (Frings and Frings 1977:179), often in reference to the existence of duetting throughout some nineteen genera, or more complex chorusing behavior, the biological function of which has hitherto eluded all investigators. The bellow of the alligator, assumed to convey an assertion of dominance and a challenge to other males within earshot, is likewise often called 'song' in the reptile literature.

I personally doubt if phenomena of this sort can be considered as prefigurements in any interesting sense. However, there are at least two groups of mammals in which singing has been reported, and these may be worthier of our regard.

First, there is the case of the humpback whale (*Megaptera novaengliae*), a species whose phonograph recordings have received considerable publicity in the media and on at least American college campuses during this decade (George Crumb's exotic composition, "Vox Balaenae For Three Masked Players", was directly inspired by the voice of the whale). Mysticete sounds have for some decades been recognized to be varied and complex, but the humpback is the baleen whose rich sonic repertoire has been most thoroughly studied so far (Payne and McVay 1971). The animals certainly "emit a series of surprisingly beautiful sounds" (*ibid.* 587), including a long train, called a 'song', that recurs in cycles lasting up to 30 minutes and perhaps longer. This song is often produced in continuous soliloquy, very loudly, by a single whale for a full eight minutes; there is no evidence of duetting. But its purpose is not really understood; "we can only guess what function this remarkable series of vocalizations serves" (*ibid.* 597). This being so, no one can yet say whether the performance has, for the whale — in contrast to the human listener — any sort of aesthetic significance, and thus whether the designation 'song' is biologically justified.

The climactic question whether song-like behavior has been observed in the order of Primates can be answered affirmatively, but, among the monkeys, it seems, only for some platyrrhine (New World), species, notably, *Callicebus moloch* (titi monkey). In the case of this monkey, Moynihan (1966:119) applies the term song "in a very broad and general sense, to include all series of notes uttered in more or less rapid and regular succession and distinctly set off, by relatively long pauses, from both preceding and succeeding notes". Moynihan characterizes such passages as only moderately rapid throughout all or most of their length, and these he calls "ordinary" songs. He describes four or more other types, and calls these "compound" songs. Among the ordinary songs, he identifies nineteen, but says that this list is certainly not exhaustive. He terms two of the most common compound sequences "full" songs; in these, the normal sequence of pitch changes is from higher to lower, irrespective of the actual notes involved. He explains why they cannot be produced by precisely the same type of motivation — there are qualitative as well as quantitative differences in causation. Full songs of one individual frequently instigate full songs by others.