

The Pivotal Fact: Human Speech

(1)

LET ME repeat: among scientists who consider the matter, there is unanimous agreement that man and man alone uses verbal symbols and has a propositional language and syntactically structured speech. Included here are not only the biologists and paleoanthropologists who are concerned with the evolution of man, but also comparative psychologists, ethologists, and behavioral scientists generally (sociologists, cultural anthropologists); and, in addition, experimental neurologists.

We must not let our concentration on the state of scientific opinion lead us to forget that common experience also provides evidence of this fact, evidence so clear that common-sense opinion, without awaiting confirmation by the special data of investigative science, has long held speech to be probably the most distinctive mark of man. And if we remember the etymology of the words "logical" and "rational," and observe that both of these words have a linguistic as well as an ideational connotation, we will recognize that the philosophers who, on the basis of common experience alone, regarded man as the only logical or rational animal were, in effect, saying no more than that man is the only talking, the only naming, declaring or questioning, affirming or denying, the only arguing, agreeing or disagreeing, the only discursive, animal.

These are all matters of common observation. We are here merely describing human behavior, not explaining it by reference to unobserved psychological or neurological factors or processes. When we come to explanation, we shall see that disagreements cut every which way; they set philosophers against scientists as well as philosophers against philosophers and scientists against scientists. Leaving aside for the moment the problem of explaining the observed fact of difference, I want to comment on the remark made above that scientific investigation so far has done nothing more than confirm what common-sense opinion has long known in the light of common experience. This should not be interpreted to mean that scientific efforts in this field are supererogatory. On the contrary: since the matter under consideration is one that is capable of investigation, it should be investigated. We should never rest content with common experience about matters where investigation can add special experience that may be either confirmative or infirmative.

The fact that up to this date the scientific study of animal communication has not turned up infirmative evidence by discovering sentence-making animals by no means precludes the possibility that science in the future, perhaps even the very near future, may do so. At least we must face with a completely open mind work now going on with the bottle-nosed dolphin, and also with chimpanzees and dogs—work that may show either that other mammals have a propositional language of their own or that they are capable of learning and using ours. On the other hand, having an open mind about future possibilities should not be equated, as unfortunately it sometimes is, with having an undecided mind about present actualities; for we are obliged, at any time, to judge in the light of the evidence that is then available. At this moment, there are no scientific data infirmative of the proposition that only man has a propositional language.

(2)

What in detail is the substance of the prevailing agreement on this proposition? As I see it, it involves five points, which I will now enumerate and comment on where comment may be necessary or illuminating.

(1) It is agreed that, while other animals communicate and employ expressive cries or gestures, some of which function as signals that convey desires or demands, and in addition respond to signals that are behavioral cues, they do not use symbols that are parts of speech (i.e., which function as nouns, verbs, adjectives, adverbs or as their morphological equivalents) and that can be combined syntactically in a wide variety of ways to form declarative and interrogative sentences.

At the beginning of Western thought, Aristotle wrote:

Man is the only animal whom [nature] has endowed with the gift of speech. And whereas mere voice is but an indication of pleasure and pain, and is therefore found in other animals (for their nature attains to the perception of pleasure and pain and the intimation of them to one another and no further), the power of speech is intended to set forth the expedient and the inexpedient, and therefore likewise the just and the unjust. [1]

The context being a treatise on politics, Aristotle here chose human declarations of the sort that have political significance. If we turn to his treatise on logic, we will find him there dealing more generally with every type of utterance that can be true or false; i.e., declarative sentences, distinguishing these from supplications, injunctions, or requests. [2] The outcries of animals or their signals resemble utterances of the latter sort, not the former. In short, animals never "say" anything that is either true or false. With less precision, Julian Huxley observes that "true speech involves the use of verbal signs for objects, not merely for feelings. Plenty of animals can express the fact that they are hungry, but none except man can ask for an egg or a banana." [3]

(2) It is agreed that, while the so-called "dance-language of the honey bees" definitely does give the appearance of involving declarative statements—utterances that may turn out to be true or false—this fascinating process of communication on the part of these insects is a purely instinctive performance on their part and does not represent, *even in the slightest degree*, the same kind of highly variable, acquired or learned, and deliberately or in-

tionally exercised linguistic performance that is to be found in human speech. [4]

Apart from the dance language of the bees, no form of animal communication, instinctive or learned, appears to involve declarative statements. In all other cases, animal communication takes the form either of expressive outcries and gestures, or of making and responding to signals; there is no naming or stating. And by far the greater part of animal communication—outside of laboratories and apart from human tutelage—is instinctive rather than learned. Konrad Lorenz stresses this point.

Animals do not possess a language in the true sense of the word. In the higher vertebrates, as also in the insects, particularly in the socially living species of both great groups, every individual has a certain number of innate movements and sounds for expressing feelings. It has also innate ways of reacting to these signals whenever it sees or hears them in a fellow-member of the species. The highly social species of birds such as the jackdaw or the greylag goose, have a complicated code of such signals which are uttered and understood by every bird without any previous experience. The perfect coordination of social behavior which is brought about by these actions conveys to the human observer the impression that the birds are talking and understanding a language of their own. Of course, this purely innate signal code of an animal species differs fundamentally from human language, every word of which must be learned laboriously by the human child. Moreover, being a genetically fixed character of the species—just as much as any bodily character—this so-called language is, for every individual animal species, ubiquitous in its distribution. [5]

Lest there be any quibbling about the words “innate” and “instinct,” concerning the meaning of which American behavioristic psychologists do not see eye to eye with such European ethologists as Tinbergen, Thorpe, or Lorenz, let us adopt as the minimum meaning that can be agreed to by all parties, the formula proposed by Donald Hebb: namely, that a pattern of behavior can be called innate or instinctive insofar and only insofar

as it is "species-predictable," which is to say, in Lorenz' words, "ubiquitous in its distribution" among *all* members of the species *without exception*. [6] One or a few negative instances that cannot be accounted for by observed pathological factors would constitute infirmative evidence that the behavior was not innate or instinctive. By this strict criterion, it is extremely doubtful that, apart from a few simple reflexes and emotions or desires, there is any human behavior that can properly be called instinctive. Negative instances abound with respect to every pattern of human behavior that appears to be widely manifested by members of the species, though this statement may not hold for the so-called "instinctual drives" that have been attributed to man in common with other animals in the vertebrate group.

I will return to this point later, especially to consider its significance for the difference it makes that man differs in kind from other vertebrates with which he may also share certain common instinctual motivations that certainly would have an effect on his behavior. For the present, I will only reiterate what everyone knows—that no human form of utterance is species-predictable or ubiquitous. By the commonly accepted meaning of the term, human language is not instinctive, nor are any of the other performances that the paleoanthropologists cite as distinctive of man—the making of tools, the building of shelters, or the fabrication of clothing; the organization of social groups and the formulation of rules of social behavior; the decoration of objects or the making of pictures or statues for an aesthetic rather than an exclusively utilitarian purpose. None of these human performances is species-predictable as a definite pattern of behavior or as always productive of a result that is uniformly the same or ubiquitous throughout the species.

It is for this reason that the bower-birds of Australia do not constitute an exception to the statement that only man is an aesthetic animal that produces a wide variety of works of art for the pleasure that beholding them affords him. Of the bower-birds of Australia, Professor Thorpe tells us that some species "paint the walls of the bower with fruit pulp, with charcoal or with dried grass; and at least one [species] manufactures a painting tool out of a small wad of spongy bark." [7] The word "manufactures" is, of course, misused in the foregoing description. Quite apart from that, if, as appears to be the case, the "interior

decoration" of the bower-birds, like the "operatic warbling" of other species of birds, is species-predictable and instinctive, then the activities in question, though they may look like interior decoration or like the making of music, are not at all comparable to the human performances they resemble, any more than the instinctive dance-language of the honey bees is comparable to human speech. [8]

The critical principle here is of such great importance that it needs to be stated explicitly and with precision. Failing to abide by its stricture leads to all sorts of errors about the similarity or difference between men and other animals, not only errors made by naive human beings who have a fondness for animals and wish to glorify them by romanticizing about their anthropomorphic qualities, but also mistakes made by scientists whose training should make them more critical and who, therefore, should know better than to compare instinctive with learned behavior. The principle, stated in a way that most directly bears on the difference of man, is as follows: *With respect to any statement about some performance that man and man alone exhibits—and which some men may, in fact, engage in and others not—an apparently similar performance by another species of animal does not constitute an infirmative negative instance if the latter is instinctive or species-predictable, while the human performance is acquired or learned and voluntarily or intentionally exercised, as evidenced by its nonubiquitous distribution and by its wide range of variability within the human species.*

The foregoing discussion of the incomparability of instinctive and non-instinctive behavior, as bearing on the question of how man differs from other animals, has immediate relevance to the pivotal fact of human language, concerning which I have said that there is unanimous agreement on the part of scientists. I explained that by "unanimous" I simply meant that I could find no dissenting voice in the literature, and added that the one exception I could find did not, on close examination, stand up. That one exception is Professor Thorpe. For example, and this is only one of many instances of the same error on his part, he tells us that it "used to be argued that animal language is emotive only, whilst human language is supposed to be emotive *and* propositional." This distinction, which would, of course, constitute a difference in kind, Professor Thorpe then goes on to say, "has been abolished

by the dance-language of the honey-bee. The dances are truly propositional in that they transmit precise information about the direction and distance of a food source. . . . So this distinction falls to the ground." [9]

It does not fall to the ground at all, in view of the wholly instinctive character of the honey-bee performance: it is not the distinction, but Professor Thorpe's comment about it, that fails to stand up. Nor will his concluding comment on the subject pass muster. He writes:

Perhaps the most reasonable assumption at present is that however great the gulf which divides animal communication systems from human language, there is no single characteristic which can be used as an infallible criterion for distinguishing between birds and men in this respect. Human speech is unique only in the way in which it combines and extends attributes which, in themselves, are not peculiar to man, but are found also in other groups of animals. . . . I think we can sum up this matter by saying that although no animal appears to have a language which is propositional, syntactic, and at the same time clearly expressive of intention, yet all these features can be found separately (to at least some degree) in the animal kingdom. Consequently, the distinction between man and the animals, on the ground that only the former possesses true language, seems far less satisfactory and logically defensible than it once did. [10]

What is logically indefensible is not the distinction, but Professor Thorpe's statement that other animals have a language that is propositional and syntactic, the only evidence for which he can offer—the dance-language of the honey bee—is totally irrelevant to the point, because it is wholly instinctive behavior. Even if Thorpe were correct in his statement that other species use signals that are "clearly expressive of intention" on their part, a statement with which Lorenz sharply disagrees, it would not follow that the distinguishing feature of human language—its propositional character and its syntactical structure—has been found in other species of animals *to any degree whatsoever*, once the instinctive performance of the honey bee is dismissed as incomparable and, therefore, irrelevant. [11]

(3) It is agreed that the lack of speech by other primates does not result from the lack of the vocal apparatus requisite for speech. [12] It is further agreed that when in other animals, especially in such birds as the myna bird or the grey parrot, the vocal apparatus is used to imitate human speech sounds perfectly and to utter human sentences, the fact that such performances are obviously learned rather than innate must not mislead anyone into thinking that the birds are engaging in true speech behavior. As Konrad Lorenz observes:

Not even the cleverest "talking" birds which, as we have seen, are certainly capable of connecting their sound-expressions with particular occurrences, learn to make practical use of their powers, to achieve purposefully the simplest object. Professor Koehler, who can boast of the greatest successes in the science of training animals and who succeeded in teaching pigeons to count up to six, tried to teach [his] talented grey parrot "Geier" to say "food" when he was hungry, and "water" when he was dry. This attempt did not succeed, nor, so far, has it been achieved by anybody. [13]

As for Professor Koehler's success in teaching pigeons to count, on the basis of which he attributes to them "unnamed number concepts," I think it can be shown that his theory of "unnamed concepts" in animals is untenable. I will try to do this in the next chapter where I deal with the whole question of whether conceptual thought can be attributed to animals. Even Professor Thorpe, who thinks it can be, says of Koehler's work that, though it brings "the counting achievements of birds a step nearer that of man, . . . it is still not true counting in the fully human sense." [14]

(4) It is agreed that while animals can learn to respond to verbal cues, they do not initiate or use verbal cues to elicit behavioral responses on the part of other animals or men; nor can they be taught to do so. [15]

(5) Finally, it is agreed that man's exclusive possession of a propositional language is correlated with and, to some extent, depends on the size, structure, and complexity of his cerebral

cortex, including its dominance by one hemisphere or the other; in all of which respects except the last man is vastly superior in degree to other primates and to all other animals, with the possible exception of the bottle-nosed dolphin. In this last respect—the asymmetrical functioning of the human brain, with dominance by either the left or the right hemisphere of the cortex (as in right- and left-handed individuals)—man is unique; and this unique characteristic of his brain definitely appears to be connected with his exclusive possession of a propositional language. [16]

(3)

I have called man's exclusive possession of a propositional language the pivotal fact in this consideration of how men and other animals differ. It is the only one with regard to which a thorough search of the literature can discover no tenable demurers. That it may stand alone in eliciting such unanimous assent does not in any way minimize its logical effect in establishing the proposition that man and other animals differ in kind. That proposition being thus established, we must, of course, inquire why certain scientists, mainly psychologists, who concede that only man has a propositional language still persist in denying the truth of the proposition and asserting the opposite; namely, that man differs only in degree. And we must pursue a much more germane and more important inquiry concerning the character of this manifest difference in kind—to try to discover, when we come to explanations of man's exclusive possession of propositional speech, whether this difference is superficial or radical.

In treating as pivotal the fact that man alone names things and utters sentences, I do not mean to dismiss as unimportant or insignificant other evidences of man's difference in kind, of which two are almost as unanimously agreed upon as the fact of language. One is man's invention and fabrication of tools for use at some future time; the other is man's having a sequentially developed historical tradition that results from the cumulative transmission of cultural products from one generation not just to the next, but to remote generations, sometimes through intervening ones and sometimes jumping over them.

The few dissenting opinions with respect to the uniqueness of man's toolmaking appear to arise from a failure to distinguish between the invention and production of implements, such as the hand ax, for future use and the merely implemental use of natural objects at hand for immediate application in the present situation. Even when the latter appears to involve some improvisation of a tool by combining or adapting natural objects for the purpose, it is quite distinct from the fashioning, out of natural materials, of an implement designed to be used at a distant time and on objects not now perceptually present.

Similarly, the few dissenting opinions with respect to the uniqueness of human history appear to arise from a failure to distinguish between the cumulative transmission of technology, institutions, practices, and beliefs, on the one hand, and the non-cumulative transmission to one filial generation of behavior learned by its *proximate ancestors*.

With these distinctions acknowledged and understood, the uniqueness of man as the only toolmaking and the only history-making animal is not only as well established by the evidence, but it could also be as unanimously agreed upon as the fact that man is the only sentence-making animal. However, as I have just remarked and think it useful to repeat, it would make no difference if that were not so; for one type of behavior performed by man and not performed in any degree by other animals is quite sufficient to establish the proposition that man differs in kind, not just in degree. The addition of other unique human performances—such as toolmaking and history-making—does not, in strict logic, render “truer” the proposition that man differs in kind. The only logical effect of the additional items is to provide more things that would have to be refuted by evidence in order for the proposition to be empirically falsified.

Quite apart from the logic of proof and falsification, the additional items may, of course, make a significant contribution; for by seeing what is common to sentence-making, toolmaking, and history-making, we may be able to understand better what *underlies* the difference in kind that is manifested by these three forms of observable human behavior. For this reason, in what follows, I will, at times, refer to all three marks of man's difference in kind, though I will for the present concentrate on the significance of human language.

In saying that we were entitled to conclude that men and other animals differ in kind (even if that rests only on the pivotal fact of human language), I have always added "tentatively." Since the conclusion does follow from that fact, why is it *tentative*? The answer is that the present state of the evidence does not preclude the future discovery of contrary evidence. Evidence may be forthcoming, for example, that the bottle-nosed dolphin can make sentences. However, the fact that the conclusion about man's difference in kind is tentative in this sense, and only in this sense, does not distinguish it in any way from the best established of scientific opinions. All are tentative in the sense that they can be falsified by new data. If the possibility of contrary future evidence were to disbar us from drawing conclusions from the evidence now available, we could never draw any conclusions whatsoever from the data of scientific investigation.

(4)

The fact of man's difference in kind being established, only one question remains to be answered: *Is that difference in kind superficial or radical?* This question gives rise to two issues; for there is, first, a disagreement about whether the psychological explanation of man's linguistic performance renders it superficial; and, second, a disagreement about whether the neurological explanation of it has that effect. Of these two, the first is the pivotal issue in this inquiry, with which we shall deal at some length in the next chapter.

Before that, however, I would like to answer a question raised earlier in this chapter. Why do a considerable number of scientists, especially comparative psychologists and other behavioral scientists, still persist in saying that man differs *only in degree* when they do not dissent from the proposition that man and man alone has a propositional language, and when they neither offer any evidence to the contrary nor try to impugn the evidence that is available on this point? Since man's unique linguistic performance is quite sufficient to establish man's difference in kind, why do these scientists so flatly contradict themselves by admitting this and still asserting that man differs only in degree?

The contradiction is so patent that we can suppose they are

unaware of it only by supposing that they do not understand the distinction between difference in kind and difference in degree, or that they do not realize that one characteristic possessed exclusively by man, such as propositional speech, is sufficient to establish his difference in kind from other animals. That may be the case, but it seems so unlikely that I have another conjecture to propose. It involves a number of points.

In the first place, the scientists whom we are considering all affirm without question the evolutionary principle of phylogenetic continuity. If this principle is true without exception, then, in the realm of living things, including man, there can be no radical differences in kind, for such differences would introduce unbridgeable discontinuities into the picture.

In the second place, these scientists appear to be unacquainted with the distinction between a radical and a superficial difference in kind, and so they regard all differences in kind as if they were radical and, therefore, as creating discontinuities, which they look upon with abhorrence. Unaware that superficial differences in kind do not violate their evolutionary principles, they necessarily think that only differences in degree are compatible with the principles of continuity in nature and of phylogenetic continuity. Hence they find themselves obliged to assert that man differs only in degree even though they also admit the contrary fact of man's unique linguistic performance.

In the third place, and this is the most important point, they regard themselves as "explaining away" that contrary fact by showing—in their opinion, successfully—that the psychological processes and factors that underlie man's linguistic performance are fundamentally the same as those operative in non-linguistic animals, although they exist to a much higher degree in man than in these other animals. In their opinion, it is this difference in degree which *not only explains, but also explains away* the uniqueness of man's linguistic performance as a difference in kind. Explained in this way, it becomes a superficial difference in kind; but when it is not only explained, but also *explained away*, as these scientists appear to think, the manifest difference in kind is, in effect, eradicated and replaced by the underlying difference in degree. Hence they feel justified in saying that, in spite of his unique linguistic performance, man differs only in degree.

This mode of thinking involves a highly questionable assump-

tion on their part. It is the notion that to explain something that is accurately described is to explain it away or to challenge the accuracy of the description. Even if man's unique linguistic performance were to be explained in terms of a higher degree of the same psychological processes and factors that are operative in non-linguistic animals, that would not in any way detract from the accuracy of the purely descriptive statement that linguistic and non-linguistic animals differ in kind, just as viviparous and oviparous animals differ in kind, or just as vertebrate and invertebrate animals differ in kind.

In addition, their attention must be called to the fact that their way of explaining the difference in kind between linguistic and non-linguistic animals would, if sound, only have the effect of rendering it a superficial and not a radical difference in kind. Were they to realize this and to understand its significance, they could then withdraw their assertion that men and other animals differ only in degree without in any way withdrawing or qualifying their adherence to the principle of phylogenetic continuity.

This last point is confirmed by the position taken by another group of scientists, mainly the evolutionary biologists and paleo-anthropologists, who do not hesitate to affirm that man differs in kind, by virtue of his unique linguistic performance, or such other unique performances as toolmaking and history-making, while at the same time explaining this difference in kind in terms of differences in degree in brain size and complexity. Although these scientists do not seem to be acquainted, any more than their colleagues are, with the distinction between a superficial and a radical difference in kind, they nevertheless do see that their explanation of the difference in kind by reference to an underlying continuum of degrees render the difference in kind compatible with the principle of phylogenetic continuity—a principle that they espouse no less firmly than their colleagues in comparative psychology.