

Goodall and chimpanzees at Yale

By Maggie Scarf

The large auditorium of Yale's Sterling Law School was darkened; a film on chimpanzee behavior in the wild was in progress. Off to one side of the movie screen, her fair hair and green dress illumined by the glow, the noted animal behaviorist Jane Goodall narrated: "Of course we do know that the chimpanzee is man's nearest living relative, that anatomically and biochemically he resembles us more closely than does any other primate species. We know that the circuitry of his brain is remarkably similar to that of our brains. And yet," she observed, her voice quiet, her accent proper and very much that of the English girls' boarding school, "when one views the very striking similarities between certain chimp and human behaviors, one simply is astonished. There is something rather funny about it; it seems like caricature. One has the feeling that one is looking, not so much at animals living in their natural habitat—one is looking at one's long-lost cousins."

And indeed, even for those of us in the audience who were already familiar with Jane Goodall's work and her book on chimpanzee life, "In the Shadow of Man," there were sequences in the movie—a remarkable film, shot and edited by Goodall's husband, Hugo Van Lawick—which were startling. Here, for example, were two female chimpanzees meeting after a separation: They threw their arms around one another, hugging excitedly, their behavior indistinguishable from that of their human counterparts in a similar situation. Here was another oddly "human" greeting incident: A mature female, happening upon one of the dominant males of the troop (again, after a period of separation), came up to him and kissed him upon the lips. And here, as well, was some curiously familiar play behavior: three juvenile chimp siblings chasing each other endlessly around the great trunk of a tree. Their mother, an aging female to whom Goodall had given the name Flo, sat nearby watching, a new infant in her arms. (Later in the movie there were scenes of the whole family—including Flo and the baby, now grown up enough to join in the play—chasing each other around the tree.)

One of the film's strangest sights, at least as far as I was concerned, was that of a young chimp female, coming down a path and twirling round and round, her arms outstretched, looking for all the world like a little human girl trying to make herself dizzy. This drew an amused laugh from the audience. A much more hilarious reaction greeted a sequence in which a group of males approached what Goodall called a "desirable food source"—the bananas she and her husband put out regularly to lure the chimps into their Gombe Stream camp. The males communicated their heightened excitement by means of a ferocious "charging display." At first, one could see their heads, then their bodies, as they

emerged from clumps of trees at the top of a long hill. They paused momentarily. Then they began swaying, rocking, drumming on tree trunks. The hair on their bodies became erect; they drew up their shoulders to give their bodies a huge, powerful rounded shape—the exaggeratedly supermale appearance of football players. At last they came charging down upon the camp, pulling up branches and hurling rocks as they entered the clearing. It was all such marvelous nonsense: such sheer masculine bluff and threat. The entire audience burst into laughter and I heard the student beside me saying incredulously: "I don't believe it. I just don't believe it."

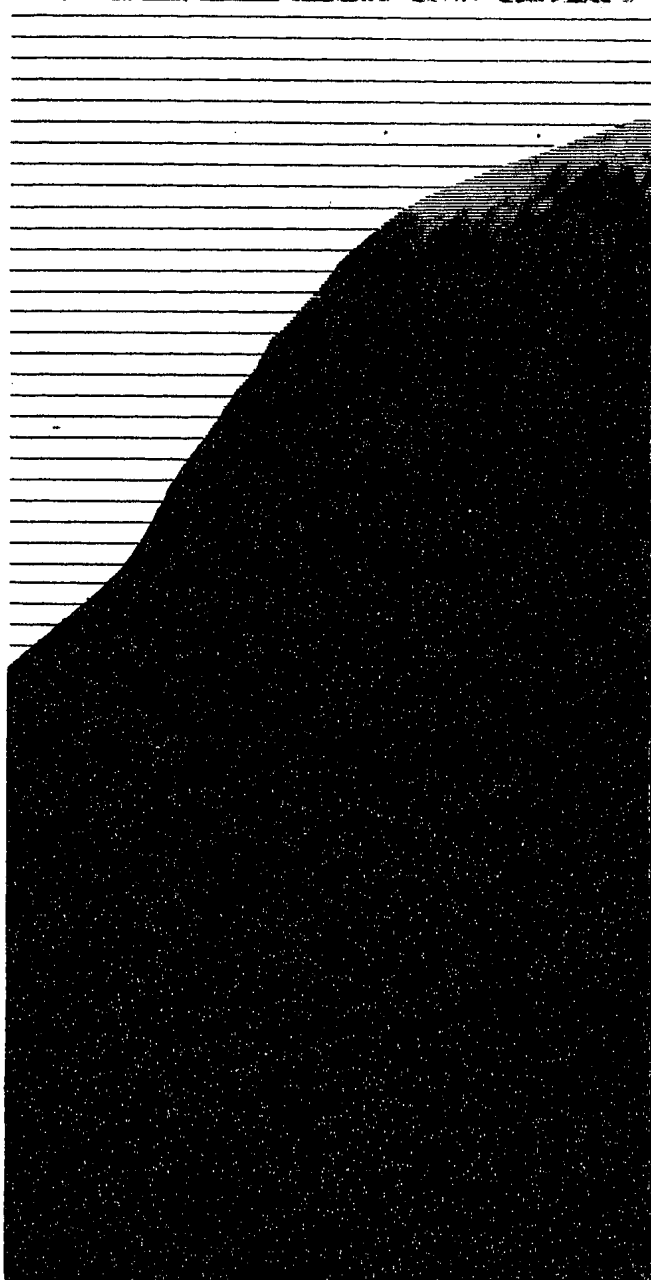
Jane Goodall was scheduled to give four lectures during her stay at Yale. After the first one, the word got around fairly quickly. On the second day of the talks, arriving at the auditorium 45 minutes early, I found most of the seats already taken. The next day it was even more crowded, the aisles choked with student and faculty members who were sitting on the floor, the high window ledges of Sterling Law auditorium crammed with latecomers who had scaled the walls and come in from the outside. At the fourth and final lecture—"Chimpanzee and Human Behavior: Some Similarities and Differences"—the situation was a fire marshal's nightmare: every inch of space downstairs and in the balcony was occupied, doorways and window ledges were jammed and scores of people were turned away. Afterward I ran into a friend, a Law School faculty member. "This is pretty astonishing," he said, looking around with a smile. "With these blasé kids, you know, it's hard to get any sort of a turnout. We can't even fill up this auditorium when there's a porno movie." Yet the whole of Yale College, or so it seemed, had come to hear Jane Goodall talk about her life among the wild chimpanzees of the Gombe Stream Reserve—and at the end of her lectures gave her a clamorous standing ovation.

What is the explanation for Goodall's widespread appeal? She has, without doubt, made an important contribution to our scientific knowledge of chimpanzee behavior. But that is not, one suspects, the sole reason for the upsurge of popular interest in her work.

One part of the enthusiasm may stem from the excited speculations generated by the wave of primate studies begun in the late nineteen-fifties—Irven DeVore's work on the baboon, George Schaller's study of the gorilla, Phyllis Jay's observations of a langur colony in India and others. These studies made abundantly clear that primates other than man live in structured social groups of fairly complex organization which exist within pretty well-defined geographical territories or "home ranges." Whereas laboratory work with primates had concentrated on the animals' "human" capabilities—Yale's great pioneer primatologist, Robert M. Yerkes, had demonstrated the chimp's capacity for learning through trial-and-error and had even taught some of his animals to eat together at a table like well-behaved children—the field studies suggested that scientists might profitably try the opposite approach:

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The "threat" gesture of this male chauvinist chimp is one of many recognizable human traits of our kissing cousins.



Goodall

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Instead of exploring the limits of the primates' ability to learn "human" behavior, science might learn something about humans by observing our anthropoid relatives. (It had become increasingly obvious that such observations had to be made in the animals' natural habitat. In captivity a male baboon often showed fairly brutal behavior toward the females and juveniles with which he shared the cage. In the wild, male baboons almost never displayed such brutality; their aggression was turned toward predators and other outside threats. Just as one could not generalize about male humans by observing prisoners in San Quentin, one could not study natural primate behavior under the abnormal conditions of captivity.)

The major primate field studies of the past decade—and Goodall's ongoing chimp study is the most extensive—have underlined the notion that a good deal of what has been considered uniquely "human" in our behavior may in fact be rooted in our evolutionary history; that, just as we and other primate species share a common biological inheritance in terms of physiology, so we share a common heritage of behavioral tendencies as well.

This kind of supposition assuredly accounts for much of the stir which Goodall and her work have been creating. Another, and wholly non-scientific cause for her popularity probably lies in her personal story, a wonderful mixture of jungle fantasy and scientific fairytale. In recounting it, one has the temptation to begin with "Once upon a time. . ."

In the nineteen-fifties a young English secretary named Jane Goodall, who was working at a documentary film studio in London, was invited out to Kenya to visit an old school friend. Miss Goodall had always wanted to visit Africa, for she was fascinated by animals and animal behavior. (Even as a child, as she recounts in her book, she was so curious about animals that she once spent an entire day in a stuffy henhouse waiting

to see a hen lay her eggs.)

Jane Goodall had been in Africa about a month when a friend suggested that if she liked animals so much she ought to look up Dr. Louis Leakey. Leakey, the late, eminent prehistorian, was at that time curator of what has since become the Museum of Natural History in Nairobi. Goodall went to see him and was hired on the spot with the rank of an assistant secretary—although she had no academic credentials, no scientific qualifications and indeed no university training whatsoever. (Leakey's penchant for hiring completely inexperienced people—and giving them responsible posts—was legendary. He tended to minimize the need for academic expertise, insisting that an untrained individual with a sympathetic understanding of animal behavior was often the better observer.)

For Jane Goodall Dr. Leakey proved to be a kind of good genie or fairy godfather. It was he who first called her attention to a group of chimpanzees living on the shores of Lake Tanganyika in Tanzania, suggesting that if she would attempt an intensive, long-range study of the chimp (a study no one had yet succeeded in making), he would try to raise the necessary funds to support the project. It was Leakey who, while his protégée was working alone at her camp in the African bush, sent out the young Dutch photographer, Baron Hugo Van Lawick, to assist her (at the same time writing Miss Goodall's mother that he had "found someone just right as a husband for Jane . . ."). The young couple did fall in love and did marry; they now have a young son. And later in the nineteen-fifties, Leakey arranged for Miss Goodall to enter Cambridge University, where she transformed a bulging satchel of observational notes into a Ph.D. thesis on chimpanzee behavior.

The tale of Goodall's early days at Gombe is partly a jungle idyll, partly the story of endless frustration and grueling work. She spent 14 discouraging months tracking the frightened and elusive chimps in an effort to make contact with them. Out of this ultimately successful preliminary

work, however, and out of the months of painstaking observations that followed, there emerged a fascinating, even astonishing portrait of man's closest primate relative, the chimpanzee.

Here, then, was an animal whose behavior, in a wide variety of situations, bore a striking resemblance to the human behavior which might occur in the same situations. Not only did chimpanzees greet one another after separations in strangely familiar ways—with hugs, embraces, sometimes kisses—but much of their "reassurance" behavior was uncannily similar to our own. For example, a chimpanzee, in instances of alarm or upset, often reached out to touch another chimp or to take its hand. In situations where deference was to be shown, the subordinate animal might bow, bob or crouch submissively in front of the dominant one. In cases of aggression—threat or intimidation—the close parallel between chimp and human behavior was equally striking (as attested by the Yale audience's howl of laughter which followed the male chimps' charging display). Chimps engaged in slapping—more commonly seen among females—foot stamping and "glaring." One threat behavior typical among males was something Goodall named the "bipedal swagger." This was a slow, rhythmic shifting from foot to foot, while the chimp's shoulders were hunched upward and slightly rounded, its arms held stiffly away from the body. Anyone who has ever seen a John Wayne movie can readily visualize this intimidating posture.

The picture which Goodall drew of the chimpanzee was, in brief, that of a highly intelligent, quite social animal, well able to communicate with its fellow creatures through expressive gestures, postures, facial expressions and sounds which included meaningful calls, cries and screams. This was an animal that could also make skillful use of objects in the environment—it could use rocks as weapons, leaves for wiping away feces, etc. It could even construct a needed tool on occasion.

A striking example of such "tool-making" occurred in connection with the hunt for termites, a favorite chimpanzee delicacy. The chimp would carefully select a sturdy stem, twig or bark fiber and deliberately fashion it into a suitable "hunting pole." Then the chimp would select a promis-

Mourner



Ollie, a member of the Gombe Stream chimpanzee colony, with her dead baby. "She had a vacant look in her eyes—the same look that has been associated with grief in orphans."

ing-looking termite mound, thrust the pole down into the earth and "fish up" and devour the termites. Such a protracted sequence of behavior—the preparation of the tool, the choice of termite nest and the patient extraction of the termites—suggests at least a rudimentary ability to carry out a "plan." Equally surprising—indeed unique among primates save for man—the male chimpanzees would occasionally hunt and kill small prey cooperatively, and the hunters (only the males hunted) would share their food in response to begging gestures of females and other males.

Goodall's work has led many scientists to reassess the "great gulf" which has been believed to separate the animal and human worlds. As Harvard's Prof. Irvan DeVore, one of this country's leading primatologists, explains: "The behavior of the chimpanzee displays many of the rudiments of those sorts of behavior which became terribly important in the development of the human line—behaviors such as tool-use, the relatively efficient hunting of animals, the sharing of food (which in chimps occurs only in special circumstances: when the males have made a kill). In the

chimp we also find a very prolonged and dependent infancy—longer than in any other nonhuman primate—and an elaboration of greetings and gestures which make it possible for relative strangers to get on with one another. In fact it's remarkable how many traits that we would have assumed came relatively late in the human line are in fact already present in the chimp."

Goodall's data, according to DeVore, strongly suggest that the gradation between what might have been our chimp-like ancestors and a very early hominid or true human represents a small step rather than a great leap. At the same time, recent fossil finds have indicated that the human species is much older—surely more than 3 million years older—than scientists had believed only a few years ago. "The point is," says DeVore, "that the chimps have moved forward in the scale, in terms of their tool-use and other complex behaviors that they show. And the time scale of our own line now appears to extend back much further." The bold, sharp line which seemed to divide man from the rest of the animal world, DeVore remarks, is at present "a good

deal less clear than one would ever have expected."

I was to interview Jane Goodall just before her third public lecture at Yale. She is a low-keyed, handsome woman in her mid-30's who combines a slight shyness suggestive of a Victorian schoolgirl with an air of authority and control. I found her looking somewhat fatigued. She admitted that she was "just exhausted"; she had been on a round of meetings with students and faculty, giving some classroom lectures in addition to her major addresses. We agreed, therefore, to limit our conversation to no more than an hour. Here are some portions of that talk.

SCARF: I think that many people have the somewhat romantic notion that when we look at the chimp we are somehow looking at man prior to culture. And yet, assuming some common ancestor from which both our species branched off at some unknown point in time, we also have to assume that not only humans but chimps as well continued evolving. So we really can't take it for granted, can we, that when we see a certain behavior in the chimp, this is the very behavior our own precultural ancestors would have shown? Because we don't know for sure, do we?

GOODALL: That's so; but we can look at it another way. We can say that there are multiple similarities of behavior in man and chimp, some of them very striking; particularly those relating to non-verbal communication. Now if a pattern is common to modern man and modern chimpanzee, it's then probable—at the very least, probable—that it will have occurred in the common ancestor. And therefore in our own early ancestors.

The most one can really say is that anyone who is interested in theories of behavior in early man—and in the ways human behavior might have been molded during the evolutionary process—can't afford to ignore chimp behavior. It happens to be the best model we have; and it isn't perfect, and we know it isn't. I certainly appreciate that the chimp has evolved; nevertheless, this model is just about the closest we can come.

How far do you think this work can be carried? More

specifically, how much do you think that scientific studies of chimp behavior can ultimately tell us about human behavior?

Well, I think it is quite significant to study the chimp in his own right, as man's closest relative—to study his behavior in the natural habitat before it's too late, before his species disappears. And then I do think understanding his behavior may help us understand human behavior.

Now, by that I don't mean that because a chimp does something a certain way, we will do it in the very same way. What I mean is: The chimpanzee—although he lives in a complex society, although he is in fact a complex creature—is far less complicated than even the most simple human being. He acts out his emotional feelings with very little masking of his responses. Therefore it's probably easier to tease apart the biological basis of something like aggression in the chimp than could ever be done in man. And having looked at aggressive behavior in the chimp, it may be worthwhile to come back to man and look at the same behavior and ask: Are the same factors involved?

Which, of the many chimp behaviors you have described in your book and in your lectures, do you happen to find most interesting? As far as our common behaviors are concerned, which ones would you want to come back to and study in humans, after having observed them in chimps?

I personally think that among the patterns we share, the most fascinating are related to things like embracing, patting, kissing... contact behaviors. But those aren't the things I would want to come back to and look at in man. I think the kind of thing we're hoping to examine at Gombe—and at the new laboratory now being set up at Stanford University—are behaviors like chimp aggression. Particularly at Stanford, we would do well to look at certain things inside the body—correlations between hormones and aggressive patterns. That's the kind of area where you want to tease some of these things apart and then look at aggression in man and see if the same kind of thing is involved.

How would you go about doing that?

I think that's going to have to wait; we're in too early a stage of research. We haven't

really begun it yet. That's something for the future.

The female chimpanzee

One thing that quite intrigued me in your book and your talks—and which is, of course, related to an issue of our times—was the submissive role of the female within the chimp community. The female adolescent was, for example, submissive not only to older females and adult males; she was submissive to male juveniles as well. Older females would also be observed to “present” to juvenile males. [“Presenting,” a turning of the rump toward the dominant individual, is an acknowledgement of inferior status and a gesture of submission.] It certainly looks as though the female is definitely submissive to the male in that society. Do you believe there is some biological basis for the female's behavior?

Well, yes I do think so. For one thing the male is larger, stronger and heavier: he has much more dramatic aggression patterns, especially his charging displays. His more violent attack patterns—the stamping, dragging, slamming up and down—are typically male patterns. And it would be extremely nonadaptive, biologically, for the female to indulge in that kind of behavior because she has a little baby which she has to carry around and protect. And if she did all those things, she'd tend to damage her child.

So you're suggesting that for the chimp female it is adaptive to be so submissive?

Well yes. (She smiles.) A student came up to me the other day and said he had an awful problem. He said he belonged to a certain group—I'm not quite sure what his group was—but at any rate he told me: “I'm the only one of my group who's been looking into primate behavior. And I've been looking at the social structures in all different kinds of primates. And I have the feeling that primates live in male-dominated groups. And my group, the group I belong to, doesn't like it. . . .” And all I could say to him was that I really couldn't help him because it just happens to be true. Primates live in male-dominated groups. (We both laugh.)

I suppose, for some people, this might lead to a direct inference or belief that the hu-

man female is necessarily subordinate to the male. But that would be terribly facile thinking, it seems to me; we don't subsist on a diet which is mainly fruit and leaves, either, as the other primates do.

Well, the best I could do for my young friend was to tell him that if he were looking for Women's Lib in the animal world he would have to go to the hyena, where there is a real sexual dimorphism which favors the female. The female is the aggressive individual in that species; and hyena society is female-dominated. Very much so.

But it isn't a very flattering model, is it?

The hyena is interesting, actually. If one is interested in the problem of aggression, then one wants to ask: “If aggression exists, why does it exist?” The hyena has given me a whole new perspective on aggression. Because, you see, if you are a primate female, you can't afford to be aggressive; biologically it would be wrong because you'd risk losing your infant. But if you're a hyena female, you have a very unique pattern of child-raising, and a fairly unique social structure too, inasmuch as the female is dominant.

Hyena females don't take their babies to the kill, as lions do; nor do they bring food to the babies, as lions or wild dogs or jackals do. Instead, the baby depends on the mother's milk for a very long time—until it's 18 months old. This is fantastically long when you think that for other carnivores it's usually six weeks. . . . But the point is that the growth and health of the cub depends on the nutritive qualities of the mother's milk. So in this case, aggression is extremely adaptive: the female's got to be able to fight for a big enough share of the clan kill to get her milk rich enough to nurse her cubs for 18 months. And it turns out that two cubs belonging to a high-ranking dominant female hyena will grow just about twice as fast as one pup belonging to a low-ranking female of this species.

What is the male hyena up to meanwhile?

Oh, he just toddles around. He doesn't seem to do much good, as far as I can see, except to mate with the female.

Returning to the chimp—don't you think it rather striking that one of the most clear-cut and important submissive

In the animal world, primates live in male-dominated groups but in hyena society the female is the aggressive individual.

postures, which is to say this "presenting" or turning of the rump toward the dominant individual, is also the very same posture which the female assumes during copulation?

Well, there is an obvious way in which one might explain this; but there are alternative theories as well. And you must remember that it isn't only the female who presents submissively; it's also the male. In fact in young males it is the most common submissive pattern (although neither for male nor female is it the only submissive pattern, by any manner of means).

But a very common posture which a chimp takes when he solicits social grooming ["Grooming" involves the picking out of foreign matter, usually flakes of dried skin, from the animal's fur] is also to stand with his rump toward the chimp whom he is asking for grooming. And it's also the position the "loser" animal takes after an aggressive encounter, when he is asking for a reassurance pat or touch from the dominant individual. So it may be that this particular submissive position derives not from sex-related behaviors but from behaviors involving the request for friendly physical contact, for reassurance.

But then one is struck as well by the fact that "threat behavior" in the male—such as glaring, shaking branches and so on—is also "courting behavior."

I think it's the other way around; the courting behavior is threat behavior. Because when you are courting somebody, you want to have them come to you; and typically, if you're a primate and you want someone subordinate to you to do something, you threaten them. In hamadryad baboons, for example, the male simply attacks the female and bites her neck; that means to follow him. It's exactly the same pattern as that of the male chimp: If the female won't follow him and he wants to go off with her, he attacks her and she follows him.

Tool-using

I'd like to talk a little about the chimp's use of tools. You

appeared to be very excited, in your book, about "man's closest relative" using objects for specific purposes. But there are certainly other animal species which use tools—the sea otter uses stones to break open mollusks; that strange bird, the Galápagos woodpecker-finch uses a cactus spine, held in its beak, to probe its insect food out of the bark. And so if we do see tool-using in other animals, aren't we anthropomorphizing if we say that this is something very special and unique simply because it happens to occur in a species so closely related to our own?

Actually, we're not. I think the point here is that if you look at animals like the sea otter and the woodpecker-finch—and even insects (there are insects that use tools), you find that with many of these animals the use of tools turns out to be a major way of getting their food. You can really consider it a behavior adaptation which matches a structural adaptation in other species. An ordinary woodpecker uses his long beak and his long tongue; the woodpecker-finch didn't have one, and he uses a spine . . . which is fascinating.

But as far as I'm concerned, if you're interested in something which relates to human tool-use, the things which become significant are (1) if a species can use a wide variety of different objects for a wide variety of purposes and in a number of different contexts, and (2) if the individual of that species can meet a new environmental challenge by using an object or a tool for solving problems that he hasn't encountered before.

You're saying, then, that the chimp's behavior is much more elastic. Can you give me some examples of this?

I'm saying that the behavior is much more elaborate, that the chimp shows tool-use to a far greater extent than any other animal save man. The chimp can also modify objects and make them suitable, and so shows tool-making. To give you an example of the way in which an object can suddenly be used: When Mike, who became dominant male during our time at Gombe, was still

scared of people, we held out a banana to him one day. He didn't dare take it because it was in our hand. He stared at it for a bit, and made a threat movement. Then he grabbed a handful of grass and shook it at us, which is another threat pattern.

As it happened, a piece of the long grass touched the banana. It was instantaneous, his realization of what he had done. Immediately he dropped the grass and picked up a long piece of straw; but he didn't bother to try that. He chucked it down, and picked up a stick. Then he hit the banana out of the human hand.

Now here was a novel problem: he'd never encountered it before, and it didn't take him more than a quarter of a minute to hit on a solution and get that banana. Then we held out another banana, and immediately he picked up a stick and hit the banana out of the hand.

Hunting and food-sharing

You also appeared, in your book, to be quite excited to find that chimps occasionally hunted small prey and ate meat. Why were you so intrigued by that discovery?

I suppose partly because chimps have always been supposed to be strictly vegetarian, and it was interesting to find that they weren't. . . . But I think the real excitement is in finding that they show this terrific cooperation when they are hunting, and in the food sharing that results from the eating of meat.

Could you say a little more about the meaning of food sharing? I believe that food sharing doesn't exist among other nonhuman primates, among baboons, for example?

No, baboons don't share food. The chimps are the only nonhuman primates that have been reported to share food amongst adults in the wild. Of course, man is characterized by his ability to share food; so are the carnivores, mind you. You know, a lion makes a kill and shares it with the others.

Primates tend to be more selfish, presumably because normally they don't need to share. They each forage for themselves. And so if you develop a species in a kind of evolutionary way that forages for itself, then it requires a new mechanism—which may be something to do with intellect—to change that into a

sudden ability to share a unique food.

As far as the chimp is concerned, what would be the utility of sharing food?

Well, I don't think that it really is terribly utilitarian for chimps. Because meat isn't really a major portion of their diet. What it means is that other chimps get the taste of meat, and the tradition can be passed on in that way to the hunting tradition. This would be very significant if for some reason the chimps were pressured into hunting more.

It could be significant in human evolution. You see, it's hard to think how man could have evolved into a hunting creature who needed to share food if there weren't some kind of precursor to food-sharing.

Awareness of death

One thing that rather astonished me in your book was the behavior of the female chimp Ollie, just after the death of her 4-month-old son. I mean the way in which she flung the limp body over her shoulder as if knowing her baby was dead; and then her dazed behavior, and the way she went off alone and sat staring into space. Do you think she "understood" what had happened?

I suspect that Ollie, who was an old female, had had a previous infant that had died. Because when her baby stopped responding, reacting, behaving—whatever you like to call it—she seemed to realize it. There was a sudden and complete change in her handling of her infant. In the case of a younger, more inexperienced mother whom I'd previously watched handling her dead infant, there seemed to be no realization of what had happened. In that instance, a full day after the baby's death, the mother continued to cradle it against her breast as if it were alive.

But whether this means that Ollie, because of a possible previous experience, had a "concept of death," I really don't know. It doesn't really matter. But you know that is the only way I can interpret it.

You didn't see anything in her that could actually be labeled "mourning behavior"? Or did you?

Oh yes. I certainly think there is some kind of stress response which is probably very similar to human grief.

She had this glassy expression and her behavior was quite aimless. She went off up a mountain and sat there, and came down again, and didn't eat, and generally didn't behave in a very purposeful kind of way. She had a vacant look in her eyes, an empty staring ahead—the same look that has been associated with grief in orphans.

I have heard that several months ago the other old female chimp whom you talked about a great deal in your book—Flo—died. And that her youngest surviving offspring, the adolescent male Flint, had what appeared to be an intense reaction to his mother's death. And that shortly afterwards Flint had died too.

Yes, that's right. Flo lay down on a rock, toward the side of a stream and simply expired. She was quite old. Flint stayed near her corpse; he groomed one of her arms and tried to pull her up by the hand. The night of her death he slept close to the body, and, by the following morning, he showed signs of extreme depression.

After that, no matter where he might wander off to, he kept returning to his mother's body. It was the maggots which, at last, drove him away; he'd try to shake the maggots off her and they would swarm on to him.

Finally, he stopped coming back. But he did remain in an area comprising about 50 square yards; and he wouldn't move any further away from the place where Flo had died. And in 10 days he had lost about a third of his body weight. He also developed a strange, glazed look.

At last Flint died too; he died very close to the spot where his mother had died. In fact, the day before he had returned to sit on the very rock where Flo had lain down (by then we had removed her body and had buried her).

Is it true that you've had a post mortem done on Flint's remains to find out whether he might have had some sort of a disease?

The results of that have been negative. They indicated that although he had a certain parasite load and one or two bugs, there was nothing sufficient in itself to cause death. And so the major cause of death had to be grief.

But that's very strange—it's weird to think of a nonhuman animal having such an intense mourning reaction that he could literally die of grief.

Yes it is. It really is. ■

A wild chimpanzee in the African forest shows friendliness by reaching for the hand of animal behaviorist Jane Goodall.



Aftermath of a jungle quarrel. The loser's back is turned deferentially and the winner "makes up" with a touch of reassurance.

