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Bonobo Mirror Project

Laura L. Newhart Ph.D.
Eastern Kentucky University

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LAURA NEWHART

THE BONOBO MIRROR PROJECT

I. Introduction

I undertook “The Bonobo Mirror Project” within the context of a graduate level course entitled *Primate Behavior and Conservation* that was jointly sponsored by Miami University of Ohio, the Cincinnati Zoo and Botanical Gardens, and Project Dragonfly. The goal of such “Zoo Expedition” courses is to promote inquiry-based learning, community involvement, and conservation. I found it both challenging and rewarding to combine my philosophical training with this very empirically based scientific method of inquiry. The empirical question that “The Bonobo Mirror Project” attempts to answer is: How does the ratio of positive to negative comments made by visitors to the indoor bonobo exhibit at the Cincinnati Zoo *about* the bonobos compare to the same ratio of positive to negative comments made directly *to* the bonobos? I interpret the results of my inquiry, and their moral significance, through the more subjective lens of Jean-Paul Sartre’s solution to the traditional philosophical problem of the existence of other minds. Our beliefs about the existence of animal minds and their varying levels of complexity inform our moral judgments on the appropriate treatment and handling of these animals.

II. Positivism vs. Anthropomorphism

Whether we base our obligation to treat animals ethically on Singer’s position that those animals are sentient, and hence able to feel pleasure and pain, or on Tom Regan’s more rigorous requirement that those animals that deserve ethical treatment are subjects-of-a-life in the sense that they have beliefs, desires, memories, a sense of their own future, and a psychosocial identity over time, we still need to have knowledge concerning the contents of their consciousness, i.e., their inner subjective experience.

The search for this knowledge has typically resulted in a clash between two camps, i.e., the positivists, or those who are methodologically committed not to allow anything into their theories that cannot be verified through empirical observation by the

five physical senses, and the advocates of anthropomorphism, those who believe that we can draw conclusions about animal consciousness/subjectivity on the basis of similarities between their behavior and ours. On the positivist side, with the increased urgency of demands for the ethical treatment of animals, there has been increased research activity into the anatomy and physiology of animals, e.g., the structure of animal brains and nervous systems, the presence of endogenous opiates, whether their physiological responses are modified by analgesics, etc. There have also been more effective defenses and fine-tuning of anthropomorphism, including the claim by Bernard Rollin that if positivists are not willing to admit anything into their theories that can't be experienced by the senses, then in addition to the existence of animal minds, they must also give up the existence of human minds and the inter-subjective verification by observation upon which their method depends (137).

One seemingly effective fine-tuning of anthropomorphism has been proposed by Josephine Donovan. Drawing on literary theory and an ethics of care, in "Feminism and the Treatment of Animals: From Care to Dialogue," Donovan claims that we understand the inner states or contents of the consciousness of animals in the same way that we understand those of people, i.e., by reading their behavior as signifiers for these inner states. While it helps to have a general knowledge of the species to which the animal belongs and a certain familiarity with the individual animal we are "reading," we can draw conclusions about the subjective experiences of animals by way of arguments from analogy based on their similarities with humans. As Donovan states:

If that dog is yelping, leaping about, licking an open cut, and since if I had an open wound I know I would similarly be (or feel like) crying and moving about anxiously because of the pain, I therefore conclude that the animal is experiencing the same kind of pain as I would and is expressing distress about it. (50)

Thus, according to Donovan, the question of whether we can understand what the behavior of animals means for their subjective conscious experience is a moot one. We do it successfully all the time. Is it possible that we might be wrong in our interpretations? Yes, but as Donovan reminds us, we can also be wrong in our

interpretations of human behavior. In such cases, an ethic of care advises that we improve the quality of our attention, where attention is seen as a disciplinary practice informed by “openness, receptivity, empathy, sensitivity, and imagination” (51).

III. The Problem of Other Minds and Sartre’s Solution

As the criticism of positivism by Rollin noted above suggests, the problem of the existence of animal minds (or the content of animal consciousness) can be viewed as a subset of the traditional philosophical problem of the existence of other minds in general. Simply stated, we can (and perhaps should) doubt the existence of human minds with as little difficulty as we might doubt the existence of animal minds. The philosophical problem of the existence of other minds is usually stated in this way: I know that I have a mind because I have privileged access to the contents of my consciousness through introspection. I don’t have that kind of privileged access to the contents of anyone else’s consciousness. So, for all I know, everyone else could just be robots with disks implanted in the backs of their necks, programming them to act as if they have a mind like mine. For all I know, my mind could be the only one in existence.

In *Being and Nothingness*, French existentialist Jean Paul Sartre’s magnum opus in which he describes in intricate detail the structures of human consciousness from a subjective phenomenological perspective, Sartre tells us that the traditional realist solution to the problem of other minds is to make a series of inductive inferences from my mind to my body to your body to your mind—in short, an argument from analogy based on physical similarities. I have a mind, and my body is like this. Your body is similar to mine, so you must have a mind like mine as well.

In *Being and Nothingness*, Sartre provides a more subjective and more immediate demonstration of the existence of other minds; and, in doing so he provides an alternative to both positivism and anthropomorphism. For Sartre, human relations are characterized by a battle to the death for subjectivity. Since Sartre believed we could not both be subjects at the same time, one party in a relationship will be the subject and the other will be the object, although there is the possibility that the two can switch places. Hence, Sartre’s famous saying, “Hell is other people.” Sartre believed that you can tell you’re in

the presence of another mind (or subject) when you feel yourself being taken as an object in their consciousness; or, to use more of Sartre's terminology, when you feel your freedom or transcendence being "trumped," so to speak, by theirs. As Sartre describes it:

It is in and through the revelation of my being-as-object for the Other that I must be able to apprehend the presence of his being-as-subject. For just as the Other is a probable object for me-as-subject, so I can discover myself in the process of becoming a probable object for only a certain subject... In a word, my apprehension of the Other in the world as *probably being a man* refers to my permanent possibility of *being-seen-by-him*; that is to the permanent possibility that a subject who sees me may be substituted for the object seen by me. "Being-seen-by-the-Other" is the *truth* of "seeing-the-Other." (256-257)

This experience of "seeing-the-Other" manifests itself as a sense of pride, possibly, but more often shame in the object that I am for the Other, which Sartre describes as "an immediate shudder which runs through me from head to foot without discursive preparation" (222). It is not the result of a tenuous string of inferences from my mind to my body to your body to your mind in the external world.

IV. The Mark Test

The impetus for "The Bonobo Mirror Project" was a paper by my colleague, Professor Robert Mitchell, entitled "Subjectivity and Self-Recognition in Animals." In the paper, Mitchell describes a particular example in which the debate between positivism and anthropomorphism implicitly plays itself out to the detriment of the goal of ascertaining the level of complexity of consciousness or subjectivity on the part of various animals. The example involves a mark test whereby individual animals have a visible mark placed on their face and then are put before a mirror. The animals are observed as to whether they make physical gestures in reference to the mark while looking in the mirror, thereby indicating the capacity for self-recognition, which is considered to be a necessary feature of higher levels of subjectivity. While the mark test was intended to be a more objective measure of self-recognition than mere descriptions or anecdotes of behavior indicating

self-recognition, it too fell prey to the variations of subjective interpretation as different researchers disagreed about which purportedly objective observations of behavior should count as evidence for passing the mark test, and hence for possessing the capacity for self-recognition.

The scientists were looking for a capacity that they hoped could be inter-subjectively verified through their own observations; however, they couldn't agree on what the behavior of the animals signified or meant for that capacity. Various researchers had different standards for the kinds and frequencies of behavior that would justify the conclusion that the animals recognized themselves in the mirror. Some studies required that the animal touch the marked area more than it did in a previous session in front of the mirror before the area was marked. Others required that the animal touch the marked area more often while looking in the mirror than when not looking in the mirror. Others still required that the animal touch the mark at least five times while looking in the mirror.

Mitchell quotes Swartz, Sarauw, & Evans:

[I]f the question is “What is passing?” in relation to the mark test... [t]he easy answer is “touching the mark on the head while using the mirror to guide the hand to the mark.” However, behavior is rarely as simple as that.
(577)

As a demonstration of the difficulties encountered in the mark test, in this video (“Bonobo Self-Recognition In Camera Viewer”¹) of a young bonobo looking into the picture viewer of a video camera it is difficult, if not impossible, to determine from its behavior whether the bonobo is actually recognizing itself in the viewer or not.

On the other hand, and more germane to Sartre's response to the problem of other minds, we might consider how comfortable we would feel hurling insults at this bonobo.

V. The Bonobo Mirror Project

¹ Published on YouTube: <http://www.youtube.com/watch?v=JoKiTs67J4k>

The *Primate Behavior and Conservation* course out of which “The Bonobo Mirror Project” arose relied on the QUEST method of inquiry which contains the following steps: 1) Question and observe 2) Uncover comparative questions 3) Explore predictions 4) Start action plan and gather data, and 5) Think hard about findings and share discoveries. I found the course both challenging and rewarding in terms of the opportunities it provided for me to bring philosophy together with this scientific method of inquiry. My goal for the project was to attempt to determine, drawing on Sartre’s solution to the problem of other minds and using the Quest Inquiry Method, whether human visitors to the indoor bonobo exhibit at the Cincinnati Zoo provide behavioral evidence that they recognize that they are in the presence of another mind (or a higher level of consciousness or subjectivity).

A. Comparative Question and Prediction

My comparative question was: How does the relationship of positive to negative remarks *about* the bonobos at the indoor exhibit at the Cincinnati Zoo and Botanical Gardens compare to the relationship of positive to negative remarks made directly *to* the bonobos? I also took into account the factors of age and gender of the visitors. My prediction was that the ratio of positive to negative remarks made directly to the bonobos would be greater than the ratio of positive to negative remarks made about the bonobos. I also predicted that adults and women would make less negative remarks to the bonobos, and children and males would make more negative remarks to the bonobos, based on the different amounts and kinds of socialization experienced by the different groups. My assumption was that people would not make negative remarks directly to the bonobos as frequently as they made negative remarks about the bonobos to other people if they sensed that they were in the presence of another mind or subject, because to do so would bring them a feeling of shame for the objects that they would become in the consciousness of the bonobos-as-subjects.

My prediction that the ratio of positive to negative remarks by visitors to the bonobos would be higher than the ratio of positive to negative remarks about the bonobos, if correct, would lend support to the conclusion that human visitors do feel

some level of pride or shame before the bonobos, differentially reflected in their behavior toward them as compared to their remarks about them. This, based on Sartre's theory, would indicate that the visitors do discern the presence of a mind or sense of personhood, i.e., a relatively high level of complexity in terms of consciousness, on the part of the bonobos.

Angus Gemmell concludes "Gazing into the Bonobo Mirror," an essay on his journey to the bonobos in the Congo, as follows:

After spending a week with the trackers, observing, absorbing, and filming bonobos, each of us was moved by the feeling of being watched curiously by another conscious being. When a bonobo is close and looks you in the eye, it's like holding a mirror up to humanity's collective past. (41)

It is my hope that this project will provide some small amount of evidence to support this conclusion.

B. Methods

I tested my hypothesis by engaging in three sessions of two hours each of continuous sampling of remarks made by visitors to the indoor bonobo exhibit on two consecutive weekends between 1:00 pm and 5:00 pm. A total of 100 visitors to the indoor bonobo exhibit were surveyed, and 96 remarks were recorded and categorized. I recorded the data collected on a generic behavior frequency data sheet with columns for the following categories: number of visitor, gender of visitor, age of visitor, positive and negative remarks, and key subject words. (Appendix 1)

One challenge that I ran into at this point was how to define positive and negative remarks in a way that would satisfy the scientific requirements of the method of inquiry, which favors facts over value judgments. Fortunately, I regularly teach *Practical Reasoning* (PHI 100), a course in informal logic, so I was able to produce objective definitions for positive and negative remarks:

A *positive remark* is defined as a remark containing words or phrases whose dictionary definition denotes a positive evaluative judgment, e.g., good, intelligent, cute,

etc. A *positive evaluative judgment* is defined as an indication that an individual or group of individuals meets certain specifiable standards.

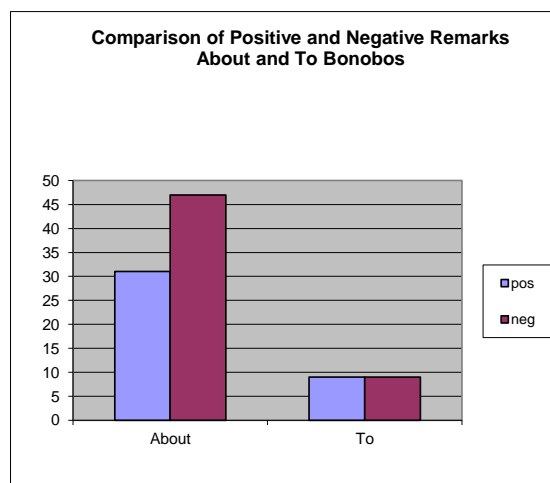
A *negative remark* is defined as a remark containing words or phrases whose dictionary definition denotes a negative evaluative judgment, e.g., bad, stupid, ugly, etc. A *negative evaluative judgment* is defined as an indication that an individual or group of individuals does not meet certain specifiable standards.

Remarks that were ambiguous due to tone of voice or context were omitted. A new remark was determined by a change of subject, a change of addressee, or (of course) a change of speaker.

C. Results and Consequences

Overall Results

The overall comparison of the ratio of positive to negative remarks about the bonobos to the ratio of positive to negative remarks to the bonobos reveals 31 positive remarks *about* the bonobos to 47 negative remarks *about* the bonobos and 9 positive remarks *to* the bonobos to 9 negative remarks *to* the bonobos.

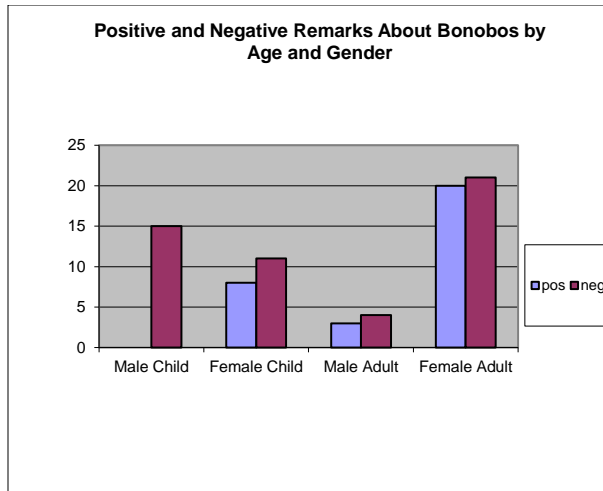


This result is in accordance with my prediction. However, the difference between the two does not appear to be as dramatic as I originally anticipated. It is important to note, however, that of the 9 negative remarks to the bonobos, 7 of them were actually commands that I interpreted as negative remarks because they implied that the bonobos *should* be doing something else. Examples of such commands include: “Be more photogenic,” “Stand still for me,” “Play some dodge ball,” etc. One of the negative remarks was a negative evaluation of one of the bonobo’s behavior when playing ball, “You missed it, buddy.” Thus, only one of the negative remarks to the bonobos was actually a direct insult, i.e., “Boo, trailer trash, you’re it.”

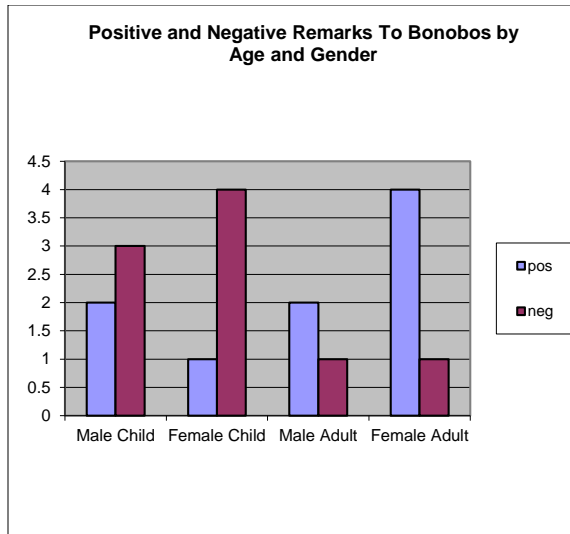
Some examples of positive remarks to the bonobos include: “Hey, cool bonobo!” “Hello, sweet guy,” “I love you,” and “Hey, buddy.” The most common positive remarks about the bonobos concerned their cuteness and their similarity to humans. The most common negative remarks about the bonobos concerned the appearance of the female bonobo’s behind, their grooming habits, and their behavior with their own excrement.

Results by Age and Gender

Categorizing the remarks by age and gender reveals that male children made 0 positive remarks about the bonobos and 15 negative remarks about the bonobos. I found this to be extremely surprising. Female children made 8 positive remarks about the bonobos and 11 negative remarks about the bonobos. Among adults, male adults made 3 positive remarks about the bonobos and 4 negative remarks about the bonobos. Female adults made 20 positive remarks about the bonobos and 21 negative remarks about the bonobos.



Female children made 1 positive remark to the bonobos and 4 negative remarks to the bonobos. This differs slightly from my prediction, as I would have thought that male children would make more negative remarks to the bonobos than female children. Among adults, my predictions about the differences between genders and between ages were more correct. Male adults made 3 positive remarks about the bonobos and 4 negative remarks about the bonobos. Male adults made 2 positive remarks to the bonobos and 1 negative remark to the bonobos. Female adults made 20 positive remarks about the bonobos and 21 negative remarks about the bonobos. Female adults made 4 positive remarks to the bonobos and 1 negative remark to the bonobos. This tracks along with my prediction that adults and women would make less negative remarks to the bonobos and children and males would make more negative remarks to the bonobos. However, my results also seem to indicate that the gender differences do not seem to take effect until the onset of adulthood.

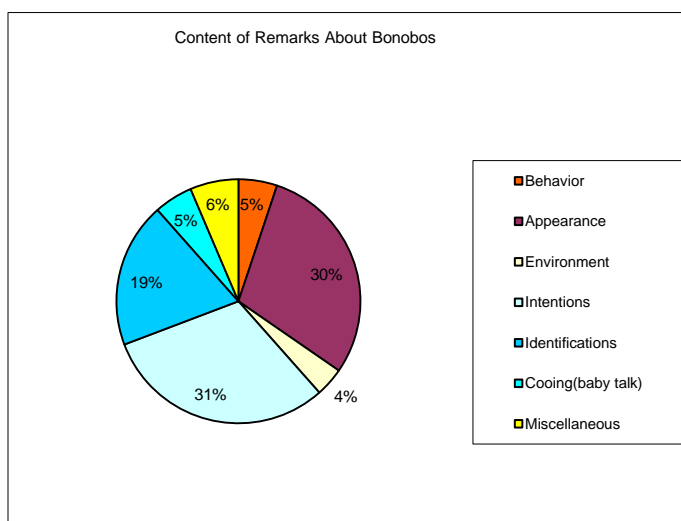


Results by Keyword

My data collection sheet includes a column for keywords in the remarks of the visitors surveyed. Throughout the course of data collection, I noticed a number of different kinds of remarks that occurred quite frequently. These remarks often could not be classified as positive or negative or as being about the bonobos or directed to them. They seem to occupy a territory in between. However, they occurred quite frequently and seem to indicate an awareness on the part of the speakers of a relatively complex level of consciousness or subjectivity in the bonobos, by way of self-recognition on the part of the visitors. These remarks include what I have labeled Intentions, Identifications, and Cooing/Baby Talk. Intentions are defined as an attributing of intentions to the bonobos either indirectly, for example, “Look, he’s sleeping with his favorite ball”; or by putting words into the mouths of the bonobos, e.g., “He’s saying, ‘I’m sleepy. Give me a blanket’.” Surprisingly, the attempt to put words in the bonobos’ mouths occurred 6 times. This attempt along with the attempt to put thoughts in their heads and ascribe motives to their behavior occurred 24 times. Identifications are defined as remarks which either make a general claim of how the bonobos are like us, which is not surprising given that the signage at the exhibit reports that they share approximately 98% of our DNA, but also personal identifications, e.g., “I do that too, cuddle up and eat orange peels,” or “He knows another monkey when he sees one,” said by an older woman to a child.

Surprisingly, there were 7 such personal identifications. Cooing/Baby Talk is defined as remarks about the bonobos to other people but said in a cooing tone of voice meant for the bonobos, e.g., “Awww, look how cuuuuuute he is,” in a tone normally used to talk to/about human babies.

After the data collection process, I went through the keywords and categorized the comments in terms of the content of their keywords using the following categories: Behavior, Appearance, Environment, Intentions, Identifications, Cooing/Baby Talk, and Miscellaneous. Out of the 78 comments recorded about the bonobos: 4 were exclusively about their behavior with no intentions, identifications or cooing involved; 23 were about their physical appearance with no intentions, identifications, or cooing involved; 24 were about their intentions, 15 established identifications, and 4 involved baby talk/ cooing. There were 5 additional miscellaneous remarks.



Consequences

My results indicate that visitors to the indoor bonobo exhibit at the zoo make fewer negative remarks relative to positive remarks to the bonobos in comparison to the same relation of negative to positive remarks about the bonobos. Given the different kinds and amount of socialization on the part of males and females, and children and adults, respectively, it is to be expected that adult males will make more such negative remarks

to the bonobos than adult females and that children will make more such negative remarks than adults. While the sample size is too small to conclude that this study confirms these expectations, nothing in the results refutes them. Moreover, the content of more than half of the remarks also indicates a kind of self-recognition by the visitors in their perceptions of the bonobos. Taken together, if Sartre's theory concerning the role of shame in the recognition of other minds is right (and my application of this theory to the bonobos is valid), this data supports the conclusion that visitors to the bonobo exhibit do discern the existence of a more complex level of consciousness or subjectivity on the part of the bonobos.

However, these findings also open up a number of other questions that must be answered before this data could be used to support a more ethical approach to the treatment and handling of bonobos. Among these questions are the following: 1) Does the relative dearth of negative remarks in relation to positive remarks to the bonobos actually arise from the phenomenon of avoiding shame before the bonobos on the part of the visitors? As one means of answering this question we might also ask if the results concerning age and gender based on a relatively small sample in this study are supported by similar results from a more statistically significant sample. 2) How do the evaluative force and content of the remarks made about/to the bonobos compare to remarks made about/to other animals on exhibit at the zoo? And 3) How do the responses to the bonobos of zookeepers and those who work closely with the bonobos compare to those of visitors to the exhibit? These questions among others may serve as springboards for future investigative projects.

D. The Strangest Thing I Saw

Although it didn't fit into my data, I'd like to conclude with the strangest thing I saw during this study, which perhaps more than anything else convinces me that human visitors discern a high level of subjectivity on the part of the bonobos through a process of self-recognition. A middle-aged mother and teenage daughter were taunting the bonobos with Dots candy. The mother was banging the box of Dots on the window of the exhibit, bouncing up and down, and saying, "Look what I've got—yum, yum!" over and

over. The teenage daughter was holding an individual piece of candy up to the window. The female bonobo got so worked up at this bizarre display that she started jumping up and down, growling loudly, and putting her fists on top of her head as if to imitate pulling a top-knot pony tail which the mother was wearing in her hair.

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Appendix 1: Generic Behavior Frequency Data Sheet

Date: _____

Bonobo Mirror Project

Time: _____

	A	B	C	D	E
1	Visitor #	Sex	Age	Remarks	Keywords
2	1				
3	2				
4	3				
5	4				
6	5				
7	6				
8	7				
9	8				
10	9				
11	10				
12	11				
13	12				
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38	37				
39	38				
40	39				
41	40				
42	41				
43	42				
44	43				
45	44				
46	45				
47	46				
48	47				
49	48				
50	49				
51	50				

F = Female
M = Male

A = Adult
C = Child

A+ = positive remark about bonobo
A- = negative remark about bonobo

T+ = positive remark to bonobo
T- = negative remark to bonobo