



Do Animals have Consciousness, Emotions & a Sense of Fairness? | Interview with Primatologist Frans De Waal

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Zain Raza: ZR: Thank you guys for joining us today. And welcome to The Source, a program dedicated to providing a platform to scientists, academics and policy experts. My name is Zain Raza. Today I'm joined by author, researcher and primatologist Frans de Waal. Frans de Waal is also a bestselling author and his latest book is called "Mama's Last Hug: Animal Emotions, and What They Tell Us About Ourselves". Frans De Waal, thank you for your time.

Frans de Waal (FdW): Thank you.

ZR: So let's start with the first question. Talk about your biography and journey. And also, while you're talking about that, tell us how the field of animal studies evolved during that time.

FdW: All right. Well that's a lot to talk about but in short, I'm a Dutchman, I was born in the Netherlands. I started studying biology. I was very fond of animals. My first studies were not so interesting because they had only dead animals and dead plants, and I was interested in live animals, clearly. So then I went to another university, studied ethology, a discipline founded by Tinbergen, a Dutchman and Lorenz, an Austrian – Konrad Lorenz. Then I studied chimpanzees at Arnheim Zoo, and wrote "Chimpanzee Politics" about it, which became a very famous book. It was used by politicians here in the US at some point, and that was all in the time that I was still in the Netherlands. Then in 1981, I moved to the US and studied there further and worked in Wisconsin, and for the last 25 years, I am here in Atlanta at the Yerkes Primate Center, which is one of the oldest and biggest primate centers in the country.

ZR: So how has this field evolved during the time since you began, and up to this point?

FdW: Well it's interesting because initially we were not allowed to talk about a lot of things. So there's a school called behaviorism in the US, which was very strict and said you should only look at the behavior. That's why they were called behaviorists. You should only look at what you can see and you should never speculate about emotions or thoughts or plans or whatever in animals. So animals were treated basically as little machines that moved around, and even the ethologists in Europe were influenced by that thought; they were very nervous about emotions. They would talk about motivations but not emotions.

All of that started to change about us, I would say, 25 years ago. It started to open up, partly under the influence of neuroscientists; the neuroscientists would say, well the rat brain and the human brain have a lot in common. If a rat is fearful, the same part of the brain – the amygdala – is activated as in humans. So fear in the rat and fear in humans must be something similar. So the neuroscientists and the behavioral sciences broke it up and now we are in a phase where, every week there's a discovery of something smart that animals do that we had not suspected. Or the studies of emotions that I described in my last book are coming up. And so at the moment, this is really changing.

ZR: You've been a part of many studies. Talk about the most notable studies and facts that you've discovered about animals or primates over your journey.

FdW: Well, it started with a discovery that they reconcile after fights, and I discovered that as a student. I worked with chimpanzees and I saw a huge fight in the chimp colony in Arnheim Zoo, and I was very surprised a couple of hours later that there was such a commotion and all these chimps were standing around two chimps who were embracing each other. And they were very excited by it and I didn't know what was going on. It's only much later that I realized that the two who were embracing were the same two who had the fight. And so that's why I thought that must be, in German you would say *eine Versöhnung*, a reconciliation. And from that moment on, every day, I saw them. I mean, it was actually quite a common thing, and I started studying conflict resolution as we call it.

By now there are maybe 300 or 400 studies of conflict resolution in all sorts of animals. It's not just chimpanzees, it's in elephants and lions and dolphins and hyenas, it's in all sorts of species that we find that after fights they come together and they repair relationships. So that's the first discovery and other discoveries relate more to empathy. I'm very interested in empathy, and in the 1990s, I proposed that animals have empathy, that they are affected by the emotions of others. At that time no one wanted to believe that and I think it's because the psychologists had a very complex definition of empathy. So it's like you understand the situation of somebody else, you can imagine how somebody else feels. Now we have much simpler definitions and empathy is being studied in rodents in rats and mice, certainly in the dogs, in all of the mammals.

ZR: I want to take a step back and I want to talk about the experiments that you have conducted. I think it would be really interesting for our viewers to know how these experiments are set up and what methodology is used. Could you elaborate on that please?

FdW: It's very hard to set up an experiment. When I give a lecture, I show one minute of it and people say, oh I could do that at home – so to speak – if I had a chimpanzee. But that's not really the case. Because we design an experiment and then we first test it on each other. So in my team the people will start doing the test themselves with each other to see how they react and what is difficult about it and what is easy about it. And then you throw it at the animals and you have to select those individuals who understand the test, because the individuals who don't relate to it and don't understand what's going on are useless. So you have to select certain individuals and then you can do the test. So for example, you may do a test on pro-social behavior; you give a chimpanzee the choice between two cola tokens so he can select a green token or a red token, and he knows that he can change these tokens for food with us. So let's say he takes a red token. He changes it with us for food and he gets food only for himself. There's a partner sitting next to him who gets nothing, if he selects the green token – now this is interesting – he gives it to us and he gets food but the partner also gets food. Both of them get food. Does he understand the difference between these two things?

And then we see which ones they prefer, and we notice in our chimps that over time they start to like the green token better than the red token because the green token gives both of them food. So that's why it's called a pro-social test. They actually like to be pro-social with their partner. But before you

can finish a study like that I mean you need to do it on many subjects. It's probably a study of three years before you're done with the whole thing and can write it up.

ZR: What can we say about studies on, for example, chimpanzees that you just mentioned and animals? I mean, I could imagine that there's an argument that says that although there's a lot in common there are many differences as well. Hence can studies that you've done on animals provide insights to human behavior?

FdW: Yeah I think I look at humans as primates. So we are animals. You can do the same experiment actually on children or on adults. And for some of the experiments that we do, we do them actually on both the chimps and on children, and we see if the results are similar or different. Most of the time they're very similar. So most of the time we have reasons to believe that what the chimps do is very similar to what humans do. But for the biologists it's so obvious that we are primates and that everything you find in terms of psychology in the chimpanzee also applies to the human (and vice versa) that we don't make that distinction. We don't say, does it apply to humans or animals? It's more like, humans may have more of something – that's often the case, because we are more complex mentally. We may do a few more sophisticated things that the chimps don't do. But the basic patterns are very similar.

ZR: You talked about behaviorism and I want to dig deeper into that. There's this perception, I think amongst humans, that animals are driven primarily by instinct and they're driven by survival. So it's either some sort of inner instinct or external environmental factor that influences their behavior. However, humans are not necessarily like this as far as the argument goes, they are driven more, not just by that, but by other factors. Sometimes they do things that are not useful at all. For example, if you and I break off this interview and start dancing for no reason at all, that's something we cannot find in animals. They usually do things in patterns. So what is your assessment of this? Is there this dichotomy or do you think this is an overblown statement?

FdW: Yeah I may it may apply to insects or something. But let's say a chimpanzee is adult when they're 16 years old so they have a very long development. They learn a lot of things during their development, and elephants are even slower than humans. Elephants, we're talking about 20 years or more, so some species are very slow in their development and have cultural practices that they transmit to each other. So the knowledge of the tool technology that they have may be transmitted from one generation to the next generation. So in general we don't make that distinction anymore. We don't say what a chimp does is instinctive and what a human does is cultural. Because what humans do has a biological component, so has some instinct in there, even though there's a lot of learning added to it. And the same applies to the other primates. And so we don't make that sharp distinction anymore. And the term instinct is barely used anymore.

So for example, one of the most important instincts that we think exists is the maternal instinct for a female to care for offspring. And I'm sure females have a natural tendency to do that, and I'm sure young females have a natural tendency to be interested in babies and learn a lot of things about them. But there's a lot of learning, that's the important part. If you take animals at a zoo that have never had babies and no one around them has had any babies, they usually are very bad at caring for babies because they have not learned the ropes. It's a very complex thing to care for a baby, to nurse them, to carry them, not to sit on them. All these things need to be learned, and so even the maternal instinct, which we think is an instinct also in humans, has a lot of learning and culture in there. So it's never pure instinct.

ZR: So what is your perspective on consciousness and animals?

FdW: Well that's interesting, because consciousness itself: we cannot measure because we don't know what it is. No one can tell me what it is. I always say, if someone says, "well do elephants have consciousness?" I say, "well you tell me what it is and I'll tell you if they have it". And I never get a good answer.

So the philosophers talk a lot about consciousness but no one knows exactly what it is. All I can say is that I know that I am conscious. I'm not sure that you are conscious. You may be a zombie, I don't know what you are, but I know that I have some consciousness, and I have feelings that I experience, and all these things.

But, there are certain things that we humans cannot do without consciousness and that's where it gets interesting. We cannot plan a party for tomorrow with friends where we have to have beer and music and invite a bunch of people. We cannot do that without consciously thinking about it. So we cannot think back to the past without some consciousness. We cannot think forward in the future without consciousness. We have things like metacognition, which is: do you know what you know? I can ask you, "what do you know about earthquakes?" And you will say, "I know nothing". That's metacognition: you don't know anything about earthquakes. So metacognition and planning for the future and stuff we cannot do is consciousness. And then we look at animals, and this has been done now with the primates but also with some bird species and so on: we notice that they can plan ahead. They can make plans for the future. So for example, chimpanzees in the forest may collect grass stems that they put in their mouth and then they walk for two hours and they arrive at the termite hills where they are going to use these grass stems to fish for termites, which means that they have been planning to go there and to collect the tools beforehand. So if you can plan, and many animals have that capacity, and we cannot do it without consciousness, then they must have something similar. So that's my sort of reasoning, but it's fairly indirect, because a direct measure of consciousness we don't have.

ZR: You want to make a distinction between emotions and feelings. Could you elaborate on that?

FdW: Your feelings are private states. So if I communicate my feelings to you, it's by telling you. I say, "I was sad that day". I'm communicating my feelings. If I communicate my emotions you don't need to hear me say anything, you can just look at my face, listen to my voice, measure my blood pressure. The emotions are always expressed in the body and automatically communicated, both in animals and in humans, and so at the emotional level we can make all the comparisons very easily between the facial expressions of a human, the facial expression of a chimpanzee. That's all very easy. And emotions are perfectly measurable. The feelings of an animal: if you ask me, "What does your dog feel?", I can speculate of course, and I think that, for example, for the primates, feelings are probably very similar for chimpanzees and humans. But that's speculation. I cannot know for sure what the chimpanzee feels.

ZR: I want to talk about animal regulation. Because humans are differentiated that we can regulate our instincts we might have certain urges. However we can control them. Do you observe the same thing in primates or other animals.

FdW: All animals who have emotions will also have to control them. So, let's say you're a cat and you walk outside and you see a chipmunk. So that's an American animal, a chipmunk. It's a little bit like a little mouse. You see a little mouse. And as a cat you go after the mouse because your impulse is to catch the mouse. That would be very stupid for the cat, because the mouse will escape, clearly. The cat needs to sneak up, it needs to go low and be quiet and silent, and may take a half hour to sneak up to get close enough to the mouse to jump on it. So the cat has to control that impulse to go after the mouse. And this is true for all the emotions and impulses. Animals cannot just follow them.

If you live in a hierarchy, like most of the primates, or like wolves – all sorts of animals – you have bosses and you have subordinates. If you're low ranking you need to control your emotions. You cannot just walk up to food and take it because they will beat you up. So you have to wait for the right occasion that you can do that. Or if you want to mate with a female as a male, you have to wait till the female is ready and the alpha male is out of sight. So there's all sorts of control that is absolutely necessary.

Emotional control is essential and is present in all the animals. And actually we have ways of testing it. In humans, we have the marshmallow test. So with humans, you put a kid in a room, you give them a table with a marshmallow which they can eat, but you tell them if you wait you get a second one and then we see how long the kids can wait and they can wait 10 minutes, 15 minutes. It's very impressive that they can do that. And the kids distract themselves while they sit there and they start singing songs and things like that or falling asleep. And this has been done with apes. So in the apes study, they have a machine that drops candies in a bowl every 30 seconds. And the ape has learned if I remove the bowl the flow stops. So the ape has an interest in waiting as long as they can and they also wait 10 minutes, 15 minutes, and they do the same thing to distract themselves. They start looking at other things while that is all happening because looking at the temptation is not good for them. So they try to distract themselves.

ZR: I want to talk specifically about what you mentioned right now: hierarchy and alpha males. On YouTube there are so many interesting talks that you've held, for example a TED talk which talks about alpha males, and also politics within chimpanzees: lobbying, coalition forming. Can you expand on these behaviors for our young viewers?

FdW: The alpha male in the literature. If you look up alpha male on Amazon.com you get all these books in the business world of how to be an alpha male. How to beat up your opponents and be the boss, and how to be attractive to women, and all these kind of stories. And so then these businessmen buy these books and they hope to be attractive and they hope to be alpha male. But the story that these books tell is that an alpha male is a bully, an alpha male is aggressive, and lets everyone know who is boss. That's not really the alpha males that I know.

The term alpha male comes from the primate studies, and so they have borrowed the terms from our studies, but most alpha males that I have known keep the peace in the group. They are “consolers-in-chief”; as soon as someone is distressed they go over and embrace them, and calm them down. They interfere in fights to stop them so they share food very easily with others. They don't keep everything for themselves and so a good alpha male is not necessarily a bully, but that's the image that people have.

And then you also have alpha females. So people sometimes forget that but in a group of primates you have always one alpha male. You cannot have two. You have only one, but you also have one of a female always and the alpha female in some species is very critical because, let's say in macaques, let's say in rhesus monkeys, the group is essentially a female group. The males come in, they stay a couple of years and then they go out, but the females always stay together and they have one big structure with an alpha female at the top. And that female has a lot of say about which males come in. So these males, while they are there, they may be dominant over females because they are bigger and they have big teeth and stuff like that. So the males may be dominant but their presence is also tolerated by the females. So who's boss then: the alpha female? Yes or no? That's hard to say sometimes.

ZR: So what about empathy and altruism? Can you provide some examples that you've seen in your research?

FdW: There are many spontaneous cases. So to give a simple case, we have a very old female chimpanzee – Penny is her name – who can barely walk anymore, and so the younger females, when they see that she is on her way to find a waterfall and sit and drink from it, they run ahead of her and they suck up water from the water faucet and then they come back to her and she opens her mouth and they spit it in there. So she doesn't need to make that long walk because it's a very big enclosure. She doesn't need to make a long walk to get there. Or they may push Penny up into the climbing structure where everyone is sitting and grooming but she cannot get in there anymore, and they push her up to get her in there. So that kind of spontaneous behavior is seen in the wild also. There are observations like that and there are quite a few tests.

One of the most interesting test was on bonobos – which is related to the chimpanzee. They would give one bonobo a whole pile of fruit and the bonobo can eat all the food by himself, but he has also learned how to open a door that is next to him, and behind the door sits another bonobo. What they usually do, the bonobos, before they even eat the fruit is open the door. The other one comes in and they share all the food together. So that kind of test is now being done. And 15 years ago, people would say only humans care about others but now we have all these experiments that showed it. Animals also care about each other.

ZR: About the capacity of violence, could you provide some examples that you have encountered doing your experiments, whether primates besides humans have a strong tendency towards violence? And the second part of the question which you could address: is the capacity and the tendency of violence and aggressiveness stronger than its tendency to do altruism and apply empathy.

FdW: It depends a bit on whether it is within the group or outside the group. So within the group, violence is unusual, because you live in a group in order to have the benefits of the group and violence is not one of the benefits. So within the group it is unusual, but it does happen, and the worst case I have seen is a male chimpanzee who was killed by two other males in power struggles. They cornered him and they attacked him so badly that he died of blood loss. So I've seen it in captivity. In the wild, there are now a dozen reports of males in the group being killed in power struggles. So that does happen, but more typical – the majority of cases – is between groups. So males of one group meet the males of another group and they attack each other. And that's why you have the killing. And also another thing that chimpanzees sometimes do is that they kill infants. So males may kill the infants of a female, especially females that they have had no sex with, so the infants are not their infants. So yes, these things happen, it's quite common. I would say that overall in group life of a chimp, positive interactions are more common, certainly within the group are much more common than this kind of killing. They are unusual and they happen maybe every 12 years or whatever, they don't happen very often, but between groups there's not a lot of love between groups of chimpanzees.

ZR: Reminds me of the way foreign policy works in most countries. But that's a topic for another day. So what could you say about morality in general, if I could switch gears here. Animals don't have religions and yet they act, as you've just said, with empathy and love and cooperation even though they have incidences of violence. Do humans need religion to have morality? What's your view on this?

FdW: No I think religion is unnecessary. Religion may add to morality because religions may be able to formulate certain moral principles and give us stories about it that reinforce these principles. So I'm not saying that religions are useless. I think that they probably play a role in this, but the source of morality is not religion. The source is human nature, and human nature is basically primate nature. So yes, we can see empathy and sympathy in other species.

We also have done experiments on the sense of fairness in primates and, for example, you can do experiments where primates get very different quality rewards. So one monkey gets, let's say grapes,

and the other one gets cucumber for the same task, and you will see that the one who gets cucumber starts objecting to the task and starts to throw the food away and gets angry about it. And so we do these experiments on the sense of fairness, and I know that there's a lot of philosophers, especially the Kantian philosophers, who think that morality comes from moral principles. Our reasoning and logic give us the moral principles that we then apply in our social lives. But I think it's exactly the opposite. I think we have these very basic emotional tendencies, which David Hume the philosopher called moral sentiments. We have moral sentiments, which we then build into moral principles. But it starts with these emotions that we can also observe, the same emotions in some other species.

ZR: My last question: what is your feeling about the increasing consciousness regarding animals for example in Germany there are so many products coming out with veganism. There's this green movement starting which takes into account personhood for animals, or at least better treatment when it comes to meat production, for example. So what is your opinion on this? And what do you think people can do to promote more consciousness regarding the animals?

FdW: I think it's interesting that the work that I do on animal emotions, animal cognition, has moral implications. So in the time that we thought that animals were little machines driven by instinct and very simple tendencies, we could do whatever we wanted with them because you can treat a machine or a rock or a chair any way you want. But now that we are seeing that animals have emotions and cognition and are actually much smarter than we thought, we need to start treating them differently. And so I personally am not vegan. I'm not against eating meat but I am very worried about how we treat animals. So it's not the eating part for me, but it's the treatment part and the treatment part is not right at the moment.

The ideal for me would be if we reduce meat consumption by half and treat the other half of the animals that we still do eat much better or that. Even better would be if we can move away from actual meat to artificial meat, because we're gonna get there. In 20 years, I think, we will be eating artificial meats that have never seen an animal, basically, and that would be a great solution. But in the meantime, we certainly need to do something because I feel the way we treat animals, especially in the massive agricultural industry, where the pigs are all locked up and even the cows are locked up, and the chickens are all in thousands in one little barn. We need to do something about that. That cannot go on.

ZR: I think there's a recent research study that also showed that we have to, as a human population, reduce our meat just based on climate change.

FdW: These are other considerations. These are not the ethical ones but the ecological ones. There's a very good argument to be made against, for example, cow meat. Beef is probably one of the most expensive meats in terms of the environment. So yeah we need to start paying attention to that.

ZR: Frans de Waal, bestselling author and primatologist, thank you so much for joining us today.

FdW: You're welcome.

ZR: And thank you guys for joining us today. Don't forget to hit the subscribe button below and to donate so we can continue to produce independent and non-profit news and analysis. My name is Zain Raza. See you guys next time.

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